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Any of the Committee, having received subscriptions, will greatly oblige by forwarding particulars of the same to me, as under. Intending subscribers, and those gentlemen who have promised to subscribe, but have not yet forwarded their subscriptions, will also confer a favour by kindly forwarding the same at their earliest convenience.

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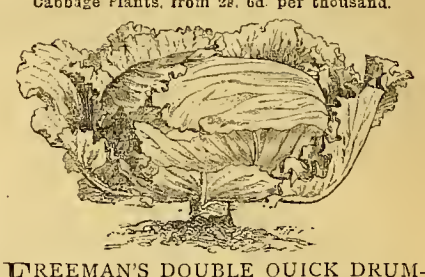

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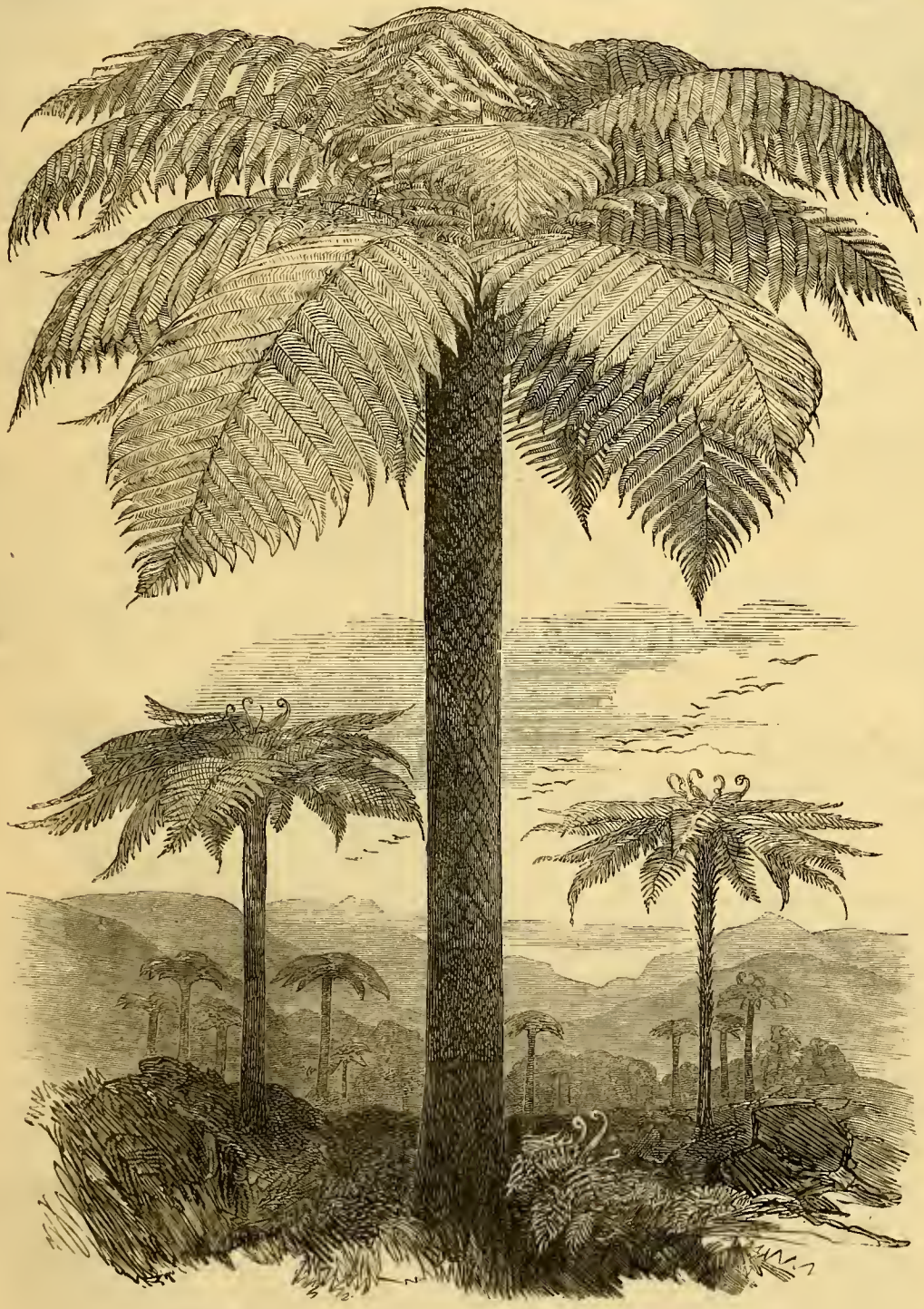

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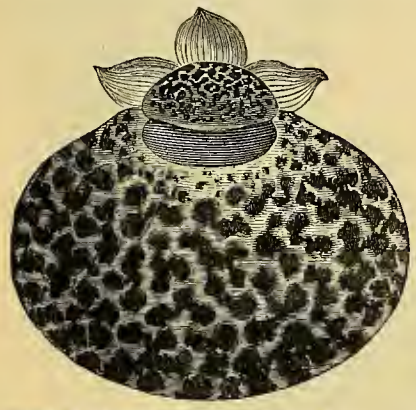

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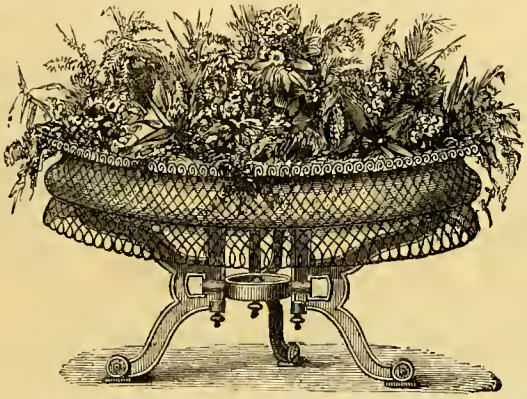

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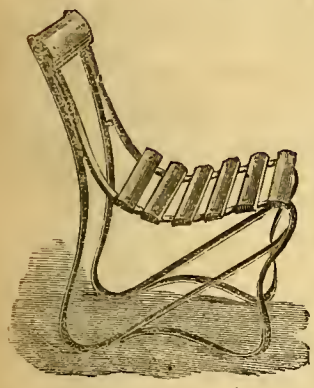
With WOOD SEAT and BACK, and WROUGHT-IRON FRAME. No. 350.



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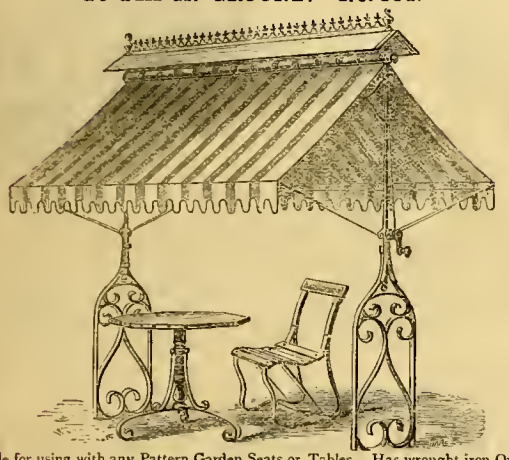

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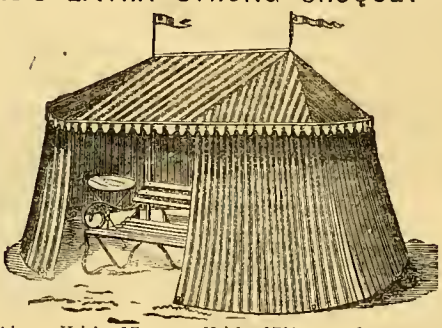
Storage box, extra	0	5	0

NEW FOLDING PICNIC TABLES. No. 346.

Well adapted for use in gardens, balconies, halls, and other places too numerous to mention. Will pack in a very small space when not in use. The attention of Shippers is solicited.

	s.	d.
21-in. diameter, made entirely of wrought iron, japanned green, grained Oak	10	0
25-in. diameter, ditto, extra strong, japanned green, grained Oak	12	6

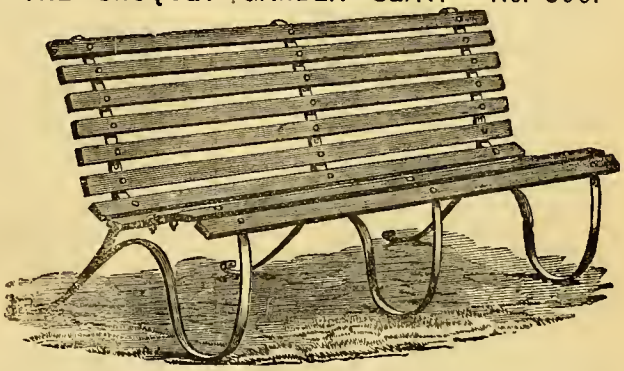
THOMAS'S EXTRA STRONG CROQUET TENTS.



Length.	Width.	Height of Eaves.	Height of Ridge.	£	s.	d.	Packing Case.
10 feet ..	8 feet ..	5 feet 6 inches ..	8 feet 6 inches ..	6	10	0 ..	7s. 6d.
12 ,, ..	8 ,, ..	6 ,, 0 ,, ..	9 ,, 0 ,, ..	8	10	0 ..	8s. 6d.
15 ,, ..	10 ,, ..	6 ,, 0 ,, ..	10 ,, 6 ,, ..	13	10	0 ..	10s. 6d.

The framework is made of light iron tube, so fitted that it can be taken to pieces in a few minutes. The usual upright supports and outside lines are entirely done away with, the interior space being quite clear of all obstruction. The blue and white striped awning and curtain give these tents a very pretty appearance.

THE CROQUET GARDEN SEAT. No. 366.



Under 6 feet, with two supports; 6 feet and above, with three.

This seat combines elasticity, comfort, strength, and durability, with an elegant appearance, and is easily taken apart when required.

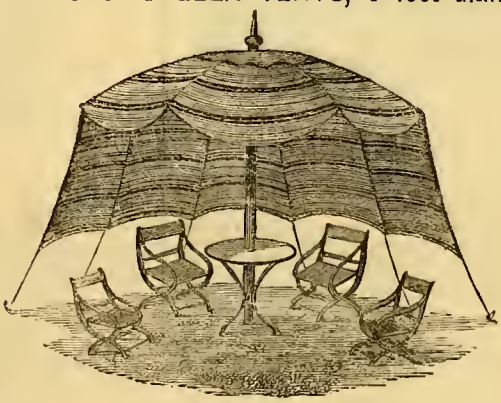
The wrought-iron supports are painted green. A key for screwing up the bolts and nuts is sent with each Seat. The woodwork, stained and varnished, is, for convenience of carriage, packed in bundles, and the iron supports are tied together. (See Illustration annexed.)

These Seats are strongly recommended for Terraces, Promenades, Lawns, &c., and are suitable for all climates and situations.

REDUCED PRICES.

4 ft. 6 in.	5 ft.	6 ft.	7 ft.	8 ft. long.
£1 1s.	£1 4s.	£1 8s.	£1 10s.	£1 12s.

THOMAS'S UMBRELLA TENTS, 6 feet diameter.



	£	s.	d.
6 feet diameter	1	1	0
Ditto, lined green	1	17	0
Half Curtains, as shown in the engraving, extra	0	8	6
Curtains all round, with eyelet holes for spiking to the ground, suitable for bathing or camping out, extra	0	14	0
4 feet diameter, weight only 2 lb., suitable for chairs at garden parties, *fêtes*, croquet or cricket meetings	£0	7	2
Ditto, ditto, lined green	0	12	6
Folding Chairs, with carpet seats ..	0	8	0
Folding Iron Tables	0	10	0

5 per cent. discount allowed for prompt cash with orders amounting to 20s. and upwards.

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Crack Nature's Moulds, all Germens spill at once."
KING LEAR, Act iii., Sc. 2.

No Mildew, Blight, Fungus, or small noxious Insect or Worm can withstand the application of SALUS.

SALUS destroys the Mildew of PEAS.
SALUS destroys the Mildew of HOPS.
SALUS destroys the Mildew of ONIONS.
SALUS destroys the Mildew of ROSES.
SALUS destroys the Mildew of LETTUCES.
SALUS destroys the Black Moulds of APPLES and PEARS.
SALUS destroys the Mildew of POTATOS.
SALUS destroys the Mildew of the VINE.
SALUS destroys the Mildew of CABBAGES.
SALUS destroys the Mildew of PARSNIPS.
SALUS destroys the Mildew of SPINACH.
SALUS prevents the CUCUMBER DISEASE.
SALUS prevents the MELON DISEASE.
SALUS prevents the HOLLYHOCK DISEASE.
SALUS destroys all minute parasitic worms and small noxious insects.
SALUS has an extraordinary effect in preventing disease, and promoting extraordinary growth in CARROTS.

See *Gardeners' Chronicle* for June 2, 1877, p. 696: letter from Mr. Fish, *Gardeners' Chronicle*, June 23, 1877, p. 792; *Gardeners' Chronicle*, June 30, 1877, pp. 818 and 821.

If SALUS is mixed with water for applying to the roots of plants, or for use through the syringe, a 14 lb. box of SALUS is sufficient for 100 gallons of water.

A SALUS DISTRIBUTOR will be enclosed if required, at an additional charge of 6*d*.

Mode of Distributing SALUS in the Fields by means of the SALUS DISTRIBUTOR.

SALUS is a dry impalpable powder, of such extreme lightness that the slightest possible agitation of the SALUS DISTRIBUTOR disseminates the SALUS in almost invisible clouds through the air. SALUS should be distributed broadcast in the morning, or at mid-day. The moist air of evening will dissolve SALUS, and every individual grain will prove FATAL to ALL SMALL FUNGI and MINUTE PARASITES. Any rustic lad can distribute SALUS.

The cost of 14 lb. box of SALUS is 14*s*.; the cost of 7 lb. box of SALUS is 7*s*., free to all London Railway Stations. Orders amounting to £5 and upwards free to all Scottish Railway Stations and Irish Ports.

A Sample Packet, with instructions, will be forwarded, post-free, on receipt of 1s. 4d.

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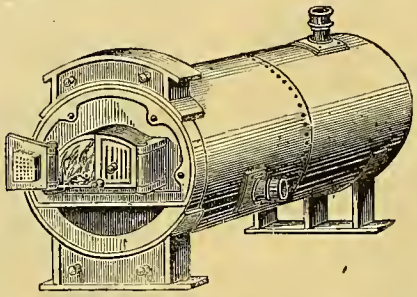
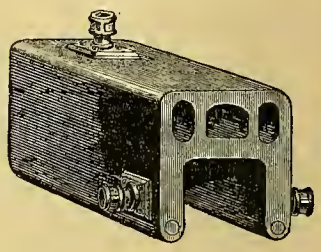
"GOLD MEDAL" BOILER (Birmingham, 1872).
PATENT "EXCELSIOR" BOILER (1871).
☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

"WITLEY COURT" BOILER (Silver Medal 1872).
"TRENTHAM IMPROVED" BOILER, with Waterway End and Smoke Consumer.
"TUBULAR," and every other Boiler of known merit or excellence.
☞ *Prize Medal Awarded at the National Contest Birmingham, 1874.*



("TRENTHAM IMPROVED" BOILER.)



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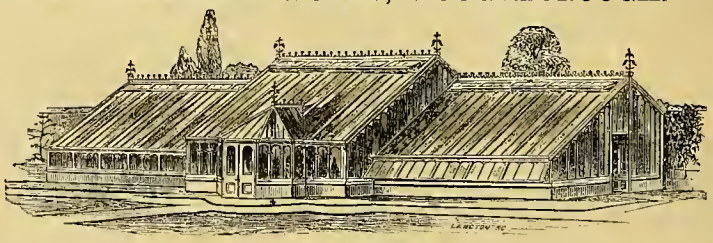

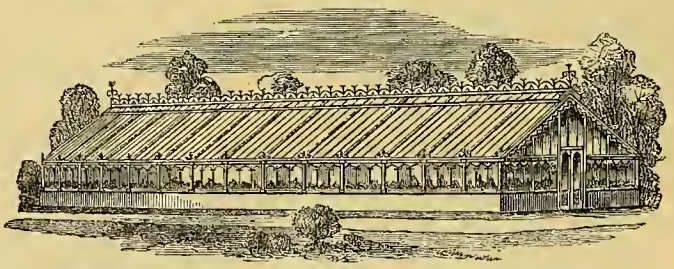

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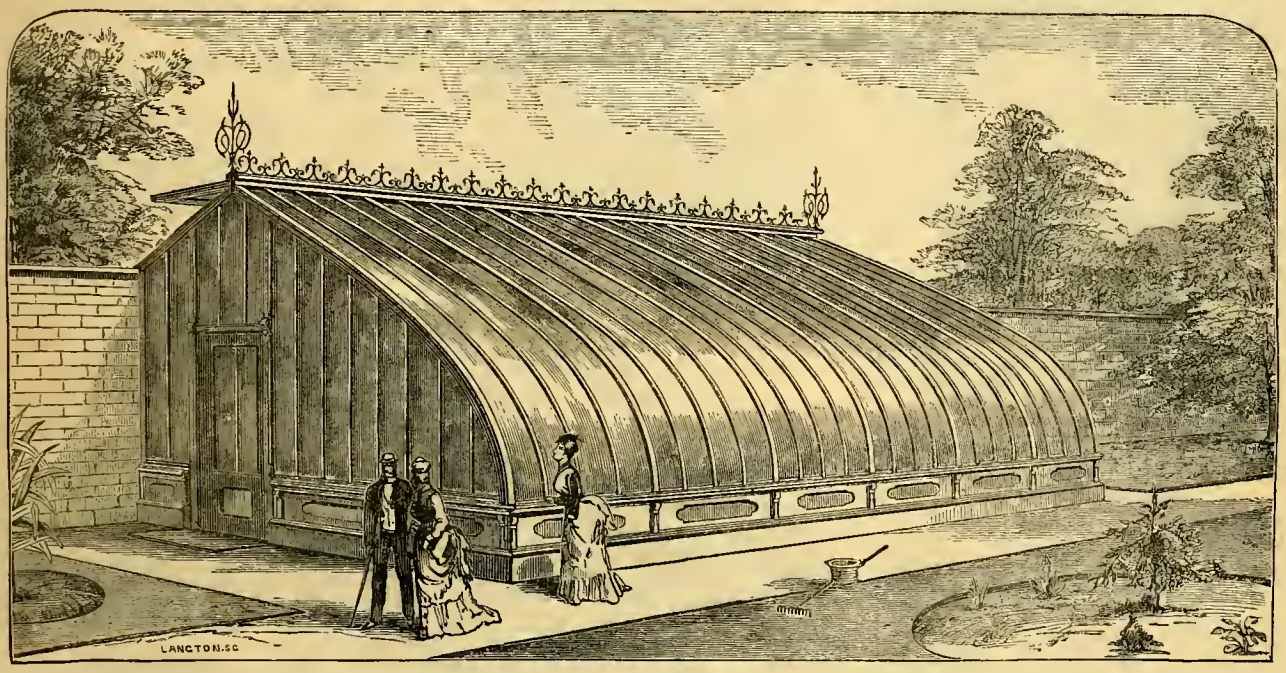

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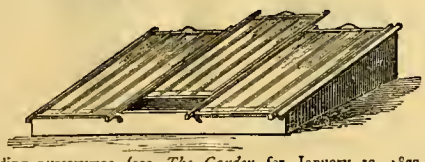
No. 75.—MELON FRAMES AND FORCING FRAMES.

The Largest Stock in the Kingdom. Ready to be despatched on receipt of Order.



These Frames are made the best red deal, thoroughly seasoned, and fitted by first-class workmen, 24 inches high at the back, 13 inches high in front; painted three coats of good oil-colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in putty, the best method of glazing known, and adopted by the most eminent builders and leading nurserymen (see *The Garden* for January 13, 1877, page 30). Iron handles to each light, and an iron strengthening-bar across. Each light is 6 feet by 4 feet, and 2 inches thick.

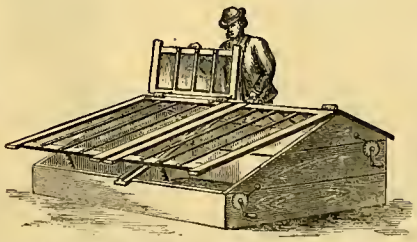
CASH PRICES—CARRIAGE PAID.

	Length.	Width.	£ s. d.
1-light frame	4 feet	6 feet	1 17 6
2 " "	8 feet	6 feet	3 5 0
3 " "	12 feet	6 feet	4 17 6
4 " "	16 feet	6 feet	6 7 6
5 " "	20 feet	6 feet	7 17 6
6 " "	24 feet	6 feet	9 7 6

Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh on Orders of 40s. and upwards.

Breakage seldom occurs. Should any glass be broken, we will send sufficient to replace carriage free.

No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.



Our illustration shows a New Frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience than the Melon frame, No. 75. The front is 11 in. high, without the light, 32 in. high at the ridge, and 22 in. high at the back. The front lights can be turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 1¼ in. thick, 2 in. lights; all are painted four times, and glazed with 21-oz. sheet glass, nailed and puttied in, same as the Melon Frame, No. 75. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without altering the other lights. Back and front gearing work separately.

CASH PRICES—CARRIAGE PAID.

	£ s. d.	Gearing extra to 8 ft. size and upwards. £ s. d.
No. 1 size, 4 feet long, 6 feet from front to back	3 0 0	—
No. 2 " 8 " 6 " "	4 7 6	0 15 0
No. 3 " 12 " 6 " "	5 15 0	1 2 6
No. 4 " 16 " 6 " "	7 2 6	1 10 0
No. 5 " 20 " 6 " "	8 10 0	1 17 6

These frames are the most convenient, best made, and strongest things of the kind that are in use.

Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

Packing Cases are charged, and half of the cost allowed if they are returned in good order, carriage paid, to our Works, within a month of delivery of the frame.

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CATALOGUE of SEEDS,
With every Article Priced, on application.

[ALL HALF NATURAL SIZE.]

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PRIMULA SINENSIS.

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Seed of Mr. WILLIAM BULL's select and unrivalled strain of this useful and favourite plant is now offered in mixture containing all the new and most distinct colours and varieties. The many unsolicited testimonials received at Mr. Bull's Establishment point conclusively to the fact of its being appreciated among growers as an unequalled strain. To distinguish this from the ordinary mixture of P. alba and rubra usually supplied, Mr. W. B. designates this choice mixture as

"BULL'S PREMIER MIXTURE"
1s. 6d. and 2s. 6d. per Packet.

From Mr. T. GODFREY, *Gardener to* Lady Jolliffe, *Southwood House, St. Lawrence.*
"From the Primula seed I had from you I have such a variety of colour I never saw before—white, violet, pink, a beautiful rose, lilac, and a brick-red; without exception I never saw their equal."

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"The strain of Primula seed I had from you last spring have turned out to be extremely fine, many of the single flowers being about the size of a crown piece, the colours being exceedingly rich."

From Mr. R. EVANS, *The Hall Gardens, Bushey.*
"Your Primulas were all that one could wish for—fine flowers and robust growers; some of the plants were nearly 2 ft. through."

PRIMULA SINENSIS FIM. ALBA,
PRIMULA SINENSIS FIM. RUBRA,
Extra Choice, 1s. 6d. and 2s. 6d. per Packet.

From Mr. E. ABBOTT, *Nurseryman, Ardleigh, Essex.*
"Your Primulas I am blooming now are a splendid strain. I hope you will send me same again."

From Mr. E. COOLING, *Nurseryman, &c., Derby.*
"Your Primulas were first-rate here this season."

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BEGONIAS, handsome flowered section, various colours mixed	2	6
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DIPLAZIUM ARNOTTII,
DRACÆNA MINIATA,
,, MIRABILIS,
,, RUBESCENS,
DRACÆNA TRIUMPHANS,
,, VESTALIS,
,, VIVICANS,
EUCALYPTUS CITRIODORA,
HIBISCUS (ROSA-SINENSIS) COLLERII,
IRIS ROBINSONIANA,
LOMARIA DALGAIRNSIÆ,
MACROZAMIA MACKENZII,
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PANAX LACINIATUM,
SADLERIA CYATHEOIDES,
SMILAX SHUTTLEWORTHII.

NEW REGAL PELARGONIUM,
PRINCE OF WALES.

This is an exceedingly handsome variety of this new and popular class of Pelargoniums. It is of excellent habit, very free blooming, and produces good trusses of large effective flowers; they are not really double, but from their fulness of form and extra number of petals, which are prettily undulated, they have the appearance of being so. The colour is a bright vermilion with light centre and light edge to the petals, the superior ones being marked with light crimson and darkly blotched. It is much brighter in colour, larger in truss, and very superior in every way to Pelargonium "Captain Raikes."

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This distinct and attractive plant has been introduced from Duke of York Island. Its divers colours are curiously blended and very effective, the leaves, which have a green ground, being more or less but variably flushed with yellow in irregular patches; the leaves are also marked in the direction of the veins with longitudinal bars, varying in size and outline, of a rich chocolate brown, which, where it meets the parts flushed with yellow, assumes a reddish-brown hue. The marginal teeth are bordered with chocolate colour. These peculiar markings, and the unusual form of the leaves, give the plant a bizarre and curious appearance.

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HORTICULTURAL BUILDERS,

And Sole Manufacturers of

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CONSTRUCTED ON THEIR

PATENT

TUBULAR RIB SYSTEM,

Which has gained so many Medals
And so much commendation at the Royal Horticultural and various other Shows, Exhibitions, &c.

By the adoption of this system Curvilinear Houses can be constructed

WITHOUT THE USE OF BENT GLASS,

By which means a considerable saving is effected.

F., L. & Co. also construct

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Which is the Lightest and Strongest Form of Rib Principal ever made.

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Patent Ventilating and Vaporising Pipes,

By which perfect Purity of Atmosphere is maintained.

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NEW AND CHOICE

FLOWER SEEDS FOR 1877.

Per packet—*s. d.*

CALCEOLARIA, Williams' Superb Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Capt. COSENS, *Aberystwith, May* 13, 1877.

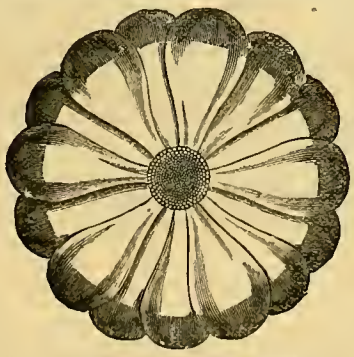
"The Calceolarias, from the seed Capt. Cosens had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."

PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

From Mr. F. DENNING, *Gardener to* J. Fenton, Esq., *Yardsley, February* 26, 1877.

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."



CINERARIA, Weatherill's Extra Choice Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Mr. J. WEST, *Gardener, Cheadon Park, May* 21, 1877.

"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

CYCLAMEN PERSICUM GIGANTEUM (new) .. .. 2*s.* 6*d.* and 5 0

Do., do., do., Williams' Superb Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.* and 1 6

VICTORIA and PARADISE NURSERIES,
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SATURDAY, JULY 7, 1877.

ROSES FROM NEW LIGHTS.

OLD plants in new positions often possess all the charms of novelty. The standpoint, the light, the angle of vision, make all the difference. The Rose, for instance, prone on the wet ground, after a dashing rain—top-heavy, moist, splashed, soiled, water-logged—is different and almost as the poles asunder from the same Rose in bud, gemmed with pearls in the cool sweet stillness of a June morning or evening. Again there are wider differences of degrees of beauty and enjoyability between dwarf Roses and standards, Roses in bushes and the self-same Roses or others running over an arch, climbing up a tree, or wreathing a dead ruin, bound with three-stranded cords of life, verdure, and colour. And so potent is the power of circumstance in the appraisement and enjoyment of the beautiful—that the oldest Roses become, as it were, new, when seen in new lights, such, for example, as running up and round a chimney, forming a wall covering of matchless grace and beauty, clothing the roofs of dwelling-houses or outbuildings, rendering healthy and sweet the streets of crowded towns with their matchless freshness and fragrance, and furnishing architectural walls with richly embroidered panels and pillars of living colours, loveliest forms and perfumes—at once healthful, pleasant, and antimalarious—such are a few of the new lights in which Roses might be placed, to the obvious advantage of the Rose and ourselves. For, be it frankly acknowledged, the most gloriously beautiful and richly fragrant of all our flowers, the Rose, suffers much from our intensely conservative modes of treating. As a rule, it is forced into a dwarf or standard of three lights—dwarf, half tall, or, if allowed to run, it must run by iron or wooden lines, and keep to them with mathematical precision. The result is a dreary monotony of Rose form, which is foreign to its nature.

Others, again, look upon the Rose as made for showing. By all sorts of clever devices the flowers are forced into perfect form, huge size, solidity, substance; they are displayed in boxes like soldiers at drill, and the end is another trophy or silver cup to the sideboard, or a few more guineas in the exhibitor's purse. This is all very well, and has proved most useful in its way, but the time of launching a new society for the special fostering of the Rose seems opportune for advocating a wider sphere, a nobler freedom—larger liberties for Flora's queen, and the placing her in such open lights as those here indicated.

It may seem at first sight a digression to propose to send our Roses up chimneys, but a moment's consideration will prove the contrary; for is it not the highest mission of beauty and goodness to convert the unbeautiful into comeliness, the bad into good? Now chimneys are horticultural and artistic nuisances in more senses than one. They disfigure and defile the loveliest landscapes. Tall shafts shoot up into the sky, bold and bare in their mockery of the graceful lines of the trees which the one-shaft system obtains, and whole battalions of black stumps rising above crystal roofs, where every house has its chimney, suggesting the idea of a host of black dwarfs, each with huge short pipes

vomiting forth clouds of soot and smut. Chimneys are the terrors and stumbling blocks alike of landscape gardeners and architects. No art can raise them into things of beauty, no genius bend them into harmony with the flowering hues of living landscapes. But where art and genius fail, the Rose, which is more, better, higher than both, succeeds. Let such a Rose as the climbing Devoniensis, for example, enfold the ugliest chimney in the country in the rich drapery of its noble shoots, lovely ample foliage, and pure sweet flowers, and the chimney is transformed into a thing of matchless beauty—a joy for ever, the delight of all beholders, the eye, the glory, the delight of the garden. This is no romance, but the fact. While I write, a square bright chimney of the plainest type is before me. It is wide and tall, and the top crowned with a white pot. All is nearly hidden, and the very pot entwined with this splendid Rose. From base to summit the chimney is clothed with verdure, and showers down sweetness from a perfect crowd of noble fragrant Roses; the chimney has, in fact, become a noble polished shaft of beauty—a pillar of sweets. Therefore, to any one who may be trying, and trying in vain, to bring stiff, formal, unpracticable chimneys into harmony with the soft, flowing beauties of landscape art, the advice may confidently be given to try Roses. There are many Roses, such as Gloire de Dijon, and other strong growers, that will answer equally well, but none better for chimney adornment than the climbing Devoniensis.

Next to chimneys, perhaps, the even monotonous equality of light sky-hue of wall copings are the most determined and persistent artistic blots in and about gardens. Walls are necessities in gardens, though they are often multiplied with a recklessness that would point to the bricklayer and builder having combined with his useful qualities of a mason or a bricklayer also that of garden artist. It is difficult to account for the redundancy of walls about many demesnes on any other hypothesis. But our business now is, not with their origin, but their improvement by means of Rose copings. The artistic weakness of copings rests on their evenness. It is impossible to make an even sky-line artistic. The attempt has often been made by the use of belts or screens of shrubs and trees. These, too, have often been planted so near as to exhaust the ground by their roots, and so monotonous as to be almost as formal as the walls themselves. Rose copings deal directly with and break up the level tops and smooth surface of walls; for nothing can be easier than to allow Rose shoots to grow to unequal heights on the tops of walls—now rising like the crest of a wave, and anon a long shoot running up like a dash of spray, and again all falling on the wall-top like descending into the trough of the sea. The artistic planter or trainer will also allow a few shoots or sprays to wander or fall over the face of the wall at times, as if by accident—just as a lonely ringlet will steal out from under Mary's sober cap in spite of her mistress's order and against her maid's will! Thus living copies of grace and beauty dissolve, as it were, into the hard-and-fast line of the walls, and cause them to melt readily into the surrounding landscape. The Roses link the dead bricks and stones on to the living shrubs and trees, and the walls, no longer a blot, become a substantial part of the beauty and richness of the finished picture. Some of the stronger and common Roses, such as Ayrshire, Boursault, Noisette, might be used to form the basis of the living coping; and other and choicer Roses could be worked on to these for forming sprays and furnishing greater diversity of colour and form.

Roses in the streets of towns may seem to be placed in a position in which the light would be too glaring and the dangers too many and too great for their safety; but the result would prove so charming that it is worth an effort to accomplish it. Two revolutions are needed before roadside or street houses generally can be garlanded or furnished with the beauty and sweetness of the Rose; one has regard to taste, the other to petty morality. The thing is physically practicable on most roadside houses. In the majority of provincial towns, culture and scavenging could master the physical details. An intense desire for street Roses would bring them into the streets, and also force them to grow and thrive there. Then, to insure the safety of the Rose, there must also be a revolution in our national views of petty morality. The time may come when an unprotected Rose will be as safe in Piccadilly as an unprotected woman is now in a railway carriage or public park.

Roses on the housetops would be in safer quarters and in better light than in the streets. Here are miles on miles square to be conquered and won to the empire of Beauty, now given up to sheer deformity, burglars, and smuts. Each Rose on the housetop is a direct contribution to the purity, beauty, sweetness, and enrichment of the country and the world. No doubt many dwelling-houses are almost too high to be thus crowned with glory and honour. But Roses may be grown in pots and tubs on the leads. And then what a dreary waste of low roofs are presented by kitchens, outhouses, stables, warehouses, workshops, sheds, piggeries, &c. It is an easy matter to plant stray Roses to climb the walls and overspread the roofs of all such dwarf buildings of low stature. What at once so beautiful and so sanitary as wreaths of Roses drooping over stables, cow-houses, piggeries, kitchens, wash-houses, workshops, and other buildings. The overlooking of low roofs from upstairs sitting and drawing-rooms mars the pleasure of most houses more or less. Clothe the lower roofs with Roses, and their deformity is hidden and, more, the roofs themselves are thereby converted into the richest and most delightful part of the whole garden. Spring-growing Roses also revel in the freedom the roofs afford. Freed from the fetters of the precise trainer, the Roses ramble at their own sweet wills, with forms and styles of beauty unknown and undreamed of by Roses even in any other light than the clear, stimulating, bracing light and air of the housetops.

Roses in panels and on pillars of walls would also present them in charming and novel lights. The whole of a short wall might be furnished with Roses of sharply contrasting colours—such, for example, as panels of Princess Camille de Rohan or Duke of Edinburgh, separated with pillars of Devoniensis, Boule de Neige, or Baroness Rothschild, or *vice versâ*. Then again, on long walls, each panel and each pillar or projection could be furnished with a separate Rose of a distinct colour; each beauty would then be presented in sufficient mass to fill the eye at once, and in bulk enough to reveal and display its natural habit and style. Golden beauties could be contrasted with scarlet, reds and pinks with whites, &c., thus adding to the beauty of each Rose by sharply-defined contrasts and pleasing harmonies. When sharper contrasts might be desired, the pillars might be formed of Ivy, Clematises, or Golden Honeysuckle, and the panels be filled in with Roses. The wall copings might also be of other and contrasting Roses, Virginian Creepers, or other climbers; but the two families—those of Roses and Clematises—are strong and rich enough to make one of the most rich and lovely walls in the world between the planted or the panel style. Walls thus richly embroidered or inlaid with beauty would prove among the grandest features of the garden, while the Roses thus exhibited in new and better lights would show to much higher advantage and far more telling force than the higgledy-piggledy mixtures of weedy-looking Roses that one too often meets with on even the best-managed Rose walls.

D. T. Fish.

SEASONABLE ROSES.

The uneven English climate, with its seasons never twice alike, renders a larger choice of Roses necessary than we should otherwise include in our lists. For example, this present season, with its glorious heat, making all Roses alike grow splendidly, has put *hors de combat* at the exhibitions Duke of Edinburgh, The General, Bessie Johnson, Dupuy Jamain, and Mdme. Victor Verdier—the leading flowers of last year's shows. But who would think of discarding them or other thin but finely-shaped Roses, on the average so very good? Contrariwise, the very durable Roses, such as Edward Morren, Beauty of Waltham, Marie Rady—how gloriously they have opened their last year but seldom seen blossoms.

Then what glory of colour has there not been in the rose-coloured Roses, Monsieur Noman, Annie and Emily Laxton, Marguérite de St. Armand, John Hopper, and François Michelon? They have come with a clearness of colour to the very edge of the petals, and so soft and tender in tint, as to remind us that after all rose-colour is the natural (the one Nature chose) hue of our flower.

Can one look on a perfect bloom of Henri Ledechaux (a souvenir of a good honest rosarian, now no more) and not believe in Nature's certain choice?

Yet to come are the lighter-coloured Roses, Baroness Rothschild, La France, and the Teas, and all the fine reds, which we hope to see, ere this is printed, rich in all their glory at the National.

New Roses of the Past, Present, and to Come, 1875-1876.—These are just blooming for the first time here in condition to judge if they are to be seasonable Roses in England. With rare faith we buy all that are described as extra superb, and count ourselves happy if year by year six or eight suit, or are pleased with our conditions and climate. The Rose grower's conditions here are stringent—perfect shape, perfectly bright colour, good size, and distinctness from all existing kinds, and forty to sixty such to arrive every year! There are happily in other lands those who like, for instance, Triomphe de l'Exposition de France, and other Triumphs of large rough Roses. Fancy a horticultural society giving a gold medal for the raising of Paul Néron—which ought to have inscribed on it "large and ugly." So the season 1875-76 has yielded its average, and they are, in the opinion of the writer, Duchesse de Vallambrosa, a light Jules Margottin; Abel Carrière, a bold dark Jean Liabaud, from the gardens of its worthy originator and namesake amongst the silk-looms of the Croix-Rousse, at Lyons; Jean Soupert, hardly double enough; and Madame Prosper Langier, a new, bright, pure Rose, of more than the growth and vigour of John Hopper; Marguérite Brassac, a brighter Charles Lefebvre; Avocat Duvivier, a grand Andry-like flower; and the good early Rose, Arthur de Sansal. We English growers (to proceed to praise ourselves) have no need to blush when against the above we match our contingent for the year in Letty Coles, Mrs. Baker, Oxonian, Duke of Connaught, and Sultan of Zanzibar.

The Roses for 1876-77.—A run round the French gardens has not improved the opinion formed here of them. Marquis de Nivernais, almost white, and Madame de Montchauveau, very light, are both good, the latter perhaps the best; Madame Sophie Tropot and Marie Louise Pernet are both globular roses of merit. Monsieur Filhon has a deal to beat in Henri Ledechaux.

The Roses of the future, what are they to be?—a yellow hybrid perpetual Jules Margottin, with intermediate shades of orange; pure scarlet Duke of Edinburgh, to which the present writer hopes to contribute some little help—hardy white Teas, both of the Gloire de Dijon race (ought these not to be a class by themselves called, say, Dijon Roses?) and of moderate free-blooming habits; climbing red and white Roses with the vigour of Félicité perpetual, the most glorious arch Rose, the November flowering habit of the old common China. The above is but a prophecy, but already, as one has seen, on the way to its accomplishment.

Rose Judges.—The introduction of the ballot in the choice of the judges at the National seems a move in the right direction: may not some of the shows adopt it with advantage? Need I express what has been the re-echoed opinion of growers for many years—that Rose judges should have exhibited Roses successfully themselves?—to add, must have grown them

successfully, is needless: from good plants only come good flowers.

Success to the National!—which I hope in every way your report will second—seems almost assured. The late fixture, to suit the Manetti growers, seems to have brought it just to the right moment, and overflowing coffers from the expected thronged attendance will let the Society do its other work well and easily. *George Paul, Cheshunt.*

MARCGRAVIA PARADOXA.

MANY of the visitors to the last great show of the Royal Horticultural Society were not a little puzzled at the appearance of flat green leaves growing on a board without soil or other food beyond that derived from the air or from the water with which they were moistened. In general appearance the plant is not unlike Ivy, especially the variety Regneriana, and Ivy like it emits a number of aërial roots, by which it clings to the board or other support. When the stems are in any way detached from the wall or rock upon which the plant grows naturally (in tropical America), the shape of the leaves becomes materially altered. But the most extraordinary feature presents itself when the plant flowers. The flowers are placed in umbels, each flower-stalk starting from the axil of a tubular bract or pitcher, which gives the flower a very singular appearance. The plant from which our illustration was taken (fig. 2) was exhibited by Mr. William Bull. Mr. Worthington Smith, who has examined the leaves microscopically, remarks that the under-surfaces of these leaves, although closely adpressed to the wood, have the usual number of stomata, interspersed with very peculiar hairs, like minute long-legged insects, as shown in the illustration (fig. 1).

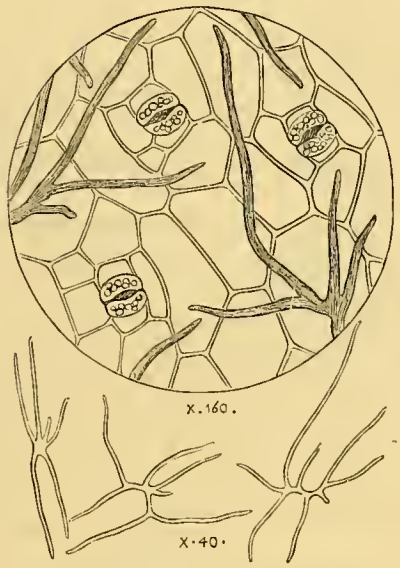

FIG. 1.—MARCGRAVIA PARADOXA.

Showing cells and stomata from under adpressed surface of leaf, and peculiar irregular hairs.

A ROSE GARDEN.

I HAVE for many years seen Roses blooming by the acre, brilliant and beautiful, but although the blooms singly are all that can be desired for colour and size a field of Roses does not entirely realise the conceptions that arise in the mind after witnessing the devoted homage given to the Rose by all poets from Hafiz and Ferdousi to Swinburne. The last-named poet is as lavish in his praise of white Roses and red as any Persian poet. Not being able to read Hafiz or Ferdousi in their own language it is not easy to realise their poetry, but the worship of the Rose by them is unmistakable, and the source of their verses seems in a great part to be the Rose. In England we cannot connect the nightingale with the Rose, as he will not sing in our climate when the Rose blooms: it is perhaps different in Persia. I am, however, puzzled to understand why these poets sing of the Rose so enthusiastically—by all accounts of modern travellers the Rose gardens of Persia are simply fields of Roses and very unpoetical to look at. The air is heavy with perfume, and their cultivation is attended with considerable toil; a labourer among Roses is much the same as a labourer amongst Beans or Turnips, *i.e.*, a most prosaic and unpoetical personage.

In St. John's travels in Egypt and Nubia he speaks of the Rose gardens at Medinet not adding to the beauty of the landscape in any greater degree than so many Gooseberry bushes, but the cultivation there must have been extensive in his time, one European speculator having, it was said, 30,000 acres for the manufacture of attar. St. John's travels were published in 1845, and it is a little singular that none of the many recent travellers in Egypt have ever alluded to these Rose gardens, but from the sameness of the colour there can be little poetry in the prospect. My own recollections of the Rose gardens of France, another classical Rose division of our planet, are generally associated with a hot ride in a ricketty third-class carriage, a tramp over fields knee-deep in dust, an interview with a sunburnt genial and enthusiaste cultivator, whose energies are devoted to pointing out the beauties of a seedling or seedlings which he is anxious to introduce to the English Rose speculator, receiving in return a substantial share of the wealth supposed to exist everywhere in England—the Roses being intermixed with crops of Wheat, Hemp, Poppies, and agricultural products generally, and the soil being cultivated to a depth sufficient to produce an amplitude of dust. It is impossible here to be poetical, and in a very few hours the cool *salon* with a refreshing *table d'hôte* [including a prime bottle of La Rose. EDS.], free from dust, clean, and with a quiet mind, the poetical instinct becomes much more satisfied than in the sight of Roses, however abundant: I have therefore still to seek the realisation of the fancy of seeing a Rose garden in all its beauty.

My ideal Rose garden must be somewhere in the "Midi" of France—a nook surrounded by trees to give a romantic shadow to the garden in the evening and shade from the sun at noonday, a greensward with a stream passing through it and alcoves of Roses yellow, white, and red, tall trees festooned with Roses, trees of Roses, bushes of Roses, pyramids of Roses rising from the ground to the height of a neighbouring fountain playing to 20 or 30 feet. Water must be cunningly dispersed that each thirsty Rose may drink—and Roses are thirsty—hedges of wild Roses for furtive walks offering an escape from the oppression of too much artistic beauty, and the bright moonlight of the Touraine to bring out the late beauties of the garden to be enjoyed without the fear of damp so everlastingly present in this provokingly cool climate. In my ideal climate and garden I should place such Roses as Hafiz never dreamed of—Solfaterre growing unfettered in all its wealth of dreamlike beauty, which, when once seen, is to be remembered. A cluster of this Rose which I once, and only once, saw in perfection has been an ever-present picture. Devoniensis in thick hedges, Maréchal Niel as a pillar of gold—scores of names arise difficult of decision as to merit, the aristocracy, as usual, leading—Duchesse de Vallambrosa, Marchioness of Exeter, Marquise de Castellane, all worthy of their rank, and the brilliant, not by rank at least by merit, Xavier Olibo, Charles Lefebvre, and their compeers. Names are, however, bewildering, and the Rose garden must be enjoyed without such an arduous study.

As the Rose garden to be complete must be peopled by humanity, my Rose garden must be presided over by the amiable rosarian, M. Alphonse Karr, attended by his wasps, no longer venomous, but tamed by his example, and as a companion poet and rosarian, Mr. Algernon Swinburne. From verses on Roses, he will surely pardon me if I claim him as a Rose fancier; and the ladies—ah! these gentlemen must choose their own ladies.

Will the procession of the equinox ever permit us to have a Rose garden in England worthy of the name? *T. F. Rivers, Sawbridgeworth.*

THE COLORADO BEETLE.

THE following is a free translation of a passage from the clever squib, *La Doryphora en Belgique* (Liége, 1877), that was read by Mr. Andrew Murray in his lecturette on the Colorado beetle at the general meeting of the Royal Horticultural Society on Tuesday last:—

"I must first tell you what took place last night at the Ministry of the Interior at Brussels. It is a necessary introduction to the comprehension of the truthful recital I am about to make. Let us transport ourselves then to Brussels—to the Ministry for the Interior, in the private cabinet of the Minister.

"It must have been about 9 o'clock at night, or nearly so. The Ministers entered one after another, and took their places silently round the table where their colleague was already installed. Besides him there are four—M. Malou, Minister of Finance, Chief of the Cabinet M. d'Aspremont, Minister for Foreign Affairs; M. Thiebault, Minister for War; and M. Beernaert, Minister for Public Works. The absence of the Minister for Justice was noted. M. Delcour, Minister for the Interior, after having saluted his colleagues, who looked at him with a very puzzled air, expressed himself in these terms:—

"'Gentlemen, pardon me for having summoned you at this unseasonable hour, but a fact of extreme gravity has been revealed to me with regard to which Government must without delay take the most energetic measures. The country is in danger, gentlemen.'

FIG. 2.—MARCGRAVIA PARADOXA.

"All the Ministers stare at their colleague in dismay.

"'A revolution in Paris?' asks the chief of the Cabinet.

"'Impossible,' says the Minister of Foreign Affairs. 'The news would have reached my department. It is the Liberals again.'

"'It has nothing to do with them,' replies the Minister for the Interior. 'The danger which menaces our country to-day is of a totally different nature. Listen to me, gentlemen. I have just been informed in an official manner that there are in Belgium three things—no, there are in Belgium three Doryphoræ. These three Doryphoræ are alive, and one of them is scouring the country at this very moment. Do you see the danger?'

"The Ministers look at one another with an astounded air.

"'Heavens,' murmurs the Minister for Public Works—'and my wife, who has set off for the country this very afternoon.'

"'Is it a venomous beast?' asks M. d'Aspremont.

"'Yes, and it appears, moreover, that it runs very fast,' replies M. Malou, with a jeering air.

"'Ah, if we had only to do with a venomous animal,' responds M. Delcour, 'but only think that the Doryphora may be perhaps full.'

"'Full of what?' asks the Minister for War.

"'Why full of bad intentions probably,' says M. Malou, still facetious.

"'Let us have no joking in such serious circumstances, my dear colleagues,' continues the Minister for the Interior. 'The peril is real, I assure you, for in truth this Doryphora may be full, and then——

"'Full of what, then, *morbleu?*' interrupts the Minister for War.

"'Why, full of eggs—do you not understand? The American journals have stated that a single Doryphora may lay sixty millions.'

"'Sixty millions?' cry out all the Ministers.

"'What is that to us?' says the Minister for War.

"'The figure is probably exaggerated, but suppose that we reduce it to 600,000, the peril is not less alarming.'

"'What harm can that do us?' insists the Minister for War, shrugging up his shoulders.

"'And the Potatos, then!' cries M. Delcour. 'Have you forgotten the law that we voted two years ago against the fatal beetle which makes such ravages in America in the Potato fields? You know that laws have been made in France, in Germany, and by ourselves, to prevent its introduction with the tubers coming from the United States.'

"'Ah, yes—the Doryphora; I recal it to memory now,' cries M. Beernaert; 'it was in the month of February, 1875. M. Andrimont even showed us some in a box; it is an insect as large and as round as a Pea, yellow, with ten black lines.'

"'Pshaw! all this is only about an insect!' says the General Thiebault. '*Morbleu*, to have ourselves inconvenienced for a trifle like that. Let us go.'

"At this moment enters M. de Lantsheere, Minister for Justice. He takes his place beside M. Malou, and, speaking aside to him—

"'Are we again at the Secret of the Confession?'

"'No,' replies M. Malou, in the same tone; 'the question is about the Doryphora. We have got the Doryphora.'

"'The Doryphora—good heavens! Is it a new malady?'

"'No, it is an insect—a parasitic insect.'

"'A new parasite? We have plenty already.'

"'This one attacks the Potatos.'

"'Ah!' says M. de Lantsheere, visibly relieved.

"'My dear colleagues,' resumes the Minister for the Interior, 'I request all your attention. Pray listen to me. I have not exaggerated the gravity of the situation, I assure you. All our Potato fields are in peril. Besides, if the Doryphora spreads with us, our international relations will be compromised. It is clear to me that if the wretched insect multiplies in Belgium, Germany, France, or Holland, England will put us in quarantine. These countries will stop our exports rigorously at the frontier. Industry will perish of plethora. It is already very ill, alas!'

"'As a peg of consolation we shall, at least, have no more of the Spectre of Annexation,' insinuates M. Malou.

"'That peg scarcely consoles me,' continues M. Delcour. 'I would prefer the Spectre of Annexation. But let us return to our escaped Doryphora. We must retake it again without delay before it gets the key of the fields. It is at Glain that the insect now is.'

"'Do you believe that the Doryphora is still in that village?' asks one of the Ministers.

"'It is probable,' replies M. Delcour. 'I have good grounds for thinking so.'

"'In that case I know a remedy,' says the Minister of War.

"'Speak, General!'

"'You say that a great national interest is at stake.'

"'Yes; very great!'

"'And this . . . Doryphora is still in the village of Glain?'

"'I believe so.'

"'Very well. I make it my business; it is in my department.'

"'What is your project?'

"'Burn Glain.'

"'And its inhabitants?'

"'It would be wise to burn all; but they might at the utmost be forewarned, and made to leave before the execution, first submitting them, of course, to a rigorous examination.'

"'The remedy would be efficacious, but it is too military,' observed M. Malou.

"'Have you not said that a great national interest is at stake? For great evils great remedies!'

"'It is so, but the remedy is too military,' reply all the Ministers.

"'I am amazed at you, and cannot understand your backward scruples. You do not keep pace with the progress of civilisation. We now do many worse things in time of war.'

"'But we are in time of peace,' remarks the Honourable M. Delcour.

"'That is why I would not burn the inhabitants with the village,' sharply replied M. Thiebault. 'I am not one of those Generals who . . .'

"'It would be efficacious, but it is not feasible,' interrupts the Minister of the Interior. 'We should be subjected to hostile criticism. The newspapers of the Opposition would not fail to turn it to profit against us. They would be capable of likening this proceeding to the Inquisition, St. Bartholomew, and the like. No, no! It would be better to run the risk of the Doryphora. . . . But there are other means. One might institute an active search,' says M. de Lantsheere.

"'Arouse the zeal of the population by the hope of a large reward,' proposes M. Beernaert.

"'That is it; put a price on its head, as we did for Oblin.'

"'But it has no head,' objects M. Malou. 'M. Beernaert said just now that it is round, like a Pea.'

"'I said it was round, like a Pea, it is true; but it must nevertheless have a kind of head, or something which does instead of it, since it has a mouth—and it has a mouth, since it eats Potatos.'

"'That is no reason,' murmurs M. Malou. 'There are some animals which eat, although they have no head,'

"'That is rather too much,' said the Ministers, looking at their colleague with a distrustful air.

"'But oysters and mussels, for instance,' continues the chief of the Cabinet, 'they eat, although they have no head.'

"'The discussion is beginning to wander from the point, gentlemen,' interrupts the Minister of the Interior, 'let us return to the question, if you please?'

"'Has the Academy been consulted?' asks M. Malou.

"'Faith! no one thought of it,' replies M. Delcour; 'but we are sufficiently competent in our bureaux; we will do without its advice. Besides, time presses. I return to my proposition of a few minutes ago. What do you think of a prize of a 1000 francs to whoever succeeds in placing his hand upon the fugitive. The figure is high, I allow, but it cannot be concealed that a great national interest is at stake.'

"All the ministers approve.

"'It is then decided,' continues the Minister of the Interior, 'I will occupy myself without delay about this affair; it is necessary that from this evening a notice, promising the reward in question, be printed and posted up at Glain. There only remains one point to be settled—to which budget shall we impute the expense? Mine has no provision for anything of the kind."

"'It appears to me,' says the Minister of Justice, 'that it should be to the chapter of agriculture, which concerns the department of the Interior.'

"'My credit is exhausted,' objects M. Delcour; 'besides agriculture (the dictionary of the Academy says so)—agriculture is the art of cultivating the earth; it has for its object production and not destruction. The Court of Accounts would refuse the payment. But your budget, my dear colleague, has formally provided for the case; I see figured there, at article 59, 80,000 fr. for measures of public safety.

"'That refers to measures against foreigners,' said M. de Lantsheere.

"'That is it,' said M. Malou: 'that is it precisely! The Doryphora is a foreigner; it introduced itself into our country without a passport, and without being provided with a permission to stay here."

"Unanimous consent. It is nearly 10 o'clock. The Ministers rise."

Notices of Books.

Cottage Gardening. By E. Hobday. Macmillan.

What is a cottage? It is obvious that the answer must be a comprehensive one, and unless some less vague and more precise definition be given as to what the author means by a cottage, it is difficult to form a fair judgment of his book. From incidental remarks we infer that the original intent of the book was to provide information for the smallest form of cottage gardens, those tilled by the labourer and his family as a recreation from severer toil, or as furnishing a welcome addition in money or in kind to his store. But if this be so the author has greatly expanded his plan, as many of his directions are adapted to gardens of larger dimensions, and where the recreative element is the main consideration. Indeed his book is, as it seems to us, much better adapted for what it is now the fashion to call villa gardens than to cottage gardens proper, *i.e.*, the gardens attached to the cottages of the labouring poor and artisans. Looking at it, then, as a book for villa gardens wherein the proprietors do the greater part of their own gardening, with or without occasional assistance, it is entitled to our hearty commendation. The directions are clear and sensible, and the lists well selected. Here is a judicious hint about the pruning of fruit trees:—

"In pruning old neglected trees there is a temptation for the sake of uniformity of appearance, to saw out all old spurs, especially in the case of wall or other trained trees; but this is work that should be done very gradually, and spread over several years—that is, if the trees have been bearing fruit principally on the old spurs, which is generally the case. I have known instances where, for the sake of neatness, old spurs have been removed from old Pear and Apple trees, and the crop of fruit has been lost for several years in consequence. The old spurs seem to have arrested the sap, and to have converted what would otherwise have been wood-buds into flower-buds, and when they were removed the pent-up sap rushed into soft watery spray, and the trees became practically barren till the roots had been somewhat shortened. Neatness and uniformity in a fruit tree are doubtless very desirable, but the main object of the cultivator should be to obtain plenty of fruit of good quality, and to accomplish that result there must not be an excess of pruning with either knife or saw. Cutting out large branches ought seldom to be necessary, even in large standard trees, if the trees had been properly managed, and the thinning gradually attended to when the branches were small. There are two main objects sought to be obtained by pruning. The first is to build up a well-balanced, healthy, vigorous tree in as short a time as possible; and the second is, in conjunction with the first, to encourage the production of fruit-buds, so as to bring the tree into a bearing condition as early as is consistent with its permanent well-doing. A well-balanced tree can easily be secured by heading back at the autumn pruning any branches not sufficiently furnished. But fertility is best obtained without much use of the knife. Disbudding or thinning out the young growths early, when the trees are producing too much soft spray, should be followed in due course by a gradually progressive pinching back through the summer, and every tree should be treated separately, without any reference to its neighbours. Root-pruning is a valuable expedient to adopt in the case of trees excessively vigorous that are not easily subdued by any other means; but with all trees of a manageable size the object sought is best attained by digging the tree up carefully and replanting it. This usually gives sufficient check to moderate the growth, and bring the trees into a bearing condition. October and November are the best months for this operation, and also for the shortening back of a few of the roots of any large, strong-growing tree that may be too large to lift and replant. In nearly all cases, if half the roots be shortened back, the check given will have the desired effect, there being a danger of permanently crippling the tree should the roots be too severely pruned. In some cases opening a trench on one side of the tree at about 3 feet from the trunk, and working under the ball so as to get at the roots that descend perpendicularly, will be sufficient. When those are severed the hole may be filled up again, and the soil made firm."

—— SUNDAY LAST must have been regarded by gardeners, near London, with much more complacency than it probably was by young ladies, or farmers with their hay about. After a long spell of drought, with at times almost tropical heat, and as often of keen, drying, withering winds, all vegetation was late and delayed by the absence of rain, the ground was hard, literally baked with the heat, crops suffering, Potatos yet unearthed and waiting for the necessary rain to pulverise the rough lumps and soften the soil. With these drawbacks to the season it will be well understood that the truly model day's rain that then refreshed the soil, washed the coating of dust from vegetation, and gave a hue of freshness to plants to which for some time they had been strangers, was trebly welcome to gardeners who were within range of the refreshing change. Potatos, late Peas, Beans, and other vegetables will immensely benefit, whilst it has proved a veritable god-send for the getting out of winter green crops.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Young stock that have been recently potted should not for two or three weeks yet be exposed to the sun without slight shading some half dozen hours during the middle of the day. When the weather is extremely bright and the atmosphere dry, such as where no rain has fallen for some time, all young growing stock will be better for a thin protection this way where the houses in which they stand are constructed so as to admit a maximum of light; this is especially the case if the structure happens to be a lean-to facing the south, which from its position is subject to the full influence of the sun in the hottest part of the day; in old houses, the roofs of which consist of heavy timber and small glass, it is different, and little or no shade will be needed by established plants. To achieve anything like success in plant cultivation it is necessary to discriminate in this way in the requirements of the various thing grown under different conditions. In hot weather during the middle of summer the floor under the stages, generally consisting of either the natural earth or other material that will absorb moisture, should be thoroughly soaked with water once every ten days or fortnight; this will beneficially affect the plants in several ways, through the humidity it imparts to the atmosphere of the house, accelerating growth and enabling them to better withstand the effects of sun at a time when at its greatest power; it is also one of the best preventatives against the attacks of red-spider. All plants, but especially large specimens, should be turned round every week or ten days, where this is necessary to admit of the water in syringing reaching every portion of their leaves. When plants have been stood in lean-to houses where they can only be got at from one side, through not attending to this matter I have frequently seen the half non-accessible to the syringe seriously affected with red-spider, and though there are those who look upon its presence as a matter of no great consequence, yet if ever hard-wooded evergreen plants get infested with it to any considerable extent, they rarely afterwards can be brought into condition equal to those that have not suffered in this way. *T. Baines.*

ORCHIDS. — Plants of Dendrobium Falconeri, whether on blocks or in baskets, must now be well supplied with water at the roots, as well also as being frequently syringed overhead, among the young lateral growths, and the fine threadlike roots that start away from them. This latter operation is the more important, and must not on any account be neglected, for hanging down from the roof, as it is generally met with, the roots do not get half the nourishment they require, and consequently the breaks do not exhibit the strength and vigour that under a genial and more liberal treatment they may be enabled to do. There can be no doubt that the best way to treat this, and the one that will bring about the most satisfactory results, is that of growing them in pots, as described in page 689 in your last year's volume v.; and to any who have this in a poor and inferior condition I should say, place it in a pot with but a small quantity of peat and moss about the roots; tie the shoots up about half their length, the remaining part being tied round so that the plant may have more of the appearance of a hard-wooded plant. The plant should now be stood on the side-table of the Dendrobium-house, the syringe frequently used, and not at present subject to much strong light. As the growths push away tie them out, always keeping the points turning outwards, and in a short time the plants will assume a state of freshness and health that cannot be so readily obtained on the hanging-down principle. Few plants when first imported look more unsightly and seem to hold out less promise of future success than the Dendrobiums, taking them as a whole; at the same time it may truly be said that there are scarcely any that under genial treatment will in the same short space of time, by new growths and healthy green leaves, hide all that is unattractive, and assume an appearance of health and vigour and pleasing progress. When a number of these are obtained—and so much the better and the greater certainty of ultimate success when they are received in the early spring, there being then the whole of the season before them—they must as quickly as possible be attended to, so that by syringing and a gentle heat the old bulbs may again be filled up with a healthy sap, and thus, as it were, a reserve will be ready when the young breaks push away, which, in some degree at least, in the earlier stage of their growth, depend upon the old bulbs for their stay and support. Those of the long bulb section, as well also as densiflorum, thyrsiflorum, &c., should be grown in pots, they being more handy for moving about, whilst such as are shorter in the stem, or of a decidedly pendulous character, must be put in baskets or on blocks. Many of these plants will be resting from growth for at least six months of the year, during which time the formation of bloom-buds and the ultimate flowering process comes on; and though in the increasing of the size of the plant this resting period may appear the least important time, there can be no doubt that a proper and consistent method of treatment during this period is just as important as a well-regulated season of growth. *W. Swan, Fallowfield.*

FRUIT HOUSES.

ORCHARD-HOUSE.—Where mixed fruits, including Cherries now ripe, are grown in districts infested with birds, Chiswick netting or some other light material must be placed over the ventilators, otherwise they will soon spoil the crop; but the most satisfactory plan is to remove the Cherries to a partially shaded, airy spot, where, protected with old lights for throwing off wet and netting round the sides, choice Cherries may be kept in good condition for several weeks, and this arrangement admits of giving the permanent occupants of the house the full benefit of unimpeded ventilation by night and by day. The necessary thinning and mulching having been brought to a close, the most important operations will be vigorous syringing twice a day and liberal supplies of liquid manure diluted with tepid water. Attend to the stopping and training of young growths, and observe former directions with regard to the extermination of insects, particularly the black-fly, as these pests are extremely hard to kill when thoroughly established in the points of the shoots. Keep down red-spider by means of good syringing and occasional use of the garden engine. Examine borders which may have become hard on the surface and impervious to the free passage of water, break up the soil a few inches deep, add fresh mulching, and give repeated waterings until every part occupied by the roots is well soaked through, as Peaches and Nectarines in a growing state, if well drained, cannot be over-watered; indeed, half watering is the most fertile cause of dropping and the premature ripening of our finest stone fruits. *W. Coleman.*

CUCUMBERS.—Plants in pits and frames which have been some time in bearing, may now be cut and dressed over more severely than usual, as they show signs of exhaustion. After the removal of old bearing bines and leaves, the bed should be well soaked with lime or soot water for the destruction of worms, preparatory to the top-dressing of 2 to 3 inches of good firm turfy loam which is to follow. Let the turf be well packed in amongst the stems, and peg the young growths down quite close to the soil. Water overhead, and keep close for a day or two, until the leaves have recovered their position and young roots are seen working into the new soil, when the usual treatment may be followed. Watch closely for greenfly, and fumigate as soon as it is discovered. Give copious waterings with tepid liquid manure twice a week. Water overhead on fine afternoons, and crop lightly if clean straight fruit is held in favour. A few seeds of Telegraph may now be sown for early autumn fruiting. Allow four weeks for the plants to become strong and fit for turning out. Meantime make the necessary preparations by thoroughly cleansing the pits and getting together suitable materials, such as tan or leaves for producing bottom-heat, as these will produce a more genial medium for the roots than hot-water pipes. Use turfy loam somewhat stronger than that recommended for general winter work. Drain the beds or pots well, and insure sturdy growth by ventilating freely, shading slightly, and early closing with plenty of moisture. *W. Coleman, Eastnor.*

STRAWBERRIES IN POTS.—The runners from these plants will evidently be somewhat later than they are in some seasons, a fact itself alone sufficient to indicate the necessity for pressing forward at the earliest moment the process of layering on young vigorous plants which were planted out last season, and on those which have had special treatment for producing runners alone there will now be a supply fit for the operation. For this purpose use moderately rich soil which has been passed through a coarse sieve beforehand, which, with the runner, should be pressed firmly into medium 60-sized pots and fixed by means of a small peg or stone, and be watered afterwards. To save time and attention to watering many plunge the pots into the soil; for the later kinds this is a very good way, but for the earliest required plants, when speedy root-action is so desirable, time will be gained by exposing the pots to the action of solar heat, providing the requisite degree of attention be given to watering regularly. In order to accelerate an early development in those plants which are intended for early forcing operations, avoid the use of large fruiting pots, those of from 4 to 5 inches diameter being ample for the purpose. In potting these the crown of the plants should be kept well up above the surface of the soil. To prevent the buds from sustaining injury from dampness at the advanced period at which these will appear, after potting well water the plants, place them in a shady place for two or three days, and then stand them in a position where every ray of sunshine will operate freely, and which has been prepared for them by means of ashes to resist the inroads of worms to the pots. As it is very important to get all these plants well established betimes, no delay should take place in potting them into the fruiting pots as soon as the plants are fit; in every case pot the plants firmly into moderately rich and rough soil, and for strong-growing late kinds 6-inch pots may be used. *G. T. Miles, Wycombe Abbey Gardens.*

KITCHEN GARDEN.

With so late a season it may be feared that the cutting of Asparagus has, of necessity, been protracted beyond the usual time, but as there should now be a continuous supply of Peas the cutting should have been entirely stopped a week ago, and as the present is the season when it will be best to apply a large amount of stimulants in order to strengthen the roots for another season's bearing, the operation may be at once commenced by applying salt in the proportion of about a pound to the square yard; this, besides acting as a very beneficial manure for the plants, is thoroughly destructive to weeds of all kinds. After a week or two, and during wet weather, a good dressing of guano will be a fine supplemental stimulant. With such aids as a powerful sun and the dry season the hoe is one of the most useful of implements, and, if kept constantly in use amongst advancing crops, will do much to ward off the serious effects of drought, as well as keeping down the seedling weeds. This operation is especially imperative in gardens having a strong retentive soil, which is apt to cake on the surface and split up in large open cracks which admit the drought deep in the earth, and a well-regulated system of surface-stirring is the best method of preventing evaporation. The earliest planted Celery may now have occasional applications of liquid, but the main crop will scarcely be sufficiently rooted for much stimulation, and only copious applications of water should be applied. Continue to plant more trenches of the same for later successional purposes. A good breadth of Walcheren Cauliflower from the latest sowings should be planted on a well-manured border; if facing the north, so much the better. The white and purple Cape Broccoli should also be got in at once, and if not already done, another lot from the last sowings of Veitch's Improved Broccoli and Autumn Giant Cauliflower should be got in to succeed the earlier plantations; the latter will only show its true character in highly-manured soil. The plantations of hardy spring Broccoli and Winter Greens must be followed up as ground becomes vacant for the purpose; in fact, there should not be any vacant ground now—every corner and available space should now be planted with something likely to be useful in the future, and as soon as a crop is taken off the space should be immediately filled up; but this system of continual cropping can only be successfully carried out where there is a good supply of manure, without which tender and succulent vegetables of most sorts cannot be secured. Successional sowings of various sorts will still be necessary, in order to maintain a continual supply: a sowing of Cabbage for autumn use and of the various sorts of Lettuce will be necessary, as well as continual sowings of Radishes and small salading. A good breadth of Turnips for autumn should be sown at once, and advancing crops thinned out and copiously watered where possible. A late sowing of dwarf French Beans of an early sort may be tried, but they must have a warm and sheltered situation. Scarlet Runners should be well staked, and the bine assisted with a little tying at first, to give them a fair start up the rods. A last sowing of Peas may be tried, for which purpose Ne Plus Ultra, Knight's Tall Green Marrow, or British Queen are suitable sorts; they must be sown in trenches, with manure dug in the same as prepared for Celery. Frequent waterings and mulching must also be resorted to, and watering and mulching will also be necessary for all the later crops, which should always be staked in time. Where any of the taller sorts are becoming top-heavy it is a good plan to drive in some stout stakes at intervals along the rows, and pass a length or two of rope yarn from stake to stake along the rows: this will afford sufficient support for the Peas, and at the same time not much footing for those little destructives the birds, always so troublesome to the late crops. Beds of ridge Cucumbers and Vegetable Marrows must be kept trained out, stopped, and frequently watered. See that the ground is stirred amongst beds of Onions, which are not so strong this year as usual—if very dry a good soaking of water in which a small proportion of washing soda has been dissolved will be beneficial, which solution will also have the effect of keeping the Onion maggot in check. Thin out the later sown Carrots, and give them every encouragement to grow out by frequent surface stirring. Basil, Chilies, and Capsicums under south walls will require attention in watering and tying up, and see that Tomatos are kept thinned out and fastened. Now is a good time to commence the preparation of manure for making up Mushroom beds in the open air next month. *John Cox Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, JULY 7, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	July 9	Sale of Natural History Specimens, at Stevens' Rooms.
TUESDAY,	July 10	Sale of Orchids, at Stevens' Rooms.
WEDNESDAY,	July 11	Royal Caledonian Horticultural Society's Summer Show. Ealing, Acton, and Hanwell Horticultural Society's Show. Oundle Horticultural Society's Show. Enfield Horticultural Society's Show.
THURSDAY,	July 12	Bristol, Clifton and West of England Rose and Strawberry Show. Newcastle-on-Tyne Botanical and Horticultural Society's Summer Show (two days). Highgate Horticultural Society's Show. Ludlow Rose Show.
FRIDAY,	July 13	West of Scotland Rosarian Society's Show, at Helensburgh (two days).

PUBLIC attention is very properly being called to the COLORADO BEETLE, and to the best means of dealing with it. We have done our part in bringing the matter before the practical growers, and are pleased to see that the general Press is becoming aware of the gravity of the situation. Since our last issue the appearance of the insect near Mülheim has been confirmed, and our German friends seem to have "taken the bull by the horns" in a way which ought to be efficient. Sawdust saturated with petroleum was scattered over the field, and the whole set fire to. Such a procedure would in all probability destroy eggs, larva, and beetles, together with the Potato haulm, and therefore at the sacrifice of the tubers. No doubt this stamping-out process is the best in the first instance, when the pest is limited in its range, but we question very much if the English Potato grower would at once see the necessity for such a step—he would be sceptical, or he will procrastinate till the beetle has got a footing—till the eggs are deposited broadcast on the leaves, and not till he sees the fat larvæ stripping the leaves before his eyes will he begin to exert himself; then probably the application of Paris-green, as recommended in our last number, will be the best remedy, and one which at any rate gives some hopes of the crop not being utterly destroyed. The eggs, we are told, take six days to hatch; the larvæ or grubs live for about a fortnight prior to assuming the pupa or chrysalis stage, in which state the insects remain for another nine days before assuming the condition of full-grown winged beetles.

At the Royal Horticultural Society on Tuesday last Mr. ANDREW MURRAY exhibited specimens of the insect in various stages, together with enlarged diagrams showing its structure and appearance. Mr. MURRAY also gave a brief account of the habits of the insect, showing that it extended as far as its natural food plant, Solanum rostratum, the plant itself being distributed by means of buffalos, to whose hairy hide the prickly calyx of the plant adhered. From the wild plant it passed to the Potatos of the cultivated regions, spreading from field to field in the way familiar to our readers, from the reports given of its rapid progress from the West to the Eastern States of North America. It was unfortunate that so small an audience was gathered together to hear this interesting communication, but no previous notice had been given; and even if it had been, the conservatory of the Royal Horticultural Society on a meeting day is probably about the worst place possible for such a purpose. Still, this is one of the many ways in which the Royal Horticultural Society should render service, and prove its utility.

In face of so grave a danger, no doubt the Government will take every means that a nonpaternal Government can do to spread information as to the appearance of the beetle, and the best method of coping with it. The eggs should be destroyed wherever seen, and a sharp look-out kept for the long, bulbous-bodied, spotted larva on the haulm. It is the larva which is most destructive, but the powers of flight and the egg-depositing tendency of the female fully-developed beetle more than compensate for its smaller appetite.

We regret also to have to record the reappearance of that peculiar form of the POTATO DISEASE which created such interest two years ago, and in which Mr. WORTHINGTON SMITH first discovered the resting-spores of the fungus. This form of the disease has again appeared at Chiswick, and in American varieties, but not wholly. Some of the affected plants, moreover, have, we believe, been dressed with Salus. From other quarters, too, we hear of the outbreak of the disease, so that the prospects of the Potato crop do not seem very bright at present. Let us hope anticipation will, as is often the case, prove worse than the disease.

WHAT a wonderful place this London is. What a hold on the affections the garden, and, in particular the Rose, has. Such might well be the reflections that passed through the minds of enthusiastic horticulturists on Wednesday last, the programme for that day included the great exhibition of the National Rose Society, the dinner of the enthusiastic rosarians, the anniversary dinner of the Royal Gardeners' Benevolent Institution, an evening *fête* at the Botanic Gardens, Regent's Park, besides private garden parties and entertainments of which we can take no heed. In what capital of the world could such a programme possibly be carried out in one day? There might have been a few, perchance, gifted with endurance like that of His Majesty of Brazil, who assisted at all the ceremonies in question. But perhaps the most astonishing fact of all, as showing intense devotion to the Rose, is the circumstance that not one or two, but numbers, came from Cornwall, from Devonshire, from Herefordshire, from Scotland even, travelling all night their 200 and 300 miles, in order to worship at the shrine of Rosa in the morning. "A matter of business," some will say, and, of course, to some extent it was so. The great commercial rosarians were naturally present in numbers, but our remarks apply to the country parson, the village squire, and others whom no inducement save that of love for the Rose drove from their homes on that memorable day. Arrived at the scene of action, many had work to do in staging, and, subsequently, in judging the Roses, so that a luncheon was a desirable thing enough Nor, some hours later, was a dinner at all unacceptable to the zealous rosarians, who dined together under the presidency of the Rev. Canon HOLE.

At this dinner the "Health of the Chairman," proposed by Mr. BAKER, drew forth some pertinent observations and suggestions, in the course of which Mr. HOLE remarked that his experience of thirty years as a Rose grower taught him we had much yet to learn before we should bring out the Rose in all the perfection of beauty it was capable of reaching in our climate. He thought that the use of the seedlings and cuttings of the Brier as stocks was a great improvement, imparting hardiness and vigour to the Rose; but his own observations led him to the conclusion that Roses on their own roots would prove to be the most satisfactory, and that it was in this direction that perfection must be sought. An expression of opinion on these matters being invited, Mr. G. PAUL objected, preferring to bud low and plant deep, by which he maintained there was received—first, the impetus derived from the roots of the stock, and then the further support and permanency to be derived from the natural roots afterwards produced from the budded portion. These and similar matters, it was suggested might be discussed with much advantage to, the Rose-growing community in the *Transactions* or *Journal*, which it was part of the scheme of the founders of the Society to publish (perhaps half-yearly) as soon as circumstances permitted.

In another part of the town, the great hall of the "Albion" was filled with a large party of diners, in the cause of charity and benevolence. We were glad to find that some managed to follow out our suggestion to lunch with the Roses and dine with Benevolence, but it could not be expected that even a rosarian could eat two dinners in one day, so that the party at St. James' Hall and that at the "Albion" was composed of different elements. Had benevolence not been very well supported we should have been disposed to complain of the specialists for putting their hobby in the way of the fulfilment of what ought to be an imperative duty with all horticulturists, viz., the support of any institution devoted to such ends as the Gardeners' Benevolent. As it was, however, the body of Horticulturists with their friends and supporters was large enough to fill both rooms, and if the Rose Society has a sufficient surplus, the best thing they can do with it is to wipe out the memory of their unavoidable secession by handing it over to the Institution in question. Sir TREVOR LAWRENCE, who took the chair at the "Benevolent," in the course of his speech alluded to the great advance in horticulture, and to the great extension in the taste for horticultural pursuits, and cited as evidence the beautiful condition of the garden beds in Hyde Park, Battersea and Victoria Parks, and others. Compare their condition twenty or five-and-twenty years ago with what it now is, and the appropriateness of Sir TREVOR'S remark will be apparent. The Chairman also commented on the great things that have been done in India, in the introduction and cultivation of Tea, Cinchona, &c.—a truly great work, carried out mainly by British gardeners. Sir TREVOR LAWRENCE was not content with presiding, he contributed greatly to the embellishment of the room by bringing some fine Orchids, and in particular a noble specimen of Oncidium crispum growing *au naturel* on a forked branch and surrounded by Ferns and small climbing plants—a delicious bit of Nature in the heart of a City dining-room! The company was, as we have said, very numerous, comprising many of our best known horticulturists.

What happened at the Botanic *fête* we cannot say, from personal experience. Our porters might well be pardoned after such a day's work if they eschewed a *fête*, which was of fashionable rather than of garden interest.

—— WE present our readers this week with a COLOURED ILLUSTRATION representing a group of Roses, drawn from Nature by the eminent botanical artist, W. H. FITCH, and executed for us in chromolithography by M. SEVEREYNS, of Brussels. Should the plate become creased in transit through the post, the reader is recommended to lay it face downwards on a sheet of clean paper, then damp the plate on the plain side, place another sheet of paper over the moistened surface, and on the top of all a heavy book or weight. In a few hours all creases will be removed.

—— In responding for the Fine Arts at the WILSON DINNER on Tuesday, Mr. HARRISON WEIR dwelt on the value of wood engravings, not merely as affording gratification to persons of culture and refinement, but as a great power of teaching and persuading the masses of the people for their good. He somewhat startled his hearers by stating that about five million copies of engravings from his drawings were circulated annually. Mr. C. P. SLOCOMBE of the South Kensington Art Schools spoke of the immense benefit the schools derived from their proximity to the gardens of the Royal Horticultural Society, and the consequent freshness and variety of the plant-subjects supplied from the gardens for the use of teachers and pupils in the schools. He said he must regard Mr. BARRON as one of the best friends of Art, for he was

ever ready both to meet their wants and also to suggest subjects they might not think of for themselves. From his point of view, therefore, said Mr. SLOCOMBE, the connection of the Society with South Kensington was to be regarded as eminently beneficial.

—— It was stated in our last issue, at p. 280, that FREMONTIA CALIFORNICA does not thrive in the open, and that the wall is its true position. To prove that this is an error, Mr. PARKER, of Tooting, exhibited flowering branches at the meeting of the Royal Horticultural Society, on Tuesday last, cut from a bush which has stood in the open air in his nursery unprotected for several years, and which is about 5 feet high and 7 feet in diameter. The fact is one of importance, inasmuch as it greatly enhances the value of a very beautiful plant.

—— There seems to be considerable difficulty about the cultivation of the varieties of IRIS KÆMPFERI. In the window of Messrs. BARR & SUGDEN might lately have been seen a fine group of these singular and beautiful forms. Mr. BARR's experience is that the plants must be established in good Rhododendron soil. It is much to be wished that those who have succeeded in propagating and flowering this fine race should make public their observations.

—— While the florists' varieties of Fuchsias are increasing with rapidity, and generally in new and improved forms of beauty, there are some of the species that are so attractive from the decorative point of view, and so well suited for the embellishment of the conservatory, it is a pity they command so little attention. There are the old Fuchsia fulgens, and the dark-leaved variety of it Mr. BARRON grows at Chiswick; F. corymbiflora, and corymbiflora alba; F. pumila, F. globosa, F. microphylla, F. spectabilis, and F. Dominiana; and to these may be added Mr. LAING's new hybrid Earl of Beaconsfield, which makes a fine exhibition variety; Sedan, with its red tube and sepals, and dark carmine-rose corolla; albo-coccinea and Germania, all of which are quite distinct in character. Such a group as this varies the type of flower considerably, and adds much to its interest. F. Dominiana is particularly an autumn and winter flowering species, but when planted out in a conservatory bears flowers almost all the year round.

—— At the Scientific Committee on Tuesday last an interesting fact was made known, viz., that the first botanical publication of Dr. LINDLEY was a description of MARANTA ZEBRINA, in the *Bot. Reg.* 1819. The fact is attested by a note in Dr. LINDLEY's handwriting.

—— Season after season we hear that measures are being taken by the anxious Swiss against the threatened extinction of the EDELWEISS. With the exception of the Alpenrose no other mountain flower is so characteristic of the alpine districts, so popular among foreign visitors, and so dear to the native heart. The poems written upon these two plants alone would fill a big volume. All tourists of culture are, says the *Echo*, quite as anxious as the Swiss themselves can be that this unique plant should live on to future generations, and afford delight to botanists and climbers who are yet unborn. Some of the foreign Alpine Clubs have done what they could to put a stop to the present reckless and culpable waste of the Edelweiss. We believe that the members of the Austrian Alpine Club a year or two ago issued a bye-law against the custom of wearing a sprig of the fluffy Gnaphalium in the hat. The communes of the Upper Engadine have now taken the flower under the protection of their local civil law, and the sale of the plant in its fresh and living condition is prohibited, under the penalty of a fine of 5 f. for the first offence. The proposal was started by the Kurverein, an association which seeks to make life agreeable to the thousands of health seekers and pleasure seekers who, during the summer and autumn, sojourn at St. Moritz, Pontresina, Samaden, and the other villages of which the famous waters of St. Moritz are the centre. The proposal was unanimously accepted by the august senators of these venerable little republics of the Grey League. It appears that the worst persecutors of the plant are the Italians, those picturesque Bergamo herdsmen and herdboys who come up from the southern side of the Alps at the beginning of the season, and remain on the mountains with their flocks until the first snow falls. They pluck up the flower mercilessly by its roots; and they will run beside a carriage for half a mile entreating and almost commanding the inmates to purchase a bunch, lowering the price of the proffered article at every few yards, until they force the traveller into purchasing by wearing out his power of saying "No."

—— The fine DOUGLAS FIR at DROPMORE is now 111 feet 6 inches high, and about 12 feet in girth round the bole at 5 feet from the ground. It has suffered a little from the effects of snow and wind last year, but is still a tree of grandest proportions. The famous Araucaria is in good condition.

—— In his report on the condition of the Royal Gardens, Kew, for 1876, Sir JOSEPH HOOKER calls attention to the rapidly progressing destruction of the beautiful "eyot" in the Thames, opposite Kew Bridge. When it is remembered that this beautifully wooded islet shuts out the view of the soap-boiling works and other abominations of Brentford, it will be acknowledged that it is high time steps were taken to preserve one of the most beautiful "bits" on the Thames.

—— Is it generally known that TURKEYS prey upon SNAKES when they have the chance? They do so at Cliveden we are assured.

—— A botanical *fête* and musical promenade will be held in the Pine-apple Nursery Grounds, Maida Vale, by the kind permission of Messrs. E. G. HENDERSON & SONS, on Thursday evening, July 12, 1877, in aid of the fund for the enlargement and improvement of St. Mark's Church, Hamilton Terrace, N.W.

—— From various sources we learn of an increasing difficulty in cultivating HUMEA ELEGANS. How or why is this? Can any correspondent confirm, refute, or explain it?

—— A circular has been issued by the Rev. F. D. HORNER, the Hon. Sec. of the NATIONAL CARNATION AND PICOTEE SOCIETY, to growers and members of the Society, for the purpose of ascertaining their willingness to consent to the postponement of the show from the last week in July to the first week in August. On Saturday, August 5, there will be held, at the Botanical Gardens, Old Trafford, an exhibition of cottagers' produce, window plants, &c., under the auspices of the Manchester Botanical and Horticultural Society; and it is the desire of the Council that the National Carnation and Picotee show should be held in conjunction with this exhibition. If it can be arranged, the Council will give the sum of £10 towards the Carnation Show fund, and provide accommodation for the visitors. This arrangement appears so reasonable that it is to be hoped it will be carried out, especially as there is reason to believe the flowers will be in bloom later than usual this year. The Manchester Society has extended such generous support to the florists of the North, that we are sure any suggestion from the Council will receive the full consideration it deserves; and there is every reason to believe the proposed arrangement will be carried out.

—— At Dropmore, the other day, we lighted on a plant of the old PELARGONIUM TRICOLOR, an old-fashioned bright-flowered gem almost lost sight of. We mention it now in connection with the curious piebald Pelargonium, half white, half scarlet, shown at a late meeting of the Royal Horticultural Society by Messrs. SMITH, of Dulwich. The object of the diversity in colour in the wild flower is to serve as a guide and signpost to insects, which are by its guidance induced to visit the flower where they can best get the honey, and where at the same time their aid is most efficient in fertilising the flower—a wonderful contrivance, the whole significance of which is lost by the average florist.

—— What is known as CARTER'S HEARTWELL CABBAGE is a quick, early dwarf variety especially deserving the attention of market gardeners and those whose gardens are restricted in space. It is a selection from the Early Improved Nonpareil, and has the short compact growth of that variety, but in a remarkably compact form, and, with the exception of the outer circle of leaves, it is all heart. This estimate of the Cabbage is drawn from inspecting a large field of it in the occupation of Mr. HENRY DUNNETT, at Ardleigh, and the remarkable evenness of character of the crop is at once apparent. It can be particularly recommended to those having a small space of garden, and where every square foot of ground is a consideration.

—— Just now, when the spring bedding is over, and the summer beds are only just planted, there is a dearth of flowers in the flower garden, which may be well obviated by the use of the MONTHLY ROSE. Some beds of this on the fine plateau at Cliveden are very lovely at the present time.

—— JAPANESE TEAS appear to be getting greatly in favour in New York, where many fine kinds, both of Japanese and Chinese produce, find a ready market, owing to the quick transit the tea ships make. Through the agency of steam new crop teas find their way to New York much earlier than formerly, and the cargos generally arrive in fine condition. The general favour with which Japanese teas are being regarded is due to the deterioration of the Chinese product. The Japan leaf, unlike the China leaf, is prepared, or, in other words, fired and manipulated under the direction and at the establishment of the foreign shippers, principally English and American firms, at the ports of shipment. This tea was originally introduced into America as natural leaf, but through the enterprise displayed in its preparation to produce styles and colours peculiar to each shipper its original designation has become nearly obsolete. Some of the terms now used to describe it are "Kalsomina," "pale," "grey," and "blue." It is mentioned as a somewhat significant fact that the effort to introduce Japan tea into other countries has been unsuccessful, America taking the bulk of the quantity exported.

—— Those who would see an OLD-FASHIONED FLOWER GARDEN in full beauty would do well to visit Dropmore at the present time, if fortunate enough to have the privilege of doing so. The display at this present time is made up principally of old Roses, Rosa gallica, the old white Moss, indica, Maiden's Blush, Noisettes, &c., together with double Rockets, Larkspurs, Oriental Poppies, Gillias, Sweet Williams, Sweet Peas, Eschscholtzias, Campanula speciosa, &c. Earlier there were Narcissi and Squills and grand Tree Pæonies; later there will be Dahlias, Asters, Gladioli, Phloxes, Sedums, and a host of other plants. No wonder people tire of bedding plants, ribbon borders, and carpet beds. There is far too much of them even now. On a lawn under the windows a few well-arranged and well-kept beds are in keeping with the architectural lines of the building, but the real flower lover will always prefer the old-fashioned flower garden with its never-failing supply of fragrant and lovely flowers, never quite the same for two weeks in succession. Granted it is not so trim as a series of well-managed mosaic beds, but that defect is far outweighed by the constant interest and variety. One can't be sentimental over a carpet bed, however beautiful, and one ought to be sentimental in a garden!

—— Mr. MECHI requests us to state that, owing to his advanced age the TIPTREE ANNUAL GATHERINGS will be discontinued, but he hopes that his brother agriculturists will come and inspect his crops before or during harvest.

—— What a splendid flower is the old COPPER COLOURED BRIER. In the rosery at Valentines, or against a wall and in the open border, as at Dropmore, it is just now resplendent.

—— Referring to the growth and PRODUCE OF THE VINE (Vitis vinifera) IN SAN FRANCISCO, a recent report says that wine produced "from the old Mission Grape does not find a ready market, even at a very low price, and the Vine growers are either by planting or grafting superseding it by the best foreign varieties, the result of which is observable every year in the manufacture of superior wines. The total exports of wine for the year amounted to over 1,000,000 gallons. The production of raisins is also

assuming some importance, 30,000 boxes, each of 20 lb., were produced in the State last year. The Muscatel, and one or two other varieties, are equal in every way to the best imported. Grapes can be grown at a profit at 1 cent per pound, and at this price raisins can be sent into the market to compete successfully with the imported article. Regarding other fruits, the crop of Oranges during the year was a partial failure. In Los Angeles county the produce did not exceed 2,750,000 against 5,000,000 in the previous year, but an immense number of trees, it is stated, will come into bearing in the course of the next twe or three years.

—— A stand of fifty FANCY PANSIES from Messrs. DOWNIE & LAIRD, of Edinburgh, intended for exhibition at the Rose show on Wednesday last, since they could not be there received, have since found their way to our office, and a very fine lot they were. The blooms were large, bold, richly coloured, and greatly varied, showing how eminently the climate of Scotland suits these fine spring flowers. We only regret, as they were not named, we cannot indicate which sorts were the best amongst them; but where all were good this is, perhaps, of less consequence.

—— Few of the New World evergreens, which we are in the habit of calling American plants because received from America, are more beautiful than the KALMIA LATIFOLIA when growing in a situation which is congenial to it; and few situations, we should imagine, can be more congenial to it than the grounds at Bearwood, the magnificent country seat of JOHN WALTER, Esq., M.P. for Berkshire, judging from the appearance presented by it when we saw it there some week or two ago. The Rhododendrons and hardy Azaleas also grow with remarkable vigour at Bearwood, and annually present floral features of great beauty, which, with the liberality of a true English gentleman, Mr. WALTER throws open to the view of the residents in the adjoining towns and villages. The Kalmias when we saw them were particularly fine, and showed considerable variety as regards the tinting and arrangement of the flowers, some of the blossoms measuring nearly 1½ inch across, and all growing in massive trusses, which freely covered the surface of the plants. These beautiful grounds—which have undergone great changes during the past few years, bear witness to Mr. WALTER's fine taste—are freely varied by water and woodland and a boldly undulating surface. In the pleasure grounds are many handsome specimens of choice trees, notably of Araucaria imbricata, Cryptomeria japonica, Picea Pinsapo, and, last but not least, a fine seven-limbed Birch, the principal stems of which spring near the ground from one main stock, and cover a large surface of the mossy turf. In the park a prominent feature is an avenue of Wellingtonias, leading from the main entrance to the mansion; and a fine avenue of these trees, of considerable length, also planted by Mr. WALTER, on the roadside near the Wellington College, are doing remarkably well, and will soon form a prominent feature of the district.

—— In addition to the fact that the recent inauguration of the CAXTON EXHIBITION took place in the Royal Horticultural Conservatory at South Kensington horticulturists owe much to the art of printing, and therefore may well feel an interest in the proceedings on that occasion. Mr. GLADSTONE's address, delivered standing exactly opposite to the broad stone steps, was heard with singular clearness by the large assemblage; and most admirably did it illustrate the rise of printing in this country under the care and auspices of CAXTON. What horticulturists did before the age of printing it would be difficult to say. Perhaps in those dark days horticulture scarcely existed, or, if it did, only in such crude forms as to be in keeping with the mediæval barbarism that marked the days of CAXTON. Now we wonder less what was done without the art of printing in days past and more as to what we should now do without it. Printing, as represented in the horticultural press and in the many splendid books on gardening, both standard and serial, that have been put into circulation by its aid, is an art specially dear to horticulturists; and all will alike join in wishing a long and loving recollection of the first English printer.

—— Messrs. JAMES CARTER & CO. request us to state that their EXHIBITION OF ANNUALS in the Royal Botanic Society's Gardens, Regent's Park, will be on view until the 12th inst.

—— The subscription list in connection with the WILSON TESTIMONIAL FUND will, we are informed, be closed on the 25th inst.

Home Correspondence.

Potato Disease.—The Potato disease is once more upon us, and it will interest those who have studied the minute characters of the murrain to hear that it has broken out upon some of the Potato plants at Chiswick, just as it did in 1875, when the resting-spores of the fungus were first discovered. With this I send you a portion of one of the seed-tubers laid by Mr. Barron before the Scientific Committee of the Royal Horticultural Society on Wednesday last, and a preparation from the same tuber hastily mounted in glycerine to show the nature of the bodies visible in the corroded and gelatinous parts which are affected. If you look at my preparation (or better, make a new one from the tuber sent), and use your microscope, you will see directly that the diseased portions of the seed-tuber are traversed in every direction by innumerable threads of fine fungus spawn, and that these threads bear at their extremities the now well-known globose bodies (rich in protoplasm) originally described by me. With care you will also see the male bodies of a smaller size, some free from, others attached to, the larger. Now (as in 1875) the stems and leaves are discoloured in patches, the discoloration being clearly caused by the long continuations upwards of the threads of spawn so abundant in the seed tuber. In both stem and leaf the globose bodies are also to be found, but in these positions they are far more rare, as they were at first. If you further examine one of the Chiswick leaves, sent herewith, you will see a crop of Peronospora infestans just emerging from the stomata, and powdering over the brown patches. At present the aërial condition of the fungus is immature, and the conidia or spores are consequently only present in small quantities. At the present moment, therefore, we have the Potato blight upon us in its infant state. There is but one fungus now present in and upon the Potato plant, and wherever this fungus is—whether in tuber, stem, or leaf—there we also see the brown corroded patches. In each part the same cause is at work, and produces the same effect. Without doubt the storms of rain which have prevailed during the last few days have started last year's resting-spores and resting-mycelium into sudden active growth, and the murrain will speedily run on like wildfire. The destruction now certainly commenced by the fungus will not be apparent to many till two or three weeks have passed over, and then the mischief will be manifest to the least observant. If, therefore, the blight is to be attacked with any success (upon growing plants already affected) now is the only time (when the parasite is in a very young condition) that there can be any hope of success. When the Peronospora has secured a stronger hold, and the Potatos are half destroyed, it will be too late to consider either prevention or cure. *W. G. Smith.*

—— I am sorry to have to tell you that the Potato disease has commenced—the earliest date I have known it—in several places around here, and if it should prove virulent, it will be the worst Potato season ever known, as the tubers are so small, owing to the cold in May. I planted my Fortyfolds in the first week in March. They escaped being cut by the frost, but have made but little progress in tubering. I housed my crop, a good one, last year, in the first week in July, as I also did my Victorias, and finer or more sound Potatos no one could wish to have. I planted all my sorts this year in March; what they will turn out to be I am afraid to imagine at present. Whilst I have the pen in hand, I may as well inform you that fruit crops in this neighbourhood are an almost total failure. For the last four years the month of May has been disastrous. *J. Scott.*

Picea religiosa.—I regret to have to state that the specimen of this graceful Conifer which I reported in the spring of 1876 as having coned here has fallen a victim to the effort. Mr. Andrew Murray gave you a full account of this rare instance of coning in your paper of April 29, 1876, accompanied by a very accurate woodcut of one of the cones, with bract, scale, seed, and leaf, executed by Mr. Worthington Smith from one of the specimens which I sent to the Horticultural Society, and which was afterwards deposited in the Museum of the Royal Botanic Gardens at Kew. I incline to attribute the death of the tree to over-coning rather than to the unfavourable season which followed. The cones had not been counted when I sent my report, and on picking them I found more than one hundred instead of forty. I had picked a very few in December, 1875, in order to secure a coloured drawing of the cones before they lost the purple tint referred to by Mr. Gordon in the notice of last spring. The cones picked in March were preserved, and the seeds which they produced were sown, (some here and some at Nichols' nursery at Redruth, but not a single plant grew, the climate of Cornwall being too cold and damp for maturing the seeds. As the parent tree is now a thing of the past I may add a few items of its history. The plant was bought by my father in 1847, transplanted by me in 1857 into a sheltered spot in an excellent rookery. Here it died back after removal, was cut down to a promising shoot, survived the severe and deadly winter of 1860-61, lost its head again in a gale in 1867, was pruned again, and was, when it coned, a healthy though not well-shaped tree about 25 feet in height, and 2 feet 10 inches in girth at 30 inches from the ground. *John J. Rogers, Penrose, Helston, July 2.*

The Mrs. Mappin Pelargonium Sport.—I have been much interested in the reading of Messrs. Smith's explanation of the origin of the scarlet and white-flowered Pelargonium shown by them at South Kensington on the 19th ult. Understanding that it was originally a scarlet-flowered kind, I drew the attention of some friends—amongst others, of your excellent artist, Mr. W. G. Smith—to the fact that the next expanding flower had showed no evidence of white petals, and that therefore I concluded that the sport of white lower petals was only of a temporary character. The Messrs. Smith's statement that it is in reality a sport from the white-flowered Mrs. Mappin shows that I had been misinformed, and renders the character of the sport all the more interesting. That it has already produced self scarlet blooms, however, shows that not only was my estimate of the character of the opening flower-bud correct, but also that its particoloured flowers are probably things of the past. Will the originator of Mrs. Mappin tell us whether it is a genuine seedling or a sport from a scarlet-flowered variety? *A. D.*

Rêve d'Or as a Climbing Rose.—I wish that all who are in doubt as to what Rose to plant (in the South of England at any rate) for covering the walls of their house could see the plant of Rêve d'Or that I have at this moment in bloom. It was planted seven years ago by the wall of the east side of my vicarage; it now covers a space on that side 24 feet high by 12 broad, and has gone round to the north side, covering a space there nearly as large; the stem is 12 inches round, and from within a foot of the ground to its very outmost branches it is covered with bunches of blooms, thousands upon thousands, in all stages of development; and when I say it "covers" I use no hyperbole; there is not, on the east side at any rate (on the north it is a little thinner), a brick to be seen—unlike in this respect to the looser-habited Solfaterre, Cloth of Gold, Gloire de Dijon, and other climbing yellow Roses, and this after cutting out in the autumn some five or six barrowloads of wood. It is in colour very like Madame Falcot. The description of Madame Falcot would apply also to this. There has been no peculiarity of treatment, it has been allowed to run away as it liked, but its most vigorous habit has compelled me every year to thin out an immense quantity of shoots. If there be any better Rose for this purpose named I do not know it, and can most strongly recommend it as no *rêve* but a reality of gold. *D. Deal.*

Oxalis corniculata rubra.—I wish to bring to the notice of your many readers the effect produced by the use of the brown-leaved Oxalis, which I have lately seen in the garden of Dr. Shafter, Cobham, near Exeter. Imagine a very long and wide terrace-walk, the gravel in perfect order, on either side a wide margin of grass, in equally good order; in this margin of grass on either side are planted Irish Yews, trained with the greatest care to a great height, and with a single leading stem; the number of these Yews is great, and their effect is most imposing. Between each Yew a Golden Yew is planted; at the base of each Irish Yew and around it a circle is made, it may be about 3 feet diameter, and this circle is filled with brown-leaved Oxalis; nothing is seen but green turf, and the circle of brown Oxalis which forms a base to the Irish Yews springing from it. The effect is perfect—a scene of entire harmony and repose. Much as I dislike formal gardening, with its horrible bedding-out, the perfection of taste in this terrace surprised me, and I am quite sure its finished effect was entirely caused by the use of this brown Oxalis, and the entire absence of all those gaudy flowers, absurd statuary and ill-shaped vases, which are the usual accompaniments of terrace decoration. Do not imagine that I object to flowers in their proper place, but the present system of bedding-out, and tying out, and torturing flowers for exhibition purposes, is opposed to all good taste. I hope some of your readers will try the brown Oxalis, it is evidently capable of producing the best effect. Although I have spoken very approvingly of the training of the Irish Yews in the above garden, yet I believe the principle is entirely wrong, and that a better effect would have been produced by allowing the Irish Yews to take their natural form, which is rather a full flat head, more quaint and out of the common than the cut-up single leader; but nurserymen set a fashion in training trees and the public adopt it, without due thought or consideration

whether it is right. The true rule is, let a tree, or shrub, or plant grow as Nature intended, you then have perfect form, perfect beauty. *K. K., Taddyforde, Exeter.* [We cordially endorse your principles—in practice a compromise is often a necessity. EDS.]

Concerning Roses.—I have been requested to give a list of Roses suitable for culture in either of the following methods, viz., the best for general culture, the best climbing Roses.

1. THE BEST FOR GENERAL CULTURE.

I must leave out many good Roses which require a wet-nurse, a dry-nurse, and a doctor; I shall name those only that with a fair amount of attention will give satisfaction. Roses with bad constitutions and weak growth are of no use except for the exhibitor.

Hybrid Perpetuals.

Abel Grand
Alfred Colomb
Anna Alexieff
Baron Adolphe de Rothschild
Baron Chaurand, not a strong grower
Baron Pelleton de Kinkelin
Baronne Prevost
Beauty of Waltham
Bessie Johnson
Caroline de Sansal
Charles Lefebvre
Comte de Nanteuil
Comtesse de Chabrillant
Countess of Oxford
Dr. Andry
Duc de Cazes
Duc de Rohan
Duchesse d'Orleans
Duke of Edinburgh
Dupuy Jamain
Edward Morren
Elie Morel
Empereur de Maroc
Etienne Levet
Exposition de Brie, very like M. Bernardin
Felix Genero
Ferdinand de Lesseps, very like M. Bernardin
Fisher Holmes
François Fontaine
Général Jacqueminot
Gloire de Ducher
Gloire de Vitry
John Hopper
John Keynes, fine colour
Jules Margottin
La Ville de St. Denis
Lord Clyde
Lord Macaulay
Louis Van Houtte, not a strong grower
M. Alice Durzeau
Emilie Boyau, a perpetual Madeline
Monsieur de Montigny
Mdme. C. Joigneaux
Mdme. Boll
Mdme. C. Crapelet
Mdme. Creyton
Mdme. Charles Wood
Mdme. C. Verdier
Mdme. Eugénie Verdier
Mdme. George Swartz
Mdme. Lacharme, lovely and good on Prince's Briers
Mdme. la Baronne de Rothschild
Victor Verdier
Marie Rady
Thérèse Levet
Maréchal Vaillant
Marguérite de St. Amand
Marquise de Castellane
Maurice Bernardin
Monsieur Woolfield
Maximé de la Rochaterie
Paul Néron
Pierre Notting
Pierre Seletzky
Sénateur Vaisse
Souvenir Dr. Jamain
Souvenir de W. Wood
S. George
Prince Camille de Rohan
Prince de Portia
Princess Mary of Cambridge
Vicomtesse de Vezins
W. Griffiths
Leopold Premier
Duchesse Cambacérès
Triomphe de Paris
Thyra Hammerick
Miss Catherine Bell (Bell), a fine grower and good Rose
Souvenir de la Reine d'Angleterre
Viscount Vigier

Bourbons.

Baron Gonella
Baronne de Maynard
Acidalie
Sir J. Paxton
Souvenir de la Malmaison

The three last are good climbers.

2. ROSES SUITABLE FOR CLIMBING.

Noisettes.

Aimée Vibert
Céline Forestier
Gloire de Dijon
Lamarque
Mdlle. Aristide
Ophirie
Solfaterre
Triomphe de Rennes

All the above are best on a wall.

The following in other groups will climb from 8 to 10 feet:—

Madame Louise Langue
Anna Alexieff
Souvenir de la Reine d'Angleterre
John Hopper
Jules Margottin
Edward Morren
Vicomtesse de Vezins
Madame C. Joigneaux
W. Griffiths
Paul Néron
Sombreuil
Glory of Waltham, a good pale Rose
Baronne Prevost

Longe floreant rosæ! Mrs. Opie (Bell) is a first-rate buttonhole Rose when just opening; Star of Waltham is a fine show Rose. I like Prince's seedling Briers* much. *W. F. Radclyffe.*

The Caper Spurge and Great Mullein.—About a fortnight since one of your correspondents asked a question about the Caper Spurge, but the tone of the remarks did not indicate that thorough appreciation of the beauty of the plant which it deserves. No wild garden should be without it; its peculiar form and colour render it a most attractive and effective plant, and there is another plant which groups well with it—the Great Mullein, Verbascum Thapsus; the large white downy leaves of the one form a fine contrast to the blue-green, angular growth of the Spurge. I have just been looking at a group of them in my garden—above twenty Mulleins, an equal number of Spurges, and about half the number of Foxgloves, in full flower, growing irregularly on a bank. No hothouse or greenhouse group of plants ever gave me more pleasure. One of the Mulleins is a grand plant; I measured the lower leaves, just 24 inches long and 9 inches wide. I expect its height when the growth is complete will be at least 6 feet. One great advantage of these plants is they give no trouble, they sow themselves, and repay with compound interest any care or attention you bestow on them. I may add that this year, from the quantity of rain and the mildness of the season during the early part of the year, I have never seen wild plants in greater perfection—a pleasant compensation for the loss of fruit. *K. K., Taddyforde, Exeter.*

* It is not Briars but Briers, *vide* Hebrews vi. 8. "But that which beareth thorns and *briers* is rejected, and is nigh unto cursing: whose end is to be burned." [Surely an inappropriate text this week. EDS.]

Phormium tenax.—I think it worth a note that Phormium tenax is now in flower in my garden. I am aware that it flowers in the open air in the south and west of Ireland, and in Argyleshire, but I have never before heard of its flowering in the open ground in England, except in sheltered corners in Devonshire and Cornwall, and in the Channel Islands. The flower-stem is now 7 feet high, and will be 1 foot higher, with ten or a dozen lateral flower-spikes, each containing about twenty flowers. I do not know whether this would be considered a fine specimen, but it is a very striking plant. As there is nothing exceptional either in the soil or climate of my garden I am inclined to think that the flowering of this fine liliaceous plant depends more upon age than climate. Would not the variegated forms be equally hardy? *Henry N. Ellacombe, Bitton Vicarage, near Bristol.* [At Cliveden, near Maidenhead, the variegated form seeds yearly. It is unprotected, but grows in a warm corner. EDS.]

Gorse, Furze, Whins.—In your article, p. 809, a correspondent gives a very interesting account of the Whin, *i.e.*, Ulex europæus, and its double variety. He has quoted Burns and Byron, as northern poets, who have just mentioned it. Burns no doubt used to see it plentifully in Ayrshire and other places south of the Grampians. I do not recollect having seen it any great distance north of Strathearn, and I have traversed many a mile in the hilly regions north of the Earn, in search of plants, and no doubt should have noticed the Whin, but I am inclined to think that it is scarcely a native, as it is so easily destroyed by severe frosts, and may, in long-past years, have travelled from some more genial clime? But this is merely supposition on my part. I am not acquainted with its geographical distribution out of Europe—that is, I am not aware that it has ever been found in any other quarter of the globe. In Great Britain it seems to be almost general south of the Grampians, at least in low latitudes, and its southernmost boundary seems to be Provence in France, where the variety called provincialis seems to take the place of our form. In Ireland they have an upright variety called, by Mackay, U. strictus. Besides the above we have, especially in our southern counties, the U. nanus, which flowers very abundantly in the autumn, covering the heaths in many parts with a close carpet of gold. The most northern point I have ever seen this sort was on the Pentland Hills. About Bournemouth it enlivens the wide spreading heaths from June till November, and to those not acquainted with the sorts it appears as if the Furze flowered all the year, for just as the europæus goes out of flower, the nanus comes in. *John Scott.*

Reports of Societies.

Royal Horticultural: *July* 3.—The usual afternoon meeting was held on this occasion in the large conservatory instead of in the Council-room. Lord Alfred S. Churchill, V.P., took the chair, and eleven Fellows were elected. Mr. Andrew Murray called attention to a few of the subjects exhibited, and then made some interesting comments on the Colorado Potato beetle, examples of which in various stages of development were exhibited.

SCIENTIFIC COMMITTEE.—Dr. Maxwell T. Masters, F.R.S., in the chair.

Sulphureous Earth as an Insecticide.—Mr. Murray read the following letter from Mr. Picciotto:—

"The plague of insects usually makes a greater havoc on plants in Italy than in England, and many attempts have been made to diminish the evil. Lately a friend of mine, the owner of a tract of land in the south of Italy, having found therein large deposits of a sulphureous earth containing, besides sulphur, some alkaline salts, had the idea of applying by way of experiment some of this earth to several sickly Vines and other plants. The experiment succeeded wonderfully in destroying the insects which were the cause of the malady of the plants, and restoring them to a vigour and luxuriance they never enjoyed before. The same treatment has been applied to Vines and fruit trees, to Tomatos, Roses, and various other plants and flowers with equally good success. Many independent trials have been subsequently made in different parts of Italy, and the result is a great demand for this earth.

"My friend tells me that large quantities of this earth can be supplied at a cheap rate in a condition ready for use. A large sample has been sent, and is now in London.

"As you feel interested in the subject, I shall be glad to procure you a sample of the earth, with directions for use, in case you wish to have some for experiments on a small scale. *M. H. Picciotto.*

Beetle on Cattleya Aclandiæ.—Dr. Wallace sent a leaf of this plant curiously blistered by some kind of beetle, of which we shall shortly publish an illustration by Professor Westwood.

Oak Root Gall.—Mr. Murray showed specimens of this gall, which in some of its stages much resembles a Truffle, but which is the work of a Cynips, Amphilothrix radicis.

Ustilago bromivora.—Mr. Renny showed specimens of Bromus mollis affected with this parasite, from a field near Kilburn, and not previously recorded as indigenous. The plants in the adjoining field were unaffected.

Lepidium Draba.—Rev. G. Henslow showed a specimen of this from the neighbourhood of London. It is supposed to have been introduced originally into the Isle of Thanet by the troops returning from the Walcheren Expedition, and has now spread over many parts of the kingdom.

New and Rare Species of Sedum.—Mr. George Maw showed specimens of Algerian and Spanish Sedums in bloom, on which a report will be made at some future time.

Rosa Brunonis.—Dr. Masters showed, on the part of Mr. MacIntosh, a specimen of this beautiful free-flowering white Rose.

Dr. Lindley's First Botanical Publication.—Dr. Masters called attention to a note in Lindley's own copy of his monograph of Roses in the Lindley Library, with which are bound up sundry miscellaneous notices of plants, among them a plate of Maranta zebrina, from the *Botanical Register*, vol. v., 1819, t. 385, accompanied by a very elaborate description of the plant in question. To it is affixed the following memorandum in Dr. Lindley's handwriting:—"This was my first production in the way of botany. J. L." A similar figure and description of Calycanthus fertilis (t. 404) is of nearly the same date.

Pitcher on Leaf of Cabbage.—Dr. Masters showed on the part of Mr. Farquar, Fyvie Castle Gardens, a well-formed pitcher originating from the middle of the leaf of a Cabbage, together with several smaller ones. Such cases are not very uncommon. Dr. Masters made some observations as to their mode of production.

Vinegar Plant.—Mr. W. G. Smith exhibited a camera-lucida drawing of a section taken through a Vinegar Plant. The original plant grew upon lime-juice, and was one-sixteenth of an inch in thickness. As is very unusual with the Vinegar Plant the specimen in question fruited well all over the upper surface, and produced Penicillium crustaceum, whilst still growing in the lime-juice. No spores or conidia whatever were found in the substance of the fungus, which consisted wholly of minute septate threads matted together. Mr. Smith stated that a cubic one-sixteenth of an inch of a Vinegar Plant was traversed by no less than 550,000 distinct threads, therefore every cubic inch (a very common thickness for a Vinegar Plant) is traversed by nearly 150,000,000 of the minute mycelial filaments.

FLORAL COMMITTEE.—G. F. Wilson, Esq., in the chair. A small but by no means uninteresting collection of plants came under the notice of the committee on this occasion. H. J. Elwes, Esq., Preston House, Cirencester, again sent a splendid lot of cut flowers of various beautiful bulbous plants, including Liliums Szovitzianum, philadelphicum var. manshuricum, Hensoni var., elegans var. columbianum, parvum, elegans var. alutaceum, pardalinum, auratum var. Wittei, remarkable for its long, narrow, white petals, with a rich golden band; Washingtonianum var. purpureum, canadense; the charming Calochortus splendens and venusta, two pretty species of Gladiolus as Colvillei alba, ringens, crimson; the showy Alströmeria pulchella, Xiphion junceum, fine golden-yellow; X. lusitanicum var. sordidum, rich in purple, brown, and gold, Brodiæa congesta, Hyacinthus candicans, &c. From G. F. Wilson, Esq., came fine cut spikes of the small but prettily spotted orange Lilium columbianum, the beautiful white Lilium japonicum (Krameri), and a curiously mottled variety of the same species, the small deep red L. callosum, the brighter coloured L. avenaceum, &c. Several striking Lilies were also shown by George Maw, Esq., Benthall Hall, Broseley, including Lilium elegans var. Mawii, a fine bold open flower, orange-crimson in colour and heavily spotted; and L. croceum var. Chaixii, a very distinct flower, of a bright orange-yellow colour, tinged with crimson. It was collected on the maritime Alps. First-class Certificates were awarded to both. With the above came a magnificent variety of Lilium canadense, collected at Haysville, Ontario; L. canadense rubrum, very dark; the pretty vermilion-red L. pomponium verum, from the maritime Alps. Mr. Maw also exhibited Salvia interrupta, a purplish lilac and white flower, in cultivation about seventy years ago, but subsequently lost, and again introduced by the exhibitor from Morocco. Messrs. Barr & Sugden also contributed cut spikes of a considerable number of Liliums, including about two

dozen variations of L. Thunbergianum, broad, open, and brightly coloured flowers, also the very showy L. croceum splendens, bright orange-scarlet, several well marked varieties of L. davuricum, and the distinct L. monadelphum Szovitzianum; many pretty varieties of L. canadense, L. columbianum, and the purple Martagon. Messrs. Barr & Sugden have also been fortunate this season in flowering a number of seedlings of the beardless Iris Kæmpferi, and showed to-day a dozen varieties; three of which were selected for First-class Certificates; I. K. alba grandidissima, with magnificent white falls and standards, the falls measuring 3 inches or more across; Robert Parker, with rich rosy purple standards, and the fine broad falls beautifully suffused and reticulated with rosy purple—a grand variety; and Mrs. Barr, with pale, rosy purple standards, and broad lilac falls, very fine. Messrs. James Carter & Co. exhibited several pretty varieties of sweet Peas, and also cut blooms of two very showy Eschscholtzias, varieties of E. crocea, the one named flore-pleno being double, of a very bright orange-scarlet colour; and the other a single variety, named Mandarin, the petals of which are bright orange inside and scarlet on the exterior. Both are very showy and valuable novelties. Messrs. James Veitch & Sons received First-class Certificates for Alocasia Thibautiana, a very fine introduction from Borneo, the large leaves being of a dark bronzy green colour, with well-marked silvery venation; for Rhododendron Countess of Derby, one of the new hybrids with bright cerise flowers; for Cypripedium albo-purpureum, a hybrid between C. Schlimii and C. Dominii; for Aerides crassifolia, rose shaded with purple, very pretty. The same firm also received a Botanical Commendation for the singular little Masdevallia triaristella from Costa Rica, and a Second-class Certificate for Vanda Parishli. Messrs. J. Laing & Co. showed the new Eulalia japonica zebrina, in better condition than we had before seen it. From Messrs. William Paul & Son, Waltham Cross, came several new Roses, one of which, named May Quennell, was selected for the award of a First-class Certificate. It is a distinct and beautifully-formed flower, rosy crimson in colour, and very promising as an exhibition variety. The next most promising H.P. in the same stand was named Masterpiece, a very full rosy pink flower of excellent form. The same exhibitors also showed blooms of a charming little Moss Rose named Little Gem—a pink-flowered variety, in fact, of the old Moss De Meaux, and which certainly deserved, though it did not get, a First-class Certificate as a garden Rose. Messrs. Paul & Son, Cheshunt, also showed three new Roses, and a First-class Certificate was awarded to H.P. Marchioness of Exeter (Laxton), which was put up in fine form, the rich flesh-pink of the flowers and their reflexed petals rendering them very beautiful. The other varieties were John Bright, a very dark crimson; and Duke of Teck, in the style of Duke of Edinburgh, from which it is a seedling, but of a brighter crimson colour, and, indeed, the nearest approach to a scarlet we have yet seen. Under the name of Burghley Yellow Mr. Gilbert showed blooms of a splendid canary-yellow coloured double Rose, which was believed to be the same as the old Double Yellow Sulphur. Mr. Turner showed a seedling H.P. Rose of his own raising named Penelope Mayo, but very nearly resembling Marie Baumann, a dark rosy-crimson, and very promising. Mr. Turner also made a wonderfully effective display of cut blooms of seventy-two varieties of show Pelargoniums. Mr. Cannell, of Swanley, sent two fine boxes of cut blooms of Verbenas and Sweet Williams; and from Mr. Ollerhead, gr. to Sir H. Peek, M.P., came cut sprays of Andromeda cassinefolia, one of the most beautiful of white flowered shrubs. Messrs. Lyle & Speed, nurserymen, Cambridge, showed two seedling Ivy-leaved Pelargoniums, one of which, named Bessie Speed, a beautiful double flesh-pink flower, promises to prove a desirable acquisition. From the Society's garden, Chiswick, came a large assortment of cut blooms of Antirrhinums and Sweet Williams, the latter strain being an undoubtedly good one.

Fruit Committee.—H. Webb, Esq., in the chair. The largest contribution made to the meeting to-day was a collection of twenty-five varieties of Strawberries sent up from Chiswick by Mr. Barron, and which included several of Dr. Roden's new seedlings. None of them proved to be of more than passing interest, but then this is not a Strawberry year, and more could not be expected. Messrs. Paul & Son, Cheshunt, sent samples of the Strawberry mentioned in our report of the late Crystal Palace exhibition, and which was believed by the committee to be identical with Sir Joseph Paxton. Messrs. James Veitch & Sons showed a dish of pods, and Mr. Gilbert, of Burghley, plants of a new Pea, named Criterion, somewhat resembling G. F. Wilson or Ne Plus Ultra, but dwarfer than the last named, and earlier. Messrs. John Laing & Co. showed a dish of white podded Peas, under the name of Blocksburg; and Mr. Ollerhead, gr. to Sir H. Peek, M.P., sent a couple of good Queen Pines.

The National Rose Show at St. James' Hall: *July* 4.—Two things were amply demonstrated on Wednesday last, on the occasion of the National Rose Society's exhibition—one, the never flagging popularity of the Rose, the other, the unsuitability of the building for the purposes to which it was devoted. It was a sight to see people who care but little for their garden in a general way, and have less feeling for their plants than they have for their cats, hovering lovingly over the long lines of parti-coloured fragrance. Ladies who we may venture to say hardly know a Cabbage from a Lettuce, a Fern from a Ferula, might have been seen keenly scrutinising the points of Alfred Colomb, dilating on the exquisite fragrance of La France, the deep hues of Louis van Houtte or Xavier Olibo, or the lovely tints of François Michelon. However, no one will care to dispute the popularity of the Rose though it may give ground for some surprise why it should, as it does, almost entirely monopolise the affections of a certain large class of the community, including no small proportion of the clergy. As to the second point, the unsuitability of the room, there can also be no doubt. Inconvenient of access and dark, the only things that could be urged in its favour were the very important considerations that no other site was available, and next, that a certain historic interest attaches to the spot, as there was held the first Rose show of a similar character, the history of which is so graphically told in the pages of *A Book about Roses*, by Reynolds Hole. Of the show itself we may say that, considering the terrible season we have had, it was undoubtedly a good one. There were about 400 entries, and over 100 exhibitors, about thirty entries being received too late, and consequently rejected. The Roses were very numerous, about 10,000 being shown, many of them as fresh as if they had not left their homes in Herefordshire, Devonshire, and other counties, and and travelled through the night and the small hours of the morning to Piccadilly. Freshness, brilliancy, colour, substance, fragrance, all were there, so that he would be hard to please who could not find some gem to warm his enthusiasm and make him admit there is nothing like the Rose after all. We shall have to go into detail forthwith, but before doing so we must express our regret that nothing was done to break away from those monotonous long straight lines of colour—"all of a row"—and with scarce a variation in the level, and at the top of the tables a long row of sickly Palms, whose condition but too plainly indicated that they had been up all night. Why will rosarians strive to turn beauty into ugliness by not making the most of the loveliness Nature sets before them? A few hours' more work would be needed, but with a good plan prepared beforehand, and a good staff to carry it out, it would be possible to satisfy the requirements of the judges, the keen scrutiny of the connoisseur, and the artistic feeling of the general public. Poor public!—a roll of parti-coloured ribbon seems to be thought good enough for it.

To the general management very great praise must be given, and especially to Mr. Newman, to whom fell the lion's share of the work. The judging was quietly, systematically and speedily done, and we believe gave general satisfaction. What a contrast to the Continental system! In two hours the judges got quietly and efficiently through a mass of exhibits, many of which demanded critical nicety of judgment—a mass which would on the Continent have taken up nearly as many hours to adjudicate upon, as minutes were here required. So much for a well devised scheme systematically carried out.

The Nurserymen's Classes.

The whole of the six classes devoted to trade growers were of unusual excellence, the competition in each case being all that could be desired, and the blooms—well, grand. Certainly a finer lot has not been seen anywhere this season. In the leading class, which was for seventy-two distinct varieties, single trusses, the competitors were Messrs. Paul & Son, Cheshunt, Mr. B. R. Cant, Colchester, Messrs. Cranston & Co., Hereford, Mr. Keynes, Salisbury, Mr. G. Prince, Oxford, and Messrs Davison & Co., Hereford, and as between the first few the competition was very close, it of course took some time to compare their merits and settle the order of precedence in which they should be placed, as was eventually done in the order named above as regards the first four; and Mr. George Paul is to be congratulated on his success, for he well deserved it, so grand were his blooms and so admirable his setting up. As one collection of seventy-two varieties is pretty much the same as another, we shall on this occasion, to save a repetition of names give a complete list of those staged by Messrs. Paul & Son, which were, Mons. Boncenne, Centifolia rosea, Mons. Noman, Madame Ferdinand Jamin, La France, Mons. E. Y. Teas, Comte de Serenye, Madame C. Wood, Marie Finger, Victor Verdier, Peach Blossom, Maurice Bernardin, Madame Vidot, Duke of Edinburgh, Marquis de Lignereaux, Xavier Olibo, Clothilde Roland, Duchesse de Caylus, Emily Laxton, Camille Bernardin, Catherine Mermet, John Bright, Duchesse de Vallambrosa, Auguste Rigaut, Alfred Colomb, Duchess of Edinburgh, Exposition de Brie, Princess Beatrice, Jean Soupert, Niphetos, Olivier Delhomme, Marquis de Castellane, Annie Wood, Felix Genero, Mrs. Baker, Madame H. Jamin, Charles Lefebvre, Marchioness of Exeter, Lord Macaulay, Miss Ingram, Marie Baumann, La Ville de St. Denis, Jean Liabaud, Marguérite de St. Amand, Antoine Ducher, Abel Grand, Star of Waltham, Elie Morel, François Michelon, Ferdinand de Lesseps, Madame Nachury, Comtesse d'Oxford, Baroness Rothschild, Mrs. George Paul, Captain Christy, Etienne Levet, Marquis de Gibot, Henri Ledechaux, Lælia, Horace Vernet, Maréchal Niel, La Havre, Edward Morren, Dr. Andry, Marie Cointet, Marguérite Brassac, Paul Verdier, Louis Van Houtte, Madame Lacharme, Robert Marnock, La Duchess de Morny, and Sénateur Vaisse. In the whole collection there was not one poor bloom, and the same may be said, indeed, of all the winning stands. In class 2, for forty-eight distinct varieties, three trusses of each, there were five competitors, and again the Cheshunt growers came in at the head of the poll, followed by Mr. Turner, Mr. Keynes, and Messrs. Cranston & Co., the unsuccessful competitors being Messrs. George Davison & Co. Here, again, were a splendid lot of blooms, and we name those shown in the 1st prize stand, most of which were also represented in the others:—Horace Vernet, Madame Nachury, Baroness Rothschild, Nardy Frères, Marie Finger, La Rosière, Niphetos, Star of Waltham, Marguérite de St. Amand, Xavier Olibo, Madame H. Jamin, François Michelon, Marquis de Ligneries, Madame C. Wood, Madame Lacharme, Henri Ledechaux, Edward Morren, Charles Lefebvre, Maurice Bernardin, Catherine Mermet, Mrs. George Paul, La France, Etienne Levet, Centifolia rosea, Abel Grand, Camille Bernardin, Marie Baumann, Duchesse de Vallambrosa, Exposition de Brie, Maréchal Niel, Mons. E. Y. Teas, Victor Verdier, Emily Laxton, Marie Rady, Dr. Andry, Souvenir d'un Ami, Marie Cointet, Ferdinand de Lesseps, Annie Laxton, Alfred Colomb, Sénateur Vaisse, Marchioness of Exeter, Devoniensis, Comtesse d'Oxford, Madame Eugènie Verdier, Louis Van Houtte, Devienne Lamy, and Annie Wood. For twenty-four distinct Hybrid Perpetuals, three trusses of each, Messrs. Cranston & Co. were 1st, Messrs. Paul & Son 2d, Mr. B. R. Cant 3d, and Mr. Turner 4th. Mr. Keynes and Messrs. J. Mitchell & Sons also competed. The varieties staged in the 1st prize collection were La France, Général Jacqueminot, Marquise de Castellane, Centifolia rosea, Monsieur Noman, Fisher Holmes, Marie Baumann, Marquise de Mortemart, Marguerite de St. Amand, Exposition de Brie, Xavier Olibo, Annie Laxton, François Michelon, Madame Lacharme, Lord Macaulay, Mdlle. Marie Cointet, Maurice Bernardin, Antoine Ducher, Baroness Rothschild, Beauty of Waltham, Baron Bonstéttin, Princess Beatrice, Duchess de Caylus, and Marquis de Gibot. Messrs. Cranston & Co. again headed the prize list in the class for forty-eight single trusses, winning with a very superior lot of flowers, as indeed were those shown by Mr. B. R. Cant, Mr. Turner, and Mr. Keynes, who took the other awards; and by Messrs. J. Mitchell & Sons, Mr. G. Prince and Mr. T. Bunyard, of Ashford, Kent, the other competitors. An unusually strong competition took place in the class for twenty-four distinct single trusses, in which none of the competitors in the preceding classes could take part. The exhibitors were Messrs. Curtis, Sandford & Co., Torquay; Mr. G. Cooling, Bath; Mr. R. J. Veitch, Exeter; Messrs. J. Laing & Co., Forest Hill; Messrs. Kinmont & Kidd, Canterbury; Messrs. Robson & Bush, Beachfield, Bowdon, Cheshire; Mr. Rumsey, Waltham Cross; and Mrs. John Lewis, Thames Ditton; and the prizes were awarded to the first four in the order named above. The varieties shown in the two last mentioned classes were much about the same as those already mentioned, and therefore we need not repeat them. There were no less than seven competitors in the class for a dozen Tea or Noisette Roses, one truss of each; and here Mr. Cant came in a good 1st with very beautiful examples of Devoniensis, Souvenir d'un Ami, Madame Bravy, Madame Caroline Kuster, Rubens, Vicomtesse de Cazes, Madame Willermoz, La Boule d'Or, Souvenir d'Elise, Catherine Mermet, Niphetos, &c. Messrs. J. Mitchell & Sons were a very close 2d, Messrs. G. Davison & Co. were 3d, and Mr. Keynes was 4th—the unsuccessful exhibitors being Messrs. Paul & Son, Mr. R. J. Veitch, and Mr. G. Cooling, all of whom were capitally represented.

The Amateurs' Classes.

These were wonderfully well filled, the flowers being marked by exceeding fresh and good average quality, but suffering materially from the general dimness of light thrown upon them, and some defective arrangements of staging, inseparable from the limited space at disposal. In the class for forty-eight single trusses the premier

one open to amateurs, the first prize for which was a handsome fifty guinea challenge cup given by Messrs. Cranston & Co. of Hereford—but to be won for three years—Mr. J. Jowitt, of Hereford, was placed 1st with a singularly even and well-balanced stand, the blooms not only being of excellent quality but of good variety. The sorts were Ferdinand de Lesseps, Lord Herbert, Marquise de Castellane, Général Jacqueminot, Devoniensis, Baroness Rothschild, Duke of Edinburgh, Princess Mary of Cambridge, Dupuy Jamin, Annie Wood, Madame C. Crapelet, La France, Prince Camille de Rohan, La Esmeralda, Souvenir d'un Ami, Xavier Olibo, Marie Van Houtte, Jules Margottin, Marie Cointet, Prince Arthur, Marguérite de St. Amand, Madame Marie Rady, Marie Baumann, Clement Joigneaux, François Michelon, Louis Van Houtte, Madame Nachury, Camille Bernardin, Hyppolite Jamin, Elie Morel, Captain Christy, Annie Laxton, Duchess of Edinburgh, Madame Belton, Sir Garnet Wolseley, Monsieur Noman, Cheshunt Hybrid, Edward Morren, Louisa Ward, Maréchal Niel, Dr. Andry, Lælia, Madame Boatin, Madame Hyppolite Jamin, Exposition de Brie, Madame Marie Finger, Alfred Colomb, and a seedling, deep rose shaded violet, a very neat flower. Mr. R. N. G. Baker, of Heavitree, Exeter, was placed 2d, with a brilliant lot of blooms, somewhat less in size than the first collection, but of charming freshness. In his lot were fine flowers of Marie Baumann, Madame Victor Verdier, Captain Christy, and Alfred Colomb; 3d, the Rev. Canon Hole, of Caunton Manor, Newark, who also had a very brilliant stand of flowers, in which the novel-coloured Beroard Violet, the bright rosy pink Miller Hayes, Maréchal Vaillant, Maréchal Niel, and Baron de Bonstéttin, a deep rich crimson shaded with maroon, were exceedingly good. The Rev. J. B. Camm, of Monckton Wyld, Charmouth, was placed 4th. There were fourteen competitors. In the class for thirty-six single trusses the number of exhibitors was increased to seventeen, but the leading growers in the previous class were here again to the front, Mr. Baker taking 1st place with a stand of blooms, by no means large, but of exceeding freshness. This included Monsieur Noman, Dr. Andry, Marquise de Gibot, Sir Garnet Wolseley, Louis Van Houtte, Edward Morren, Pierre Notting, Madame Victor Verdier, La France, Etienne Levet, Ferdinand de Lesseps, Madame Charles Wood, Prince Camille de Rohan, Miss Hassard, Camille Bernardin, Marguérite de St. Amand, Lord Macaulay, Souvenir d'un Ami, Alfred Colomb, Marquise de Mortemart, Xavier Olibo, Baron de Bonstéttin, Auguste Rigotard, Countess of Oxford, Exposition de Brie, Duke of Wellington, Marquise de Castellane, Royal Standard, Baronne de Rothschild, Marie Baumann, Fisher Holmes, Mdlle. Eugénie Verdier, Charles Lefebvre, Victor Verdier, Maurice Bernardin, and Mdlle. Marie Rady. The 2d prize was taken by Mr. J. Brown, of Reigate, whose collection included good blooms of Annie Wood, Edward Morren, and Madame Levet. The Rev. E. N. Pochin, Barkby Vicarage, Leicester, was placed 3d, with flowers that were exceedingly bright, but rather overblown. His best blooms were of Charles Lefebvre, Dr. Andry, Marguérite de St. Amand, Devoniensis, and François Louvat. The Rev. Mr. Camm was 4th. In the class for eighteen single blooms the 1st prize was taken by Mr. H. Atkinson, of Brentwood, who had in excellent form Edward Morren, Charles Lefebvre, Marguérite de St. Amand, Louis Van Houtte, and Madame Clémence Joigneaux, as also were John Hopper, Marquise de Castellane, Marie Baumann, La France, Fisher Holmes, Monsieur Noman, Duke of Edinburgh, Baronne de Rothschild, Henri Ledechaux, Camille Bernardin, Duchesse d'Aoste, Duke of Wellington, Countess of Oxford, François Michelon, Anna de Dieshach, Dupuy Jamin, Dr. Andry, and Jules Margottin. Mr. Baker again took a 2d place, having charming flowers of La France, Charles Lefebvre, Mdlle. Victor Verdier, and Etienne Levet. The 3d prize was taken by Mr. Jowitt, who had fine blooms of La France, Maurice Bernardin, Mdlle. Marie Rady, and Louisa Ward. The Rev. E. N. Pochin was placed 4th. The class for twelve Roses, in threes, were placed under the gallery, and so dark was that portion of the hall that even the names were scarcely discernible. Mr. Baker was here placed 1st, with good flowers, but with deep colours rather predominating. The stand comprised Etienne Levet, Sir G. Wolseley, Xavier Olibo, Madame Victor Verdier, Camille Bernardin, Docteur Andry, Louis Van Houtte, Ferdinand de Lesseps, Charles Lefebvre, Marquise de Castellane, Marguérite de St. Amand, and Baronne de Rothschild. Mr. J. Ridout, of Woodhatch, Reigate, was 2d, having more variety of colour, and included good flowers of Emile Hausbergh, Duc de Rohan, Mdlle. Thérèse Levet, Edward Morren; 3d, Mr. J. Scott, of Warrington; and 4th, Mr. Jowitt. The class for twelve single trusses brought twenty-seven exhibitors, and the judges had no small difficulty in awarding the prizes. Here Mr. J. J. Smallbones, of Chatteris took 1st place with Camille Bernardin, Marie Rady, Duke of Edinburgh, Abel Grand, Etienne Levet, La France, Dupuy Jamin, Louis Van Houtte, Marquise de Castellane, Prince Camille de Rohan, Baronne de Rothschild, and Marie Baumann; 2d came Mr. Pemberton, Havering, having good Pierre Notting, Niphetos, and Edward Morren; Mr. Daniel Sewell, of St. Neots, Huntingdonshire, was placed 3d; and Mr. H. Benstead, Rochester, and the Rev. W. H. Benn, of Churchover, were equal 4th. In the class for six single trusses the prizes were taken by Mr. Laken, of Chipping-Norton, Mr. A. Evans, Oxford, Mr. Smallbones, and Mr. E. L. Fellowes, of Wimpole Rectory, Royston, in the order named. The class for a dozen Teas was also an exceedingly good one, and the awards were—1st, Mr. J. Brown, Reigate, 2d, Mr. J. Chard, 3d, Professor Adams, and 4th, Mr. W. Smith, Birch Hall, Colchester.

The Open Classes.

In this division were classed the new Roses, and the competitions with twelve blooms each of various specified varieties, all of which were thrown open to competition, with very good results, judging by the displays made in the various classes. With a dozen new varieties not in commerce previous to 1874, the competitors were Mr. Turner, Messrs. Paul & Son, Messrs. Curtis, Sanford & Co., and Mr. Keynes, who took the four prizes in the order given; Messrs. G. Davison & Co., Messrs. Cranston & Co., and Mr. W. Rumsey. A most interesting lot of sorts was shown, but, as usual, with the exception of one or two of the leading stands, they were not in the best condition. Mr. Turner had fine blooms of Miss Hassard, Prince Arthur, a dark rich crimson; Mrs. Baker, Star of Waltham, Duchesse de Vallambrosa, Sir Garnet Wolseley, Oxonian, Madame Prosper Langier, Duke of Connaught, Royal Standard, J. Stuart Mill, and Triomphe de France. Shown in fine order by Messrs. Paul & Son, were Marchioness of Exeter, Avocat Deveriers, Madame Ferdinand Jamin, Marguérite Brassac, Comte de Serenye, La Rosière, Star of Waltham, Emily Laxton, Abel Carrière, Mons. E. Y. Teas, and Duchess of Vallambrosa. The most noteworthy blooms in the other stands were Marshal Von Moltke, a full bright crimson; Perle des Jardins, a beautiful yellow Tea; Mons. Fournier, Star of Waltham, Amelie Hoste, a pale pink, very full, deep Rose, with a very broad petal; La Souveraine, a large, full, and well-built globular flower, of a bluish tinted pink colour, more singular and distinct than pretty. Remarkably good flowers of Alfred Colomb were shown in twelves by Messrs. Paul & Son and Messrs. J. Laing & Co., who were awarded 1st and 2d prizes respectively. No less than 7 dozen blooms of La France were staged in the class for that variety, and, for the most part, they were quite first-rate. The 1st prize lot, staged by Mr. R. W. G. Baker, were of splendid quality. Prof. Adams, the Observatory, Cambridge, was a good 2d, and Messrs. Paul and Son 3d; the other exhibitors being Mr. Turner, Messrs. Cranston & Co., Messrs. G. Davison & Co., and Mr. J. Scruby, Rundells, Harlow, Essex. The class for Maréchal Niel brought out five competitors, and the 1st prize went to a magnificent lot of blooms staged by J. H. Arkwright, Esq., Hampton Court, Leominster; the 2d to Mr. Turner, and the 3d to the Rev. W. H. Benn, Churchover Rectory. Marie Baumann was grandly shown by Mr. B. R. Cant, Messrs. Paul & Son, Mr. G. Prince, and Messrs. J. Laing, the three prizes being taken in the order named. Mr. Cant's flowers were of fine size and form, and perfect wonders on the score of freshness and brightness of colour. The splendid dark coloured Louis Van Houtte was shown by five exhibitors, and Mr. Cant again came in 1st in unexceptionable style. Mr. R. N. G. Baker was a remarkably good 2d, and Messrs. Paul & Son 3d. The class for Baroness Rothschild was perhaps the finest of all, so numerous, large and fresh were the flowers staged. Of grand size and form, and splendid as to foliage, were the 1st prize lot from Mr. R. N. G. Baker. Another very fine stand was the 2d, shown by Mr. Scruby, and the same may be said of the 3d, from Mr. Cant. Messrs. Paul & Son, and Mr. J. Ridout. Reigate, also staged flowers of great excellence. Mr. R. M. G. Baker took Messrs. Fisher Holmes & Co.'s prize for a dozen blooms of Fisher Holmes, with a nice fresh lot of blooms; and the 1st prize offered by the Rev. Canon Hole for a similar number of Reynolds Hole, was won by Messrs. Paul & Son. In the class for any variety not named above, Messrs. Curtis, Sanford & Co. came in first with a magnificent lot of François Michelon. A but slightly inferior stand of the same variety from Messrs. Paul & Son was 2d, and Mr. Turner came in 3d, with Mdlle. Cointet. For a dozen English raised seedling Roses, the names of which have been mentioned before, Messrs. Paul & Son were 1st, Mr. Turner 2d, and Mr. B. R. Cant 3d; and for three trusses of any new seedling Rose, Messrs. Paul & Son were 1st with the fine glowing crimson though rather flat John Bright, which is bright indeed; and Mr. Turner 2d, with Penelope Mayo.

Alexandra Palace: *June* 30.—The lessees of the Alexandra Palace were more fortunate than their Sydenham rivals in the selection of the date for holding their Rose show, though even Saturday last was, if anything, a few days too early to catch the Roses out in the greatest numbers. Though not so large a display as that made last year the present was, all things considered, an uncommonly good one, the nurserymen especially coming out strong on the point of quality, and the amateurs, as usual, with quantity, and in some instances with high quality as well. Messrs. Paul & Son, Cheshunt, took what is usually regarded as the Blue Riband of the day—*i.e.*, the 1st prize for seventy-two single trusses; Mr. B. R. Cant, of Colchester, who was unable to show that day week, being a good 2d; Mr. John Keynes, Salisbury, 3d; and Messrs. Cranston & Co., Hereford, 4th, all showing in capital form. The Cheshunt firm also came in 1st with forty-eight trebles, Mr. Turner running them a close 2d, and Mr. Keynes 3d. In the next class, which was for twenty-four trebles of H.P.'s only, the highest award went to Mr. Cant, Mr. Turner being again placed 2d, Messrs. Paul & Son 3d, and Mr. Keynes 4th.

The Slough Roses next had a turn in the class for twenty-four singles, in which they stood well 1st, Mr. Keynes taking the 2d, Messrs. Cranston & Co. the 3d, and Mr. Cant the 4th prize. We have not attempted to name all the best blooms in each exhibitor's stands, but, to prevent a mere repetition of names, have selected for honourable mention such varieties only as were well shown in most of the stands.

The Best Roses as Shown.

These were François Michelon, Beauty of Waltham, Charles Lefebvre, Etienne Levet, Xavier Olibo, Prince Camille de Rohan, Marie Baumann, Centifolia rosea, Moos. E. Y. Teas, Madame C. Wood, Felix Genero, splendidly shown in most of the collections; Louis Van Houtte, very dark and rich, and of fine form; Souvenir d'Elise, Madame Lacharme, very fine in nearly every instance; Devoniensis, Mons. Etienne Levet, Maurice Bernardin, Charles Lefebvre, Mrs. George Paul, Sir Garnet Wolseley, La France, Miss Hassard, Maréchal Niel, Edward Morren, Ferdinand de Lesseps, Comtesse d'Oxford, Marguérite Brassac, Captain Christy, Emily Laxton, W. Wilson Saunders, Antoine Ducher, Cheshunt Hybrid, Miss Ingram, Baron de Bonstettin, Exposition de Brie, Baroness Rothschild, La Rosière, Ferdinand de Lesseps, Marquise de Mortemart, Oxonian, Madame Caillat, and most of the older and better known favourites. The class for twelve Teas was a remarkably good one, and here Messrs. J. Mitchell & Sons came in 1st, with very beautiful blooms of Souvenir d'un Ami, Madame Margottin, Madame Willermoz, Jean Pernet, Souvenir d'Elise, Catherine Mermet, Marie Van Houtte, Comte Ouvaroffe, Souvenir de Paul Néron, Maréchal Niel, &c. Messrs. Paul & Son were a good 2d, and Mr. Keynes 3d, an extra award being made to Mr. Turner.

Amateurs' Classes.

The amateurs' classes were very strongly contested, but, as usual, with one or two notable exceptions, the blooms were a long way behind those shown in the trade classes. There were eight competitors with collections of forty-eight single blooms, the race for the premier award being very close between Mr. R. N. G. Baker, of Heavitree, Devon, and Mr. Jowitt, of Hereford, who were placed by the judges in the order named. The Rev. J. H. Gould, Mortimer, Berks, was 3d, and Mr. J. Davis, Wilton, 4th. The two first-named collections were much the best of all, Mr. Baker especially showing splendid blooms, and extraordinarily fresh, considering their long journey. Mr. Baker again came to the front with thirty-six singles, being seconded this time by Mr. Curtis, of Chatteris; the 3d prize going to Mr. Davis, Wilton; and the 4th to J. Hollingworth, Esq., Turkey Mills, Maidstone. A very good collection of twenty-four trebles won the 1st prize in the class for that number for the Rev. J. B. M. Camm, Monckton Wylde, Charmouth, Mr. R. N. G. Baker being an extremely good 2d, Mr. J. Davis 3d, and J. Hollingworth, Esq., 4th. Six collections were staged. Of five collections of twenty-four singles the best came from Mr. J. T. Smallbones, Chatteris, Mr. H. Akinson, Brentwood, Mr. J. Mayo, Oxford, and Mr. J. Wakeley, Sittingbourne. It was the class for twelve single trusses that brought out the strongest contest. There were ten collections, and so good was the class as a whole that two extra prizes were awarded, in addition to the four offered in the schedule. The winners were Mr. J. H. Pemberton, the Round House, Havering-atte-Bower, Essex; Mr. J. Wakeley, Mr. J. Tranter, Upper Assenden, Henley-on-Thames; Mr. H. Atkinson, Mr. J. T. Smallbones, and Mr. A. Evans, Marston, near Oxford. Six collections of Teas put in an appearance, and a prize was awarded to each. Mr. J. H. Pemberton had a fine lot of blooms here too, and came in 1st again, the other awards going to the following gentlemen in the order named—Mr. C. Davis, M. J. Hollingworth,

Rev. J. B. M. Camm, Mr. J. W. Chard, and Mr. R. N. G. Baker.

NEW ROSES.

New Roses, though not strong in numbers, were uncommonly well shown in the classes specially devoted to them. Mr. Turner took the lead with twelve varieties sent out in 1875, 1876, or 1877, showing fine blooms of Sir Garnet Wolseley, Duchesse de Vallambrosa, Colonel de Sansal, Royal Standard, Mrs. Baker, Miss Hassard, Mons. Fournier, fine in colour, Alexander Mackenzie, Dean of Windsor, a seedling from the Duke of Edinburgh, and much in the same style, which received a Certificate of Merit; Oxonian, and the Rev. J. B. M. Camm. Messrs. Paul & Son were an excellent 2d with Star of Waltham, Emily Verdier, Miss Hassard, Madame Prosper Langier, Marguérite Brassac, Emily Laxton, Madame Ferdinand Jamin, Marchioness of Exeter, Sir Garnet Wolseley, Duchesse de Vallambrosa, Jean Liabaud and Oxonian. Mr. J. Keynes came in 3d, and Mr. G. W. Piper, Uckfield, 4th. In the class for six trusses of any Rose sent out during the same years, Messrs. Paul & Son, Cheshunt, took the premier award with beautiful blooms of Emily Laxton, and the 4th with Marchioness of Exeter. The second best was Miss Hassard, shown by Mr. Turner, and the 3d, Duchess of Vallambrosa, staged by Mr. B. R. Cant. Messrs. Paul & Son and Mr. Turner were pretty evenly matched in the class for eighteen trusses of English raised Roses in commerce, but the Cheshunt growers had the best of the contest, coming off 1st with the following varieties:—Emily Laxton, Bessie Johnson, Cheshunt Hybrid, Miss Hassard, John Hopper, Edward Morren, Beauty of Waltham, Miss Poole, Duke of Edinburgh, Princess Mary of Cambridge, Annie Laxton, Princess Beatrice, Rev. J. B. M. Camm, Miss Ingram, Star of Waltham, Duchess of Edinburgh, Reynolds Hole, and Marchioness of Exeter. In Mr. Turner's stand were many of the above varieties, the most notable additions to the list being Devoniensis, Marquis of Salisbury, Peach Blossom, and Lord Macaulay. The following Roses were shown in classes for twelve of each, the best coming from the exhibitors in the order named:—Duke of Edinburgh, Messrs. Paul & Son; Baroness Rothschild, Messrs. Paul & Son and Mr. Harrington, gr. to E. Mitchell, Esq., Romford; La France, Messrs. Paul & Son and Messrs. Cranston & Mayos; Marie Baumann, Mr. B. R. Cant and Mr. R. N. G. Baker; Maréchal Niel, Mr. Turner and Mr. Davies, Wilton; Princess Beatrice, Mr. B. R. Cant and Messrs. Paul & Son; Edward Morren, Messrs. Paul & Son and Messrs. Mitchell & Sons; and Madame Lacharme, Mr. B. R. Cant and Mr. Turner.

[*Owing to the great pressure on our space this week, we are obliged to defer the publication of several other reports that have reached us.*]

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JULY 4, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°				In.
June 28	30.07	+0.25	78.6	48.8	29.8	61.8	+ 0.5	49.5	65	W.; N.W.	0.00
29	30.04	+0.22	83.1	55.6	27.6	67.7	+ 6.4	51.6	57	S.W.; WSW	0.00
30	29.99	+0.17	75.1	55.2	19.9	64.0	+ 2.8	56.7	77	WSW; WNW	0.00
July 1	29.85	+0.03	63.0	55.0	8.0	57.5	− 3.7	54.6	90	W.	0.28
2	29.81	0.00	70.1	50.1	20.0	59.3	− 1.8	50.2	73	S.S.W.	0.00
3	29.82	0.00	71.0	48.0	23.0	58.1	− 3.1	51.5	78	WSW; W.	0.03
4	29.79	−0.03	71.6	52.4	19.2	60.2	− 1.1	49.5	68	WSW; WNW	0.00
Mean	29.91	+0.09	73.2	52.2	21.0	61.2	0.0	51.9	73	W.	sum 0.31

June 28.—A very fine bright warm day. Cloudless at night.
— 29.—A brilliantly fine warm day. Cloudless at night. Highest reading of thermometer in sun's rays = 156°.6, being higher than any reading since July 22 1876.
— 30.—A very cloudy day, a few drops of rain fell before midnight.
July 1.—Overcast, dull, and wet till 4 P.M. Fine and bright after.
— 2.—Fine but very cloudy. A shower of rain fell at 6 P.M.
— 3.—A fine day, though very cloudy at times. A slight thunderstorm, with showers of rain in evening. Cloudless at night.
— 4.—A bright bright day, partially cloudy. Heavy clouds in N., and a peal of thunder heard at 9 P.M. Cloudless at night.

LONDON: *Barometer.*—During the week ending Saturday, June 30, in the suburbs of London, the reading of the barometer at the level of the sea increased from 30 inches at the beginning of the week to 30.18 inches by the morning of the 25th, decreased to 30.09 inches by the evening of the 26th, increased to 30.27 inches by the morning of the 28th, and decreased to 30.13 inches by the end of the week. The mean reading for the week at sea level was 30.17 inches, being 0.23 inch above that of the preceding week, and 0.17 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 83° on the 29th to 67° on the 24th; the mean value for the week was 73½°. The lowest temperatures of the air observed by night ranged from 47° on the 25th to 55½° on the 29th; the mean value for the week was 51½°. The mean daily range of temperature in the week was 22¼°, the greatest range in the day being 29¾° on the 28th, and the least 16¾° on the 27th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—24th, 56°.8, −3°.9; 25th, 58°.2, −2°.9; 26th, 57°.8, −3°.4; 27th, 59°.7, −1°.6; 28th, 61°.8, +0°.5; 29th, 67°.7, +6°.4; 30th, 64°, +2°.8. The mean temperature of the air for the week was 60°.9, being 0°.3 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 156½° on the 29th, 137½° on the 25th, 127¾° on the 30th, and 126° on the 24th; the mean reading for the week was 131½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 36½° on the 25th, 37° on the 24th, and 38½° on the 28th; the mean of the seven readings was 42°.

Wind.—The direction of the wind was W.S.W. and N.N.W., and its strength moderate. The weather during the week was very fine, bright, and dry. A very fine *solar halo* was seen during the afternoon of the 27th.

Rain fell on the 27th, but only to the amount of 0.03 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 83¾° at Cambridge, 83° at Blackheath, and 82¾° at Norwich; at Portsmouth and Liverpool 70¾° was the highest temperature in the week. The mean value from all stations was 77°. The lowest temperatures of the air observed by night were 38¼° at Nottingham and 39° at Eccles; at Brighton, Portsmouth, and Liverpool 50° was the lowest temperature in the week. The general mean from all stations was 44¼°. The range of temperature in the week was the greatest at Cambridge and Nottingham, both about 42°, and the least at Portsmouth and Liverpool, both 20¾°. The mean range of temperature from all stations was 32¾°.

The mean of the seven high day temperatures was the highest at Cambridge, 74¼°, and the lowest at Liverpool, 64¼°; the mean value from all stations was 69¾°. The mean of the seven low night temperatures was the lowest at Eccles, 47¼°, and the highest at Portsmouth, 54°; the general mean from all stations was 18¾°. The mean daily range of temperature in the week was the least at Liverpool, 11¼°, and the greatest at Manchester, 25½°; the mean daily range from all stations was 18¾°.

The mean temperature of the air for the week from all stations was 58½°, being 1¾° lower than the value for the corresponding week in 1876. The highest were 61° at Blackheath, 60¼° at Norwich, and 60¼° at Cambridge; and the lowest were 55½° at Eccles, and 56½° at Wolverhampton.

Rain fell on six days at Bradford and Sunderland, but at southern places it fell on but one day. The amounts varied from 1 inch at Eccles and three-quarters of an inch at Manchester to one-hundredth of an inch at Truro and Plymouth. The average fall over the country was two-tenths of an inch.

The weather during the week was generally very fine and bright. A *solar halo* was seen at Bristol on June 27.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 70° at Edinburgh and Dundee, to 65° at Glasgow; the mean value from all stations was 67¼°. The lowest temperatures of the air ranged from 41° Dundee, to 47¼° at Glasgow; the general mean from all stations was 44¼°. The mean range of temperature in the week was 23°.

The mean temperature of the air for the week from all stations was 56½°, being 3¼° lower than the value for the corresponding week in 1876. The highest was 57¼° at Glasgow, and the lowest 54¾° at Aberdeen.

Rain fell at Greenock to the amount of 1½ inch; and at Aberdeen to the amount of 1¼ inch; whilst at Edinburgh only one-quarter of an inch fell; the average fall over the country was three-quarters of an inch.

DUBLIN.—The highest temperature of the air was 75°, the lowest 43°, the range, 32°, the mean 60½°, and the fall of rain 0.35 inch.

JAMES GLAISHER.

Enquiries.

194. ARTIFICIAL MANURES.—*Dido* asks which artificial manure most nearly resembles cow-dung in manurial properties: will some of our chemical readers be so good as to inform him?

Answers to Correspondents.

DELPHINIUM SMITHII: *T. Smith.* Appears to be a pale blue form of D. formosum, which it otherwise closely resembles.

MELONS: *W. H.* The "strong" Melon plants that don't show fruit freely, and go off yellow, are probably feeding too rankly; limit the moisture at the roots for a few days, and then if they don't set stop the shoots.

NAMES OF PLANTS: *Camjce.* Cratægus Pyracantha, propagated by budding and grafting.—*A Subscriber from the Beginning.* A variegated form of the Turkey Oak, Q. cerris.—*Mrs. R.* 1, Phlomis fruticosa, yellow flower; 2, Astrantia major; 3, Silene anglica.—*W. D.* Water Starwort, Callitriche verna. We know no means of getting rid of it but by raking it out. It should be done at once, as the plant is in seed, though the seed is not quite ripe.—*Kambler.* The two Ferns are Blechnum boreale, fertile and sterile frond; the other is a moss, a species of Hypnum.—*K. S. Badby.* 1, Rhinanthus crista-galli; 2, Valeriana officinalis; 3, Prunella vulgaris; 4, Veronica Buxbaumii; 5, Veronica Beccabunga; 6, Aspidium lobatum.—*W. M. G.* 1, Sedum acre; 2, Saponaria ocymoides; 3, Achillea tomentosa; 4, Campteria biaurita; 5, Nephrodium molle; 6, Diplazium Shepherdi.—*M. J., Stoke.* Dendrobium Wardianum, perhaps the var. Lowii.—*P. H. G.* 1, Lycaste. It would have been better to have sent fresh specimens, as it was it was discoloured. It appears, at all events, to be L. candida of Dr. Lindley. It must have had green sepals, white petals and lip, and more or less purplish or light purplish spots. If this is not right, then send a copy of the sketch in colours. 2, Cœlogyne articulata of the younger Reichenbach; Pholidota articulata of Lindley. R. has written you fully as to the Bletia, that is an Arundina requiring further observation. *H. G. Rchb.*—*F. Geary.* The golden sport of Birch is certainly distinct, and, if constant, is well worth propagating.—*W. H. C.* Teucrium fruticans.—*J. Brown.* The yellow flower is Kerria japonica. The plant with numerous long-tubed red flowers is Rochea coccinea var.? or perhaps a small state. The red flower with long stamens is Clerodendron speciosissimum.—*Mrs. Rowland.* Your plants, not numbered, are Polygala vulgaris, Convolvulus soldanella, Veronica arvensis, Anthemis nobilis (leaf only). The other looks like a small state of Collinsia verna, but the specimen is in bad condition.—*J. S., Cork.* 1, Sedum Rhodiola; 2, Potentilla ambigua; 3, Potentilla procumbens; 4, Clematis recta; 5, Astragalus penduliflorus (Phaca alpina); 6, Helianthemum canum.—*T. C. Hincks.* 1, Oncidium pumilum; 2, O. uniflorum lituiflorum; 3, Bifrenaria aureofulva.—*J. M.* Rosa Brunonis.

PEACHES: *J. W. C.* A bad case of black-fly. Cut off the worst shoots and wash the others with tobacco-water, Gishurst Compound, or the decoction of quassia chips so often recommended in our columns.

PETUNIAS: *R. Dean.* P. striata is a well-developed strain of striped varieties, very much like those of Hender's strain. P. fimbriata yields large and fringed flowers, mostly margined with white, often striped, and with a tendency to develope petaloid stamens; some of them are very showy. P. grandiflorum is a strain of very large flowers, sometimes fully 4 inches across, the predominating colour a rosy pink, but also affording striped flowers. They indicate three distinct and handsome sections of Petunias, fully up to the average as to merit. The striata section is the best as to intrinsic quality.

ROSES: *H. H.* We cannot undertake to name garden varieties.

ROSE FUNGUS: *A. B.* See our Supplement. Burn the plants. 2, Yes.

VALLOTA: *W. H.* Let it grow on and ripen its foliage, which is evergreen, by exposure to sun and air. It will then stand through the winter in a dry greenhouse—not kept quite dry at the roots—and will flower at its natural season, about May and June. When it needs repotting do it just after flowering, as an inducement to a good development of the leaves.

VINES: *J. G. & Co.* The Vine sent shows symptoms of premature ripening, apparently caused by the use of poor soil, and by alternations of drought and moisture at the root, with perhaps an over-heated atmosphere during bursts of sunshine. There is no trace of the Vine disease.

WATERING NEWLY POTTED PLANT: *W. H.* It depends on circumstances; if the plants are not very free drinkers and the soil is fairly moist when used they may stand for a while before being watered, the time being dependent on season and weather; if they are free-growing things they may be all the better for immediate watering. More important than the actual time at which the operation is performed is the avoiding of lifting or moving them about while the soil is wet, by which it would be liable to become pudding-like, and run together too closely.

COMMUNICATIONS RECEIVED.—D. T. F.—W. M. B.—W. E.—F. Holdrass—C. Osman—N. G.—C. R.—A. Young Gardener—J. F.—K. K.—H. E. W.—J. G. B.—C. T.—A. W.—G. J.—A. M.—C. S.—A. F.—H. C. (next week)—A. O.—T. W.—H. S.—A. M.—E. O.—J. M'N.—W. T. D.—W. D. (next week)—R. F.—A. W.—J. V. V.—H. H. D.—J. O. W.

[*For Market Reports, see p. 24.*]

THE IMPROVEMENT OF LANDED ESTATES,

BY DRAINAGE, ENCLOSING, CLEARING, AND THE ERECTION OF FARM BUILDINGS AND COTTAGES.

THE LAND LOAN AND ENFRANCHISEMENT COMPANY,

(INCORPORATED BY SPECIAL ACT OF PARLIAMENT).

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By Special Warrant, dated December 27, 1865.

TO THE PRINCE OF WALES,
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RICH in PHOSPHORIC ACID and SOLUBLE PHOSPHATES, and IMMEDIATELY AVAILABLE for the FEEDING of PLANTS.

Delivered at any Railway Station, £10 10s. per Ton.

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Branch ditto: Downham Market, Norfolk.

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THE CHEAPEST AND BEST MANURE IN USE.

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The Results have given Universal Satisfaction, and Prove the Manures to be the Cheapest yet Sold.

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WORKS: VICTORIA DOCKS, LONDON, AND CATTEDOWN, PLYMOUTH.

Markets.

COVENT GARDEN, July 5.

Business has been much the same as last week, with no alteration in prices. Outdoor fruit is putting in an appearance, but does not show well at present. Large quantities of Strawberries have arrived from Kent and Middlesex, and are now at their best and lowest prices. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apricots, per box	2 0– 3 0	Peaches, per doz.	10 0–36 0
Cherries, per box	2 0– 3 6	Pears, per doz.	.. ..
Grapes, per lb.	3 0– 8 0	Pine-apples, per lb.	2 0– 6 0
Lemons, per 100	4 0–10 0	Strawberries, p. lb.	0 4– 1 6
Melons, each	4 0–10 0	Figs, green, each	0 9– 1 6
Oranges, per 100	12 0–20 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Leeks, per bunch	0 2– 0 4
Aubergines, p. doz.	6 0– ..	Lettuces, per score	2 0– ..
Beans, French (new), per 100	1 3– 2 6	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Cabbages, per doz.	1 0– 2 0	Onions, 12 bunches	9 0– ..
Carrots, per bunch	0 7– 0 10	— young, per bun.	0 6– ..
— New French, per bunch	1 6– ..	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	4 0– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	3 0– ..
		Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	3 0– 6 0

Potatos, old, are nearly finished.—New: Jersey Kidneys, 14s. to 20s. cwt.; Rounds, 12s. to 16s. cwt.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	1 0– 2 0	— zonal, 12 sprays	0 3– 1 0
Carnations, per dozen	0 6– 2 0	Pinks (white and coloured), 12 bun.	3 0– 6 0
— 12 bunches	3 0– 9 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Rocket, 12 bunches	3 0– 6 0
Eschscholtzia, 12 bun.	2 6– 6 0	Roses (outdr.), 12 bun.	2 6– 9 0
Eucharis, per doz.	6 0–12 0	— (indoor), per doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	— moss, 12 bunches	6 0–12 0
Heartsease, 12 bun.	1 6– 6 0	Spiræa, 12 sprays	1 6– 4 0
Heliotropes, 12 spr.	0 6– 1 0	Stephanotis, 12 spr.	2 0– 9 0
Iris, 12 bunches	6 0–12 0	Stocks, 12 bunches	4 0– 8 0
Lilies (in variety), p. spray	0 6– 2 0	Sweet Peas, 12 bun.	3 0– 9 0
Mignonette, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0
Myosotis, 12 bunch.	3 0–12 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	4 0–12 0	Heliotrope, per doz.	6 0–18 0
Bedding-out plants, per doz.	1 6– 3 0	Hydrangea, per doz.	12 0–30 0
— in boxes, each	1 6– 2 6	Liliums in var., each	1 6– 6 0
Begonias, per doz.	6 0–12 0	Mignonette, per doz.	5 0– 9 0
Bouvardias, do.	12 0–24 0	Myosotis, per dozen	4 0–12 0
Calceolaria	6 0–18 0	Myrtles, do.	3 0– 9 0
Clematis	24 0–60 0	Palms in variety, each	3 6–21 0
Cockscombs, per doz.	4 0–12 0	Pelargoniums, p. doz.	9 0–36 0
Coleus, per dozen	3 0– 9 0	— scarlet, per doz.	2 6– 9 0
Cyperus, do.	6 0–12 0	Petunias, per doz.	9 0–24 0
Dracæna terminalis	30 0–60 0	Rhodanthe, per doz.	6 0–12 0
— viridis, per doz.	18 0–24 0	Richardia æthiopica, per doz.	9 0–18 0
Ferns, in var., p. doz.	6 0–30 0	Roses, per dozen	18 0–60 0
Ficus elastica, each	2 6–15 0	— fairy, per dozen	9 0–18 0
Fuchsias, per dozen	4 0–18 0	Spiræa, per doz.	12 0–30 0
Heaths, variety, doz.	12 0–60 0	Valotta purpur., doz.	12 0–18 0

SEEDS.

LONDON: *July* 4.—In the absence of all consumptive sowing demand the chief interest of the seed market is now directed towards the growing crops, and the probable results thereof. As previously noted, a few samples of new French Trifolium and Sanfoin have already found their way to Mark Lane, and the prices asked have not been immoderate. Of the latter article there is a wide breadth in this country, but whether much or little of this will be saved for seed is a matter of uncertainty. Trefoils are still badly spoken of, and stocks of last year's growth are, consequently, held with increased firmness. In Clovers, unless in the execution of an occasional export order, there is nothing whatever doing There is a small inquiry for agricultural, Rape, and Mustard seeds at unchanged currencies. In the Canary seed trade some slight improvement is observable. Blue boiling Peas have now got into very narrow compass, and fine parcels are with difficulty met with. *John Shaw & Sons, Seed Merchants, 37, Mark Lane London, E.C.*

CORN.

At Mark Lane on Monday the Wheat trade was quiet, and though the tone was certainly not good, no alteration was reported in prices. There was very little English Wheat offering, but the supply of foreign Wheat was large. For Barley prices were hardly so good. Malt was nominally the same, while as regards Oats last week's prices were supported. Maize was the turn cheaper, and a rather heavy market prevailed for flour. Beans and Peas were cheaper to sell.—Trade was dull on Wednesday, and any change in price was advantageous to the buyer. English Wheat was in short supply, while the imports of foreign were on a moderately extensive scale. There were remarkably few buyers, whether of Wheat, flour, Barley, Oats, or other kinds of produce, and quotations may be reported as nominally unchanged from Monday.—Average prices of corn for the week ending June 30:—Wheat, 62s. 6d.; Barley, 33s. 11d.; Oats, 28s. 9d. For the corresponding week last year:—Wheat, 48s. 10d.; Barley, 34s. 6d.; Oats, 28s. 11d.

HAY.

At the Whitechapel Market on Tuesday, with a rather short supply trade was better, and prices firmer. Prime Clover, 100s. to 128s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 116s.; inferior, 70s. to 85s.; and straw, 44s. to 57s. per load. — On Thursday there was only a short supply of fodder on sale. There was a good trade, and prices were as follows:— Clover, best, 100s. to 132s.; inferior, 85s. to 95s.; hay, best, 90s. to 118s.; inferior, 70s. to 85s.; and straw, 44s. to 57s. per load. —Cumberland Market quotations:—Superior meadow hay, 130s. to 136s.; inferior, 105s. to 116s.; new hay, 90s. to 105s.; superior old Clover, 132s. to 140s.; inferior, 110s. to 118s.; new Clover, 90s. to 110s.; and straw, 57s. to 60s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that, with moderate arrivals, trade continues steady, the following being the quotations:—Victorias, old, 100s. to 120s.; Flukes, old, 100s. to 120s.; Rocks, 80s. to 90s.; new Jersey rounds, 240s. to 260s.; ditto kidneys, 240s. to 260s. per ton.—The Potatos imported into London last week comprised 626 casks, 483 packages, 200 baskets, 109 bags, and 62 cases from Malta, 302 boxes, 260 cases from Cherbourg, 50 casks 25 cases from Oporto, 400 cases from Barfleur, 232 boxes from Antwerp, 153 from Lisbon, 70 cases from Bordeaux, 50 sacks from Rouen, and 19 barrels from Gibraltar.

EDGINGTON'S GARDEN NETTING the cheapest and most durable, at 1d. per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.
EDGINGTON'S MARQUEES and GARDEN TENTS are the prettiest.
EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
EDGINGTON'S RICK CLOTHS for 71 years have maintained their celebrity as the best.
HAYTHORN'S and WALLER'S NETTINGS.
A quantity of good Second-hand Government TENTS from Abyssinia for Sale, Cheap.
Sample of material free on application.
Be particular—FREDK. EDGINGTON AND CO., 52 (only) Old Kent Road, London, S.E.

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NEIGHBOUR'S Celebrated BEEHIVES.
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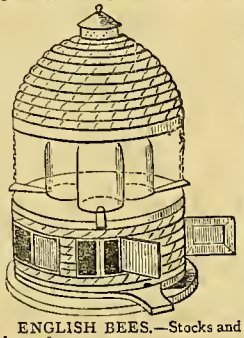
PARIS EXHIBITION, 1867.
Three Silver Prize Medals awarded George Neighbour & Sons. The only English exhibitors who obtained Silver Medals for Beehives.
The IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0
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The LIGURIAN or ITALIAN ALP BEE being much in repute, G. N. & SONS supply a Swarm of Bees with genuine Italian Queen, in the Improved Cottage Hive, at £4, Hive included.
An Italian Alp Queen, with full directions for uniting to Black Stocks, 15s. each.
ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.
THE APIARY. By A. NEIGHBOUR. 5s., postage 4d.
A newly arranged Catalogue of other improved Hives, with Drawings and Prices, sent on receipt of two stamps.
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HORTICULTURAL IRON and WIRE WORKS.

For CONSERVATORIES.
Wirework Baskets.
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Wirework Arches.
Wirework Roseries.
Wirework Summer-houses.
Wirework Screens.
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NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.
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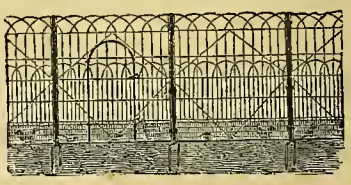
THOMAS'S
NEW POULTRY FENCING,
No. 508.
Very strong and durable. Reduced Prices, 1877.



Galvanised after Manufactured, with Iron Standards, Painted Black, AND SPACED 2 FEET APART, rendering it the strongest and best Fence in the Market.
This ornamental Fencing is easily fixed or removed by an labourer, without extra cost.
PRICES:—
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Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 3s. extra, except when 12 yards are ordered, in which case a doo is included.
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FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING
Is in use over many thousand miles,
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It is constructed with
POWERFUL WINDING STRAINING PILLARS,
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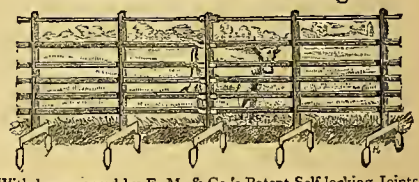
STRONG and DURABLE WIRE CABLE STRANDS,
Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.
Continuous Bar Iron Fencing.



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Iron Hurdles, Railing, Tree Guards,
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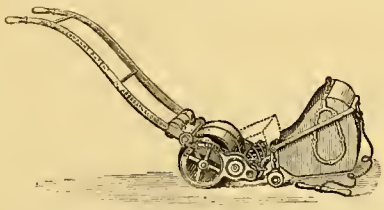

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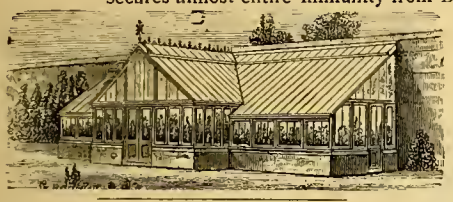

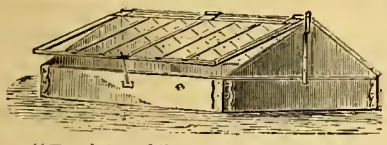

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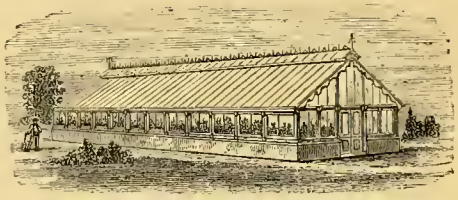

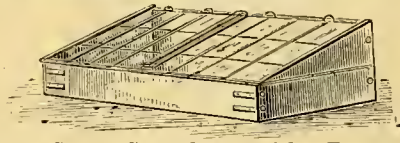

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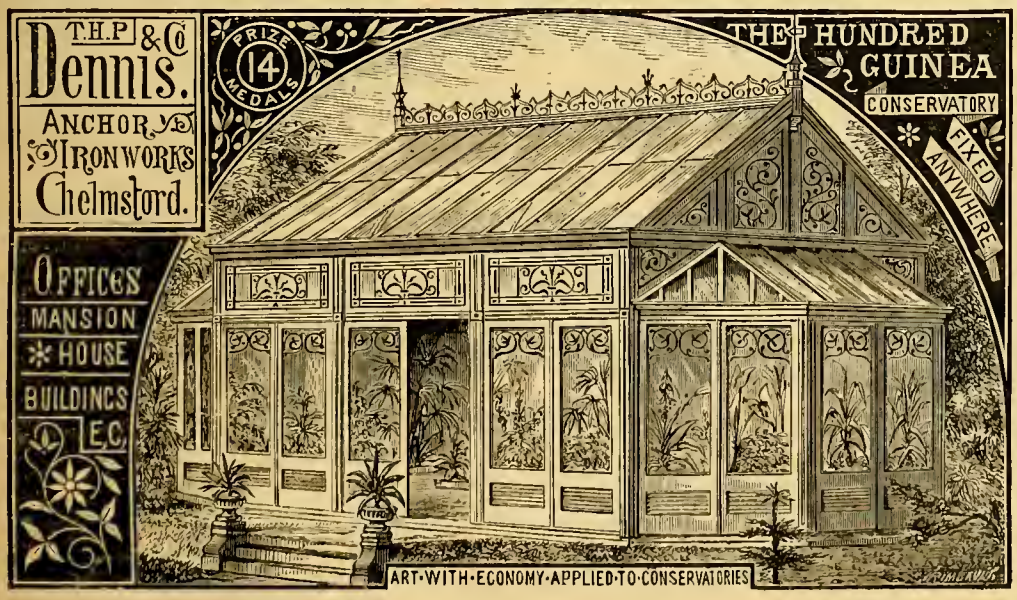

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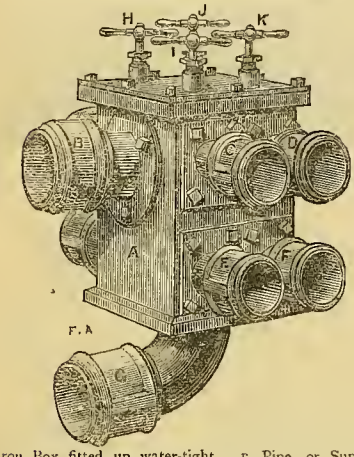

A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

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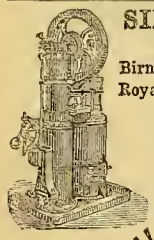

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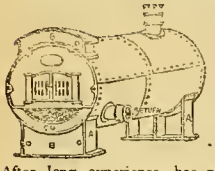
TRENTHAM GREENHOUSE BOILER,



After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Her Majesty's *Royal Letters Patent*

WRIGHT'S ENDLESS-FLAME-IMPACT *HOT-WATER BOILERS.*

GUARANTEED

The most Powerful, the most Rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The 'Boiler of the Future.' I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," July, 1877.

WRIGHT'S PATENT
ENDLESS FLAME-IMPACT BOILERS.

"The first intimation I had of the existence of these boilers, or of their inventor, was a pamphlet I received through the post. Its perusal sa-isfied me that Mr. Wright had a sounder theoretical knowledge of the subject of heating water than any author I had ever perused. I also liked the construction of his boiler better than any I had previously met with. Mr. Lewin, gardener, Drumpellier, was represented as having fixed one of these boilers, and as bearing testimony to its excellence; and as I knew Mr. Lewin to be not only a good gardener, but a shrewd, clever man. I felt satisfied that the boiler must be of the excellence which my own knowledge of such matters led me to conclude it was from its construction.

"Having occasion to be in the neighbourhood of Glasgow last February, I went to Airdrie and called on Mr. Wright, who took me to the foundry in Glasgow where the boilers are manufactured. There he put one together in a few minutes, and a closer examination of it only strengthened my preference for it over all boilers I had previously seen. I ordered a 4-C boiler, which I have fixed to heat 2600 feet of 4-inch pipe in two early vineries. One, a Muscat-house, 200 feet long and 16 feet wide, is built and planted, the other will not be built till autumn; so that at present the boiler is only heating 1300 feet of pipe, which it does with a very small fire and the damper nearly close in, burning little more than half the coal used in any other boiler I have—and I have some of the most approved, both of my own and other people's designs.

"The result of the trial I have had of Wright's boiler is, that I have ordered four more, and will pull out all my other boilers as opportunity occurs, and replace them by his, with a view both of saving and efficiency.

"No doubt many will ask wherein consists the cause of the efficiency of this boiler over others? To explain this, it may be well to observe that when fresh coal is added to the fire of any other boiler known to the writer, the first process that goes on is the distillation of the gas from the new coal, and its rapid discharge, in advance of the flame, up the chimney and unconsumed. This is not only a great evil in itself, but to effect it the heat is extracted from the fire that was in the furnace when the fresh coal was added, and little or no benefit is got from the fire till the gas is up the chimney and the destruction of the carbon in the coal has begun.

"Many expedients have been adopted to prevent this loss; and no doubt careful stoking can do much in the case of large boilers for generating steam, where there is a long fire, and where the fresh coal is always added to the front of the fire, compelling the gas to pass over the red fire and get ignited; but in the case of boilers used for heating hothouses, this is not practicable, and especially with ever-changing stokers, who, as a rule, think if they throw a given quantity of coal on the fire no further care is needed. Now, in the case of Wright's boilers, distillation of gas takes place as in others, but it has no possible chance of escape unconsumed—for gas and flame are compelled to meet face to face, over and over again, ere they leave the boiler; consequently all the gas is consumed, and the heat from it made to impinge directly on the flat surfaces of the various sections of the boiler on its way upwards. Here lies the great secret of this boiler's power.

"What also adds not a little to increase the power of the boiler is the method adopted for supplying a hot-blast, by passing air from the front of the cast-iron stand on which the boiler is placed through an intricate passage, till it is discharged at the back of the ash-pit under the bars. This leads to the most perfect combustion of the commonest dross-coal. There is also an arrangement by which a hot-blast is thrown into the furnace through the furnace door. Then there is a moderate supply of air entering the furnace all round, where the first section is laid on the heater-jacket of the boiler; this has the same effect on the fire as the well-known Argand burner has on the lamp, giving a clear fierce flame. These boilers are made up of a series of simple castings, jointed by means of india-rubber rings, which allow them to expand and contract; therefore they are sure to be the safest of boilers.

"WM. THOMSON.

"Tweed Vineyard, June 14, 1877."

"I think yours the most perfect 'Heat Trap' yet invented. —DAVID THOMSON, *Drumlanrig Gardens.*"

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "OUR BOILERS AND HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.

WM. WRIGHT & CO.,
HOT-WATER ENGINEERS,
AIRDRIE, near GLASGOW, N.B.

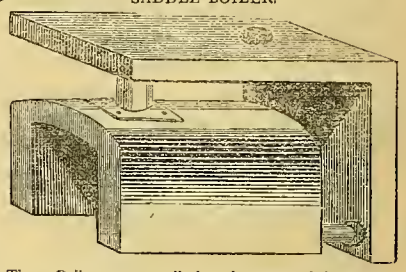
JOSEPH BRAMHAM, HORTICULTURAL and HOT-WATER ENGINEER, WIRE WORKER, WEAVER, &c., 104, Dale Street, and 44, Elizabeth Street, Liverpool.

J. B. strongly recommends the ALLERTON PRIORY BOILER as one of the most powerful for extensive work. He has fixed one capable of heating 10,000 feet of 4-inch piping. See *Gardeners' Chronicle*, p. 647. Also a WELDED WROUGHT IRON WATERWAY BACK for ordinary Saddle Boilers. These Backs can be fixed to any Boiler now in use, and are a great saving in fuel and labour. He is also prepared to fix any kind of Boiler made.

Manufacturer of the Registered LIVER FRONT for large Boilers, IRON and WIRE WORK in all branches. References from Noblemen and Gentlemen for work done.

Plans and Estimates given.

JONES'S PATENT "DOUBLE L"
SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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Can be obtained in all sizes and qualities, of
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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

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GREAT VARIETY.

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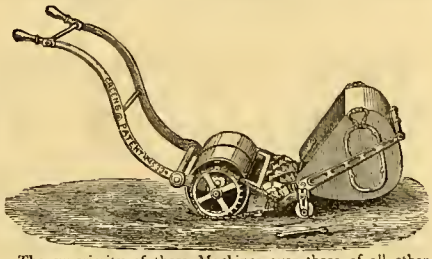

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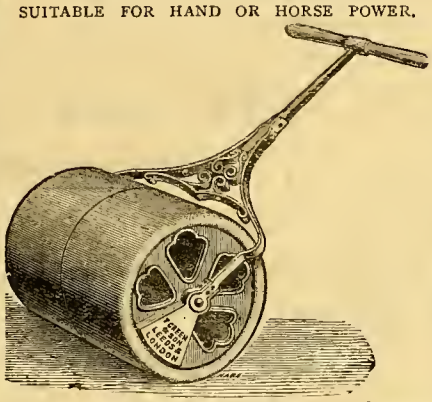

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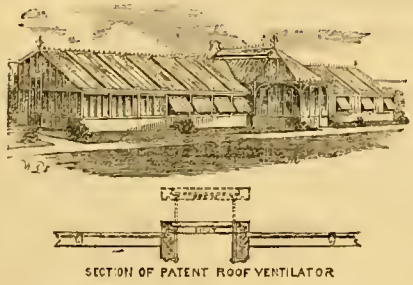

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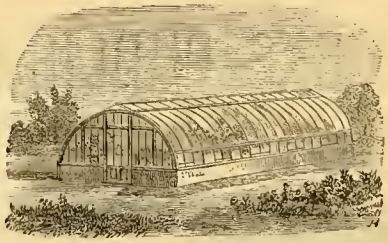

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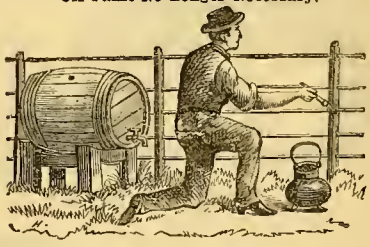

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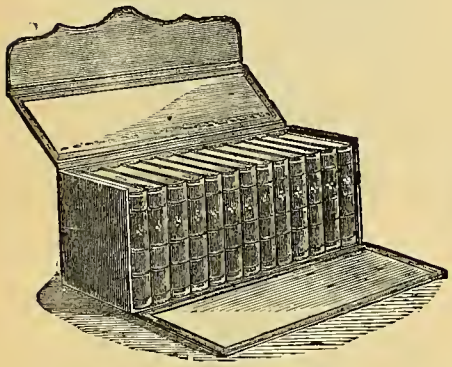

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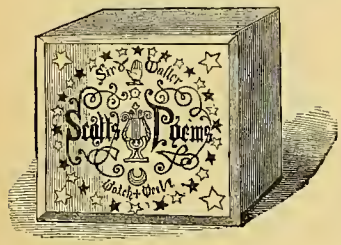

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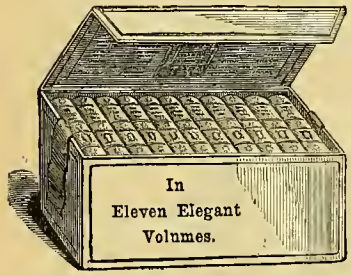

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To the Nobility, Gentry, and their Friends.

ENCOURAGED by the support hitherto accorded us, we beg to announce that we are now issuing a new and beautifully Illustrated Catalogue of Ornamental Conservatories, which we confidently hope will satisfy the advanced and somewhat fastidious taste of the present age. It is now upwards of fifty years since our business was first established, and in that time what improvements in the tastes and habits of the nation have taken place! Then four brick walls with holes in them at intervals, without any attempt at ornament, met the views of the wealthy Englishman with regard to the external appearance of his dwelling; now he builds for himself a mansion of imposing or picturesque elevation, enriched with costly marbles and adorned with choicest specimens of the sculptor's art. Then the common objects of household use were badly finished, often ill-adapted to their purpose and generally ugly; now perfection is the goal aimed at, and beauty and utility go hand in hand. Then Conservatories were simply regarded as places to shelter plants, and were with a few exceptions very commonplace structures; now the fact that appropriate architectural accessories greatly enhance the effect of flowers and plants is universally admitted, and the erection of elegant and costly buildings is the result. If it be true, as some one has said, that the character of an individual is best known by his pleasures, how great an elevation has the character of the nation undergone within that period, and how greatly has horticulture benefited by the change! Then the national pleasures were mostly inelegant and often coarse; now they are much more refined. Then Horticulture was regarded as a science very well for professional gardeners, and but rarely practised by amateurs; now it has become a popular and fashionable recreation. Then a Conservatory was the exception, and was usually a glasshouse of unornamental character at some distance from the mansion, seldom visited by the family; now a conservatory is considered necessary for every house of any pretensions, and is attached to, greatly adorns, nay, frequently forms the most costly part of it—the chosen rendezvous of the family and its guests, the cool and leafy retreat from the ball-room and the most enjoyable after-dinner lounge.

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SUPPLEMENT TO THE GARDENERS' CHRONICLE.

THE ROSE.

Science, poetry, and legendary lore have for centuries been engaged searching out, sentimentalising and imagining the history of the Rose. It would require a bulky volume to contain all the facts known regarding the Queen of Flowers, while fable is always busy inventing fresh wonders regarding this beautiful plant. The Rose is not the favourite of an age, but of all time—not the special growth of one little spot of earth, but dispersed over the known world. Familiar to the ancient Egyptians, mentioned in the Book of Wisdom, and sung by Anacreon in his *Odes*, the Rose has held its own against all flowers since the time when written chronicles were first known.

Among the poetical origins assigned to the Rose that of Anacreon is one of the best known—

"When Cytheræa, naked to the light,
Waked from her Neptunian birth
To fill with love the circling earth,
Then—then, in strange eventful hour,
The earth produced an infant flower,
By chance, upon a blooming Thorn.
Some nectar drops in ruby tide
Its sweetly Orient buds had dyed:
The gods beheld the brilliant birth,
And hail'd the Rose—the boon of earth:
They bade them bloom, the flowers divine
Of him who shed the teeming Vine,
And bade them on the spangled Thorn
Expose their bosoms to the morn."

Yet, although written in prose, that concerning Rhodanthe is scarcely less poetical, for, as the legend runs, "several princes were enamoured with Rhodanthe, a beautiful Queen of Corinth. She, however, rejecting all of them, in the blind fury of disdained love took refuge in a temple of Diana. Her subjects, who defended her, dazzled by her extraordinary beauty, made her assume the place of the statue of the goddess. Apollo, enraged by this indignity to his sister, changed Rhodanthe into the first Rose tree, her subjects into the thorns, and the three princes into butterflies, which still continue to flutter round their cherished love."

But it is not the Rose itself only which has engaged the attention of the poet. Roses are red as well as white, and to account for the former it is said that, originally white, the flower was stained with the blood of Venus, whose feet were lacerated by the thorns when she was endeavouring to rescue Adonis. Spencer alludes to the incident in the following couplet:—

"White as the native Rose, before the change
Which Venus' blood did in her leaves impress."

Then, too, we have to account not only for the colour but also the scent of this peerless flower—

"Dear to earth its smiling bloom,
Dear to heaven its rich perfume"

—a perfume which, we may imagine, was left by the breath of Venus, or imparted to it by some love-lorn maid. This idea is suggested in the following lines by Ben Jonson:—

"I sent thee late a rosy wreath,
Not so much honouring thee
As giving it a hope that there
It could not withered be.

"But thou thereon didst only breathe,
And sent'st it back to me;
Since when it grows and smells, I swear,
Not of itself, but thee."

But beauty, bloom, and scent do not exhaust the list of qualifications which have raised the Rose to the highest pinnacle of floral fame. Other flowers are, beyond doubt, beautiful, brilliant, and sweetly odorous; but what other has a variety which is enveloped in a delicate nest of moss? In this surely is the Rose unique; and to what strange accident is so charming an addition to the most charming of flowers due? Perhaps some other of Flora's favourites, envious of the beauty of the Rose, enveloped it in moss, in the hope of hiding its charms; but the moss, like modesty in a fair maid, only enhances the beauty it is meant to hide.

The likening of children to Rose-buds, and young girls to the opening flowers, has become so hackneyed in poetic usage that the simile is sufficient to render ridiculous otherwise good verse, but we know of only one instance where a youth is compared to a Rose. It occurs in *Hamlet*, where Ophelia terms the Prince of Denmark

"The expectancy and Rose of this fair state."

But this universal flower is not alone the ideal of poets and the beloved of gods and goddesses—it is entwined with the veritable history of nations, as exemplified in the chronicles of our country, a long epoch of national calamities and civil strife being known as the Wars of the Roses.

The Red Rose of Lancaster, which occupies so prominent a position in English history, was assumed as a badge by Count Egmond, son of Henry III., and founder of the House of Lancaster. About 1277 Guillaume Pentecote, Mayor of Provens, having been assassinated in a tumult, the King of France sent Count Egmond to avenge his death. After restoring order the King conferred on him the title of Comte de Champagne, and he then took for his device the Rose, which Thibaut, Comte de Brie and Champagne, had brought from the East, on his return from the Holy War. Consequently, the botanists tell messieurs the heralds and historians that the Rose of Lancaster was a damask (dark crimson) and not a red Rose. The white Rose was most probably assumed by the Yorkists in contradistinction, for the Plantagenet badge was a slip of Broom.

Plantagenet. "Since you are tongue-ty'd and so loth to speak,
In dumb significance proclaim your thoughts;
Let him that is a true-born gentleman,
And stands upon the honour of his birth,
If he suppose that I have pleaded truth
From off this Brier pluck a white Rose with me."

Then the Lancastrians plucked each a red Rose, and Warwick truly prophesied—

"This brawl to-day
Grown to this faction, in the Temple Garden,
Shall send, between the red Rose and the white,
A thousand souls to death and deadly night,"

—a quarrel which only ended when the red Rose and the white were twined together by the intermarriage of the houses of York and Lancaster, at which time, it is said, a florist made a fortune with the happy combination of the two colours by hybridising the plants—the result being a streaked Rose, which was called the York-and-Lancaster, or the Union. Within the last few years these Roses were still quite common in farmhouse and cottage gardens in Lancashire, though but few of the possessors of this relic of historical interest appeared to have any idea of the origin of the combined colours.

The Rose is still one of our national emblems, but other countries also hold it in high esteem. The gift of a golden Rose, consecrated by the Pope, and presented by him to a crowned head, is the greatest honour it is possible for a Roman Catholic to receive. Such a distinction has been twice conferred, we believe, in our time. One was sent to the ex-Queen of Spain, and one to the ex-Empress of the French. Strangely enough the Rose, also, was the device on the seal of the great Protestant reformer, Luther.

English nurserymen catalogue over 2000 varieties of the Rose, but among them, we imagine, would be found many with a distinction without a difference. The different varieties of Roses, however, are quite numerous enough to justify the boast of a successful cultivator that he had a different Rose for his buttonhole every day in the year, for the Rose is found in one or other of its varieties in almost every part of the known world. It blooms beneath the scorching sun of the tropics, and cheers the short-lived Arctic summer with its pale roseate flowers, appearing like an emanation of the red-tinted snow which has for so many months covered the ground. *J.*

ROSE CULTURE.

I am not going to write a lengthened essay on Rose culture, but just to give a few useful and practical suggestions. There are plenty of existing books on the Rose, representing every branch of culture, but who can write of seasons before they come? or who can write of evils, or suggest remedies to be of any practical use, before the former are apparent, espe-

cially if they are climatal? Well, Lancashire does not bear the best of names for a good climate, and I cannot take up the cudgels for her; she tries patience very often in that respect, and has maintained her reputation in 1877. The greatest difficulty we labour under here is "climate;" people can say what they will, talk for a century if they like, but those who do not succeed in growing grand Roses may sum up the reason in three words—"soil and climate," especially the latter; next comes situation.

If you want to be a good customer to nurserymen, and to buy Roses every year, purchase your stock from a good climate and plant them over as wide an area as you can when they reach home—plant on shrubbery banks and borders, where they will be half-starved or roasted during a hot or dry summer or worried with green-fly or other aphis to which the Rose is subject when grown in unfavourable situations and well neglected. If on the other hand you desire to succeed, purchase your Roses from some grower contiguous to home, or at all events from a worse climate than your own if possible; have your mind made up that they shall have your earliest and best attention, which means careful planting when the soil (which must be as good as can be obtained) is in a favourable state for the operation of planting to be performed. Try if possible to select a plot of ground well sheltered from cutting winds; and herein lies the greatest secret in Rose growing in this variable Lancashire climate of ours. I have seen cases where no expense has been spared in preparation fail, when others with half the expense have succeeded through selecting or rather being in possession of a favourable situation. Unnecessary shading or coddling is just as bad as the other extreme, but by having your Roses in a good situation, and all or nearly all together, how much easier it is to attend to their daily wants!

See what can be done with soft-soap, water, and a syringe, in the shape of cleanliness, and also note how dearly we pay—under new names—for what may be bought at 4*d.* per pound. These new baptismal processes are said to kill green-fly, red-spider, mildew, canker, and a whole host of other diseases—anything, in fact, but the Vine Phylloxera; and they have also been known to do irreparable damage in all sorts of fruit-houses, for the higher the price you pay the more powerful it becomes in its effect. Now as this short article is especially intended for non-professional growers, let me strongly recommend soft soap at 4*d.* per pound, sold under its own name, as the most simple and most effective recipe that can be used at the rate of from 4 to 6 oz. to the gallon, according to the hardiness or otherwise of the Rose leaves and shoots at the time the liquid is applied by means of a syringe or fine rose.

If the collection is kept well together, the same advantages in feeding as in cleanliness will appear evident enough to the intending cultivator, should the soil happen—as is often the case—not to be a proper mixture capable of assisting Nature in producing Roses of a modern type. All these little attentions are sure to be neglected if Roses are scattered here and there and everywhere, and yet we wonder how it is they are not up to a certain standard of perfection. We now come to the question of praning in spring. How and when shall we do it? For my own part I must confess to being often somewhat puzzled. I have decided against early praning, but not so "thinning." We thin out all the unnecessary and weakly growths early, so that at pruning time we may have only to shorten according to judgment or circumstances the shoots that are left. Suppose any one has, like ourselves, a small spare plantation of Roses that can be pegged down, it will insure an early supply of Roses—that is, in case standards and half-standards suffer to an injurious extent through frosty winds experienced during the spring months. I recommend "layering" to facilitate the work of protection, which cannot be so readily given to the standard section, but even those may be protected in a great measure by having recourse to dried Asparagus litter, which is a wonderful protection, and a clean one, and offers but little obstruction to air and light. If those for whom these few hints are penned do not adopt my view of the case, my object will be gained all the same if those who reject it are on the alert next spring, and try what remedy they think best or have at command in order to prevent "Jack Frost" from slaying the Rose harvest. *W. Hinds, Otterspool.*

OUR SELECTION OF ROSES.

The following list includes seventy-two of the most useful "all round Roses" in cultivation at the present time. To further assist Rose growers of smaller means we have marked a selection of forty-eight of the above with an asterisk *, thirty-six with †, twenty-four with ‡, and twelve with ‖.

Adolphe Brongniart
Alfred Colomb *†
Annie Laxton *†‡
Antoine Ducher
Beauty of Waltham *
Boule de Neige
Camille Bernardin *††
Captain Christy *†
Céline Forestier
Centifolia rosea
Charles Lefebvre *††
Charles Rouillard
Comtesse de Chabrillant
Comtesse d'Oxford *†
Devoniensis *†‡‖
Dr. Andry *††
Duc de Rohan
Duke of Connaught
Duke of Edinburgh *†‡‖
Duchesse de Caylus
Duchesse de Vallambrosa *††‖
Dupuy Jamin *†
Edward Morren *†
Elie Morel *
Etienne Levet *††
Exposition de Brie *†
Felix Genero
Francois Michelon *††‖
Général Jacqueminot *
Gloire de Dijon *
Horace Vernet *††
Hyppolite Jamin
John Hopper *†
Jules Margottin *
La Fontaine
La France *†‡‖
La Rosière *††
Leopold Hausberg
Louise Peyronney
Louise Van Houtte *††
Madame C. Wood *†
Madame Clemence Joigneaux *
Madame la Baronne de Rothschild *††
Madame Lacharme *†‡‖
Madame Thérèse Levet *††‖
Madame Eugènie Verdier *†‡
Madame Victor Verdier *†‡‖
Madame Willermoz *
Maréchal Niel *†‡‖
Maréchal Vaillant
Marie Rady
Marguèrite de St. Amand *
Marquise de Castellane *††‖
Marie Baumann *†‡‖
Maurice Bernardin
Miss Hassard *†
Mons. E. V. Teas
Mons. Fournier
Mons. Noman *†
Niphetos *
Oxonian *
Paul Verdier
Perle des Jardins
Pierre Notting
Prince Camille de Rohan *
Princess Beatrice *†
Royal Standard *†‡
Sénateur Vaisse *†
Sir Garnet Wolseley
Souvenir d'un Ami *
Victor Verdier *†‡
Xavier Olibo *†‡‖

Tea Roses.

Belle Lyonnaise
Cheshunt Hybrid
Devoniensis
Gloire de Bordeaux
Gloire de Dijon
Duchess of Edinburgh (Veitch)
Madame Falcot
Madame Willermoz
Marie Van Houtte
Niphetos
Perle de Lyon
Perle des Jardins

Roses suitable for Hedges.

Gloire de Dijon
Marguerite de St. Amand
Berthe Baron
Madame Clemence Joigneaux
Anna Alexieff
Dupuy Jamain
Mademoiselle Annie Wood
Duc de Montpensier
Victor Verdier
Duc de Wellington
Madame Hardy
Blairii No. 2 } Good corner
Fulgens } plants.
Prince Camille de Rohan

Climbing Roses.

Gloire de Dijon
Maréchal Niel
Cheshunt Hybrid
Climbing Victor Verdier
Climbing Devoniensis
Princess Louise

ENGLISH ROSES.

It is quite impossible for us to give an adequate idea of the vast numbers of Roses grown by English nurserymen. Every nurseryman, more or less, is a Rose grower, and the quantity sold is enormous. Acres upon acres are devoted to their culture throughout the country, while the amount of glass devoted to pot Roses, or to purposes of propagation, is also very large. One of the sights of that well ordered nursery, Smith's of Worcester, is a long range entirely devoted to the propagation of Tea Roses grafted on the Manetti.

The names of those who make Rose exhibiting and Rose growing a speciality, are familiar in our mouths as household words. The reader has but to turn to our columns to-day to find that the rosarians of the present are no unworthy successors of those who have gone before.

While France may fairly claim *la gloire* of having been the nursing-mother of by far the largest number of notable Roses, yet there are signs that England is no longer going to be left behind in the race, and we may safely venture to back our Pauls, our Turners, Cranstons, and others for scientific precision in Rose raising, as well as for the results obtained. The French are a more logical and systematic nation than we in most things, but we very much doubt if the English raisers have not manifested a great deal more science in their procedure in this particular matter than the French. Amid the numbers of Rose books also, Mr. William Paul's *Rose Garden* stands out, not merely as a practical guide to culture, but as a model of scientific reasoning and observation applied to practice. Mr. Rivers' *Rose Amateur's Guide* is also a veritable treasure-house of lore and original observations connected with the Rose. Of books devoted to practical cultivation chiefly there is a large selection, and while they vary considerably in scope and treatment there is not one but is good. We cite, lastly, a few of the best known English Roses, with the name of the firms by whom they were sent out, and, in some instances, raised. Much more credit is due to the successful raiser than to the merchant who merely purchases a good Rose which he procures in the ordinary way of business, and then sends out to the public with his name attached thereto.

W. Paul & Son, Waltham.
Black Prince
Cœur de Lion
Diana
Dr. Lindley
Elizabeth Vigneron
Lady Suffield
Princess Beatrice
Princess Christian
Princess of Wales
Red Rover
Magna Charta
Lord Macaulay
Queen of Waltham
Star of Waltham
Beauty of Waltham
Duke of Edinburgh
Lord Clyde
Queen Eleanor
Peach Blossom, &c.

Laxton.
Marchioness of Exeter
Empress of India
Annie Laxton
Emily Laxton
Prince of Wales
Princess Louise, &c.

Martin, Dundee.
Ayrshire

Brown.
Brown's Superb Blush
Blairii Nos. 1 and 2

Grimwood.
Unique Provence (1777)

Lee.
Crimson Moss

Sweet.
Mossy Rose de Meaux

Shailer.
Old White Moss

Williams, Pitmaston.
Double Austrian Briar

Rivers.
Rivers' George the Fourth
Ayrshire Queen
Rivers' Musk, &c.

Paul & Son, Cheshunt.
Princess Mary of Cambridge
Duke of Connaught
Dr. Hooker
Reynolds Hole
Sultan of Zanzibar
The Shah
Cheshunt Hybrid
Empress of India
Climbing Victor Verdier
W. W. Saunders, &c.

Turner.
John Stuart Mill
Miss Hassard
Mrs. Baker
Oxonian
Rev. J. B. Camm
Royal Standard
Black Diamond
Miss Poole
Miss Ingram, &c.

Cranston.
Climbing Jules Margottin
Crimson Bedder
Sir Garnet Wolseley

Foster.
Climbing Devoniensis, sent out by Pince & Co.

Noble.
Queen of Bedders

Bell & Son.
Von Moltke

Keynes.
Letty Coles, a sport

Brown, Perth.
Double Scotch

Ward, Ipswich.
John Hopper

WHAT TO LOOK FOR AT THE ROSE SHOWS.

Amongst the numerous visitors to the leading Rose shows it is certain that very few possess that knowledge which enables them to form a correct notion of the various specimens before them, and to make profitable selections for their future use. Dazzled by the wealth of beauty before their eyes, they mark down from the tallies the names of such varieties as, from the colour, size (for sensationalism prevails even in Rose showing), or some other quality of their flowers, strike their fancy, utterly ignorant of their true character under culture. What wonder that such a crude and unwise proceeding should so often be followed by disappointment. The rash and inexperienced therefore should be cautioned that there is no test of the merits of Roses so fallacious as the "stands." It would be as wise to purchase a horse without warranty or trial as to order a Rose merely because it forms one amongst a prize collection.

For the assistance of the inexperienced it will be well therefore at this period to make a few remarks upon some Roses which are less known than certain favourites whose reputations are well established, and with the characters of which most rosarians are well acquainted. These varieties for the most part are to be found amongst the issues of the last five or six years, the novelties for the current season being few in number and merely upon trial. They are necessarily the produce of young plants grafted during the winter and spring, or of the few imported "stools" after they have been severely cut back to furnish scions.

Tea Roses.

The "Teas" will be noticed first, as the class most generally known, and of which the fewest are brought out. A few acquisitions have been made in these, of which the seedlings from Gloire de Dijon are the best. Madame Berard is especially fine, vigorous and hardy, more rosy salmon than its parent. Next, Belle Lyonnaise, more yellow. Madame Lévet, Madame Trifle, are likewise from Gloire de Dijon, not so fine as those previously named, but sufficiently hardy to be grown out-of-doors. Catherine Mermet is one of the finest of the class, flesh-rose, vigorous, and fairly hardy. Other Teas for special notice are Marie Guillot, Cécile Berthod, Marie Van Houtte, Perle des Jardins, a fine

yellow; Madame Margottin and Madame Jules Margottin, Souvenir de Paul Néron, Jean Pernet, yellow; Mons. Furtado, clear sulphur-yellow. Old Niphetos ought to be marked by those without it. These are all good and safe either for culture under glass or out-of-doors where Tea Roses may be grown at all.

Hybrid Perpetuals.

Next in order let us refer to some H.P.'s:—Marie Cointet, which burst upon the Rose world like a surprise at the Crystal Palace some two or three years ago, is a striking instance of the necessity of caution in buying Roses from show blooms only; some nurserymen did not even have it in their lists, yet on that occasion it was really beautiful—it has not been seen in the same form again. It is a bad grower, and equally bad or propagation. So is Lacharme's Captain Christy, about which so much talk was made. For one bud that takes a dozen probably will fail. Besides, it is not equal to that admirable doer, Mdlle. Eugénie Verdier. Marie Finger is something in the line. The beautiful tinted white Marquise de Mortemart is a delicate grower. Take the following as distinct and good, and suitable for amateurs:—Auguste Rigotard, brilliant red; Baron Bonstetten, very dark; Comte Raimbaud, dark carmine, a fine colour; Comtesse Serenyi, light; Comtesse Vally de Serenyi, amaranth-carmine; La Rosière, dark—fine dark colours are scarce; Hippolyte Jamain, in the line of Comtesse d'Oxford; Antoine Mouton, after Paul Néron; Mons. Noman, fine, but uncertain. A similar remark applies to François Michelon, which upon occasion also took rosarians by storm. Duchesse de Vallambrosa, superior to Captain Christy; Mons. E. Y. Teas, a fine bright red; François Courtin, purplish, distinct in colour; Mr. Wm. Paul's new beauties, Queen and Star of Waltham, Magna Charta, and Queen Eleanor, La Souveraine, large, after Madame Clemence Joigneaux; Madame Louis Lévêque, Reine du Midi, François Fontaine, St. George (Wm. Paul), one of the finest dark Roses; Triomphe de France, said to have been specially so named in France. Subject to qualifying remarks, these are noteworthy Roses. It must be understood, however, they are not pointed out to the prejudice of such well-known favourites as Alfred Colomb, Marie Rady, Charles Lefebvre, Marquise de Castellane, and the like, which are certain to be in fine order whenever they appear.

One of the more modern classes in the schedules is that for the best twelve of any single variety. In many respects this is the most important section in any exhibition, inasmuch as it not only shows the relative repute in which certain kinds are held by professional growers, but it indicates the blooming power, so to speak, of special sorts, as it is much more difficult to cut twelve flowers sufficiently perfect for show purposes at a given date than thrice the number of single blooms, even in the largest collections. The kinds appearing, therefore, in the class of twelve singles are tolerably safe for adoption.

Roses of the last Generation.

The perfection to which the Rose as a flower has now attained is of comparatively recent date. Fifty years ago, before the discoveries of MM. Laffay, Vibert and Desprez, &c., Hybrid Perpetuals and the magnificent specimens of Tea-scented China were unknown. Out of their numerous productions only four of these pioneers of progress now remain, and these are still sometimes seen on the stands, though scarcely considered to rank amongst the first flight. They are Duchess of Sutherland, William Jesse, rarely seen; Baronne Prévost, and La Reine—seedlings from the two last frequently now being sent out. The rapidity with which new Roses, like meteors, appear and disappear may be judged of by noting the best of the decade following those named above. Foremost in order of time and merit stands the once famous Géant des Batailles (Guillot père), then deemed a marvel of colour, but now relegated, not altogether undeservedly, to the realms of oblivion. Others were Mrs. Rivers, Auguste Mie, Caroline de Sansalles, Comte de Nanteuil, William Griffiths. These were all beautiful Roses, but lacking in some quality to hold their own against present rivals, and consequently are gradually falling out of sight. In 1853 the justly celebrated Gloire de Dijon first appeared; a variety of such super-excellence and rare utility that it stands quite alone—La France, amongst very recent introductions, being its only rival in versatility, though in a different line.

The year 1855 forms one of the epochs in Rose progress, inasmuch as we had Jules Margottin (Margottin père), and Général Jacqueminot (Rousseles), two varieties that have left their impress in separate lines, and which still perpetuate it year by year, in the guise of seedlings surpassing even their parents. Duchess of Norfolk, Lord Raglan (from Géant des Batailles), and like other progeny of that variety rarely seen; Duchess of Orleans, La Ville de St. Denis, Gloire de Vitry, Madame Domage, Madame Vidot, and Madame or Duchesse de Cambacérès, were also fine Roses, some of which are yet seen upon the tables, and are yet used for producing seed. Prince Leon, of the same date, once considered as the most symmetrical of Roses, has virtually gone out of cultivation, on account of its unsatis-

Fig. 1.—A trained tree rose.

factory habit, the difficulty of successfully propagating it. Madame Knorr, most lovely in the bud, belongs also to this period, also Louise Peyronney. Then, again, came Souvenir de la Reine d'Angleterre and Triomphe de l'Exposition, two extra large flowers, though something of the roughest, and both well-known seed-bearers. In 1859, Anna de Diesbach, the first striking discovery of Lacharme, who has since done so much towards enriching the roseries of the world by some of their finest ornaments, came out, the model of symmetrical close flowers; Comtesse Chabrilland (Marest), also Anna Alexieff, scarcely now a show flower, but excellent in pots or in the garden. Guillot père in 1860 issued Sénateur Vaisse, the finest of the crimson-scarlet class, of which there are so many high-class representatives, since thrown somewhat into the shade by Lacharme's Alfred Colomb. 1866: Louis XIV., an exquisite colour, a dark arterial blood, came in the same list. This Rose would be invaluable were it a thrifty grower, but no stock suits it, and it has consequently declined in demand. The Duke of Edinburgh is the only Rose that surpasses it in richness and brilliancy of tone. Continuing the same year's list, Madame Charles Crapelet, a fine Rose, but surpassed by Mr. William Paul's Beauty of Waltham; Duc de Cazes, an excellent Rose; Madame Furtado, a model of the Cabbage Rose type, but unfortunately a bad doer. About the same time likewise, these charming perpetual Bourbons, Baron Gonella, Catherine Guillot, and Comtesse Barbantanne, were worthy additions to our Rose grounds; more distinguished for symmetry than size, they are seldom now seen in the competition-boxes at our shows. 1862 was the rosarian's *annus mirabilis*—the year of years. Never before nor since were so many gems presented for our admiration, but we must reserve the notice their transcendent merit deserves for a future paper. *W. D. Prior*, 25, *Blurton Road, Clapton, E.*

THE TRUE HISTORY OF A ROSE.

A botanical description even of the loveliest flower is not very lively if regarded as a literary production, nor indeed is the florist's enumeration of the points of the fairest Rose that ever bloomed much more entertaining. Personal interest is lacking to animate the whole. Even the facial characteristics of Mr. William Sykes would be uninteresting to the readers of the Penny Dreadful, if they were not accompanied by some record of his deeds and sayings. It so happens that the history of a well-known Rose is associated with some gentlemen whose names might have figured appropriately in the *Police Gazette*. But lest—on the principle that a man is known by his companions—an odium should be thrown on a young lady of unsullied purity and untarnished reputation, I proceed to relate the following veracious history. By this it will be seen that if the lady should be brought into court (as happily she is not likely to be), she will assuredly leave it again without a stain on her character.

Some three or four years ago, from information received, I was induced to go and see a Rose whose characteristics were described to me as something out of the common way. The Rose had bloomed three years in succession, always preserving its special features. I went, I saw, I won my prize, at the expenditure of a large sum of money. My acquisition had four "eyes." To make sure of them, I destroyed the rest of the plant. The sport—for sport it was—was evidently a Tea Rose of unusual merit. On my homeward journey I wrapped my treasure in a piece of newspaper, and placed it by my side on the seat of the railway carriage, together with another travelling companion, my umbrella. Towards the end of the journey, however, I was called into another compartment to speak to a friend, and with him I rode to the end of the journey, some eight miles, leaving my packages behind me. What was my dismay on returning to the carriage I had quitted *en route* to find neither Rose nor umbrella. Here was a catastrophe! My money sunk, my anticipations blighted, my umbrella vanished, my beautiful Rose annihilated. What could be done?

I remembered that I had left two men of very suspicious appearance in the carriage, but I had no idea that in one stage of about eight miles only I could have possibly lost these things. It struck me, however, all at once that these men had my Rose and my umbrella, too. The station at which I alighted was contiguous to another on a different line of railway, so I at once hastened to that other, but, alas! I could see no trace of the two men. On proceeding further, however, up in one corner of the station there was the newspaper, with the Rose in it safe and sound. The recovery of the Rose emboldened me, and gave me hopes for my umbrella. I was determined, if possible, to regain that also. I waited until the train was ready to start, when, as I expected, my former travelling companions appeared, one of them carrying my umbrella. I speedily regained that also, and my despair was converted into joy.

And now let me tell you the name of the Rose—it was Letty Coles. Never was a fine Rose so nearly lost to the lovers of Roses as this flower. I consider it myself wonderful, for had that paper parcel been thrown away the Rose would have perished, and Letty Coles would have been—nowhere. From those four eyes, however, the Rose has been propagated and distributed. It was a sport from Madame Willermoz, and fine flowers will, I trust, be exhibited this year. *John Keynes, Salisbury.*

OLD ROSES.

"Without at all denying the great beauty of many of the Hybrid Roses," writes Mr. Ellacombe, "I am sure that growers of hardy flowering shrubs do not know what they lose in so entirely ignoring the Roses as they do." We entirely agree with our correspondent, and think that one function of the Rose Society should be to extend the knowledge and promote the cultivation of these lovely flowers. As a means to this end we asked Mr. Ellacombe to be kind enough to select from among the multitude grown by him those species most remarkable or interesting as garden plants. In reply he has sent us the following list, but in view of the confusion of the nomenclature, he simply gives the names as he finds them, without accepting responsibility for their correctness:—

Cabbage Rose.—Unsurpassed for scent, the "Provencal Rose" of Hamlet.

Moss Rose.

Damask.

Scotch.—Forms most beautiful bushes, which are loaded with flowers in their season.

Banksia, white and yellow.—Is the single form in cultivation?

Bracteata, or Macartney.—A grand single Rose with bright foliage. The double form is very inferior, as it wants the golden centre.

Villosa.—The old Apple Rose. Very effective as a lawn shrub both in flower and fruit.

Green Rose, R. verte.—More curious than pretty.

Microphylla.—A charming Rose when well grown, and very distinct; very double, beautiful foliage, unlike any other plant, and with a curious prickly calyx.

Alba.—One of the oldest English garden Roses, and most excellent, but seldom seen out of cottage gardens; pure white, double, but not very fully; probably a variety of R. arvensis, and almost beating the white Rose of York.

Rubrifolia.—Curious for the colour of the stems and leaves, and handsome both in flower and fruit; single.

Moschata.—The old Musk; a long rambling Rose, but very sweet, with clusters of pure white flowers.

York and Lancaster.—Very distinct.

Alpina.—The Rose without a thorn.

Anemonæflora.—Fortune's name for a very distinct form of R. indica, a small double cluster Rose.

Multiflora.—The Bramble-flowered Rose. A pretty Rose, very like the double Bramble (see p. x.).

De Meaux.—An excellent old Rose.

R. rubiginosa.—Double and single Sweet Briar.

Austrian Brier.—Distinguished by its different colour on the outside and inside of the petals.

Fairy Rose.—Very dwarf, so that edgings may well be made of it. The new white one, Little Pet, is especially pretty.

Monthly China.—Too much neglected. I know of no flowering shrub that can show such a succession of flowers as this. Does any one?

R. cinnamomea.—A rambling bush, but the flowers very bright, and the long fruit very handsome.

Has any one got R. Hardii, simplicifolia, sulphurea single, and myriacantha?

THE ROSE IN FRANCE.

The cultivation of Roses in the vicinity of Paris is a very important affair, and gives employment to several hundreds of people.

First of all, the Roses are grown as ornamental shrubs for sale. They are mostly grafted on the Brier, either as *tiges* (standards), *demi-tiges*, or dwarfs. The Manetti stock is very seldom used here, although the case stands otherwise at Angers; the multiflora Rose, La Grifferaye, is sometimes, but seldom, used as a stock for standard Roses. About 250 acres of ground may be said to be devoted to the growth of grafted Roses around Paris. As the plants are left for two seasons on the ground, being cleared off and sold only at the end of the second year, the produce of half that extent only is put in the trade every year.

On an average, not less than 24,000 plants are put on an acre, but as nearly one-half fail to grow well, or are not successfully budded, the number of budded Roses sold from an acre seldom exceeds 12,000, giving for the total number reared in one year in the district around Paris 1,500,000, which estimate, if not quite correct, is rather under than above the mark. Of these about 300,000 are standards and 1,200,000 dwarfs.

To this must be added the *rosiers francs de pied*—Roses on their own roots—propagated by cuttings or layers. The Bengal and Provence Roses, together with several old kinds, are mostly propagated in this way, and if these are taken into account, the total number of Roses raised here in one year must be put at 2,000,000 at the least.

Roses are grown, moreover, for cut flowers: this is altogether a different matter, of which more hereafter. The great places for Rose culture are—Bourg la Reine, Ivry, Gentilly, Montmorency, Bougival.

A new centre of Rose culture has been established for some years past in a rural district somewhat farther from Paris—viz, in the neighbourhood of Brie Comte Robert, and especially at Grisy-Suisnes, Villecremes, Mandres, Santheny, and Coubert. The hardiest kinds are chiefly grown there, and very large numbers of plants are exported annually.

The leading Parisian firms in the Rose trade are well-known in England, and it is scarcely necessary to mention to your readers the names of Margottin, Eugène and Charles Verdier, Levêque et Fils, Hipp. Jamain, Ferd. Jamin, Scipion Cochet, Duval, Granger, Gautereau, &c. These men, who propagate the best varieties, no matter where they come from, are also the raisers of some of the best new Roses. Margottin the elder is especially considered as a successful raiser, as many of his new plants have become popular in the garden and the market. This is the case in particular with Jules and Charles Margottin, Rev. H. H. D'Ombrain, Triomphe de l'Exposition, &c.

Eugène Verdier has raised Duchesse de Morny, Prince Camille de Rohan, May Turner, Annie Wood, Madame Victor Verdier.

We are indebted to Charles Verdier for Madame Furtado, Vulcan, and the Bengal Rose, Madame Bréon. Scipion Cochet is the raiser of the very popular Souvenir de la Reine d'Angleterre. Gautreau, Granger, Lédéchaux, Fontaine, have raised also several good varieties. One of the most successful of raisers of a former generation was Lafay, who now lives at Cannes.

Novelties, however, find their way only very slowly to the cut flower market and to the gardens of the million. The kinds most grown here are most of them of old standing. The following are met with everywhere:—

The old Centfeuilles	Madame Bolle
Rose du Roi	Jules Margottin
Rose de la Reine	Madame Victor Verdier
Souvenir de la Malmaison	Triomphe de l'Exposition
Gloire de Dijon	Aimée Vibert
Souvenir de la Reine d'Angleterre	Céline Forestier
Baronne Prévost	Boule de Neige
	Général Jacqueminot

Of newer kinds the following are becoming general favourites and plentiful in every garden:—Maréchal Niel, Paul Néron, Auguste Mie, Baronne de Rothschild, Engène Appert, Captain Christy, Duchesse de Sutherland, Thérèse Levet, and Edward Morren, Many gardeners who never rear Roses sell them in pots at the flower markets, either forced in winter or as cut blooms in spring and summer. They buy the plants from the growers and prepare them for blooming under glass or in the open air. Nearly 300,000 are disposed of annually in this way. The sorts most used are:—Jules Margottin, Madame Boll, Baronne Prévost, Souvenir de la Reine d'Angleterre, Rose Centfeuilles, Rose du Roi, Anna de Diesbach, and Paul Néron. The dwarf, small flowered varieties of Bengal, as Miss Lawrence, are very extensively grown and sold in pots.

Another and a very important branch of trade is the cultivation of Roses for cut flowers. The headquarters of this branch of the trade are about Belle-

ville, Bagnolet, Montreuil and Charonne. Not less than 600,000 to 700,000 plants are devoted to the production of the flowers; they are generally dwarf plants on their own roots, and belong only to a few varieties which bloom very freely, as the old Moss Rose, Rose Centfeuilles, Pompon, Jules Margottin, Baronne Prévost, Rose de la Reine, Duchesse de Cambacérès. Many of the varieties mentioned as grown to be sold in pots in winter yield cut flowers for the market. To these must be added Madame Falcot and Maréchal Niel, grown for buds, which sell at a high price for bouquets in winter. Scarcely a day passes but fresh, home-grown Roses may be procured at the flower market, or at the "Halles," besides the Roses sent from Nice or Florence. Even the petals of Roses are in great demand here, especially those of the Provence Roses; they are very strongly scented, and are sold, when fresh, to perfumers, and when dried to druggists. *Henry Vilmorin.*

—— The great centre of Rose culture in France is situated in the vicinity of Lyons. The following names among the leading growers will be familiar to many of our amateurs: —Bernaise, Chartron (successor to Dumaizin), Dachet, Denis, V. Ducher, Guillot fils, Gonod, F. Lacharme, Jean Lapresle, Labruyère, C. Levet, Liabaud, Rambaud, Pernet, Schwartz.

The quantity sent out yearly from Lyons varies from 700,000 to 1,000,000 of plants; the prices of the old sorts vary from 50 c. to 1.50 c. Nearly all the Roses are budded on roots of wild Brier (seedlings), and about 20,000 on their own roots, and the same quantity on standards.

F. Lacharme has raised many of the best Roses now in the collections, principally in Perpetual Hybrids; Guillot fils has also raised many, but principally Teas and Noisettes; Madame V. Ducher and A. Levet are favourably known as raisers, but principally of Tea Roses; Liabaud has also obtained some very good hybrids; Pernet and Gonod have sent out some good Roses. The others are principally propagators of the old sorts. *Jean Sisley.*

—— Some idea of the extent of Rose culture in France may be obtained from the circumstance communicated to us by M. Camille Bernardin, that in the thirteen communes which surround Brie Comte-Robert, the birthplace of "Noisette," more than 2,500,000 Roses are annually cultivated, the number of growers being about a hundred. The Briers are procured from Burgundy, and planted 33 centimetres apart in three rows, and in beds 66 centimetres apart. The number of varieties grown has been estimated at from 700 to 800, though that is probably an exaggeration, as naturally it is the most robust and the greatest favourites which are most extensively cultivated. The origin of Rose culture in the vicinity of Brie dates back to 1799, the best known raisers of new varieties being MM. Cochet, Granger, and Rousseaux. We cannot stay to enumerate the varieties raised in this locality, but among them we may cite Edward Morren, Cléménce Raoux, Charles Lee, and Comtesse de Jaucourt.

THE PROPERTIES OF A GOOD ROSE.

The first and most essential point to constitute a good Rose is that the variety be hardy and of a healthy and moderately robust habit, combining ample foliage; for, be its blooms ever so good, if it refuses to grow under proper treatment it is almost worthless. Next to these are fine form, fulness, large size, good substance, fragrance, freedom to bloom, and decided and distinct colour. The form of the flower, whether it be cupped, globular, or expanded, should be symmetrical; the petals even and regularly placed, smooth, and free from all indentures, full, but not crowded, the outer row being broad and closely folded, to enable the flower to stand firm for several days. They should be thick and leathery in texture, and not (as we too frequently see them) thin and flimsy, and either faded or fallen to pieces after an hour's sun. The colour, whatever it be, should be decided and lasting, and not changing to a dull, cloudy, or objectionable shade. The flower-stem should be stout, to hold the blooms partly erect, so that it may be seen without the necessity of applying the hand. Every Rose should be fragrant, and the more highly so the better. Whether summer blooming only or perpetual, it should be free to flower, in the former case yielding abundance of blooms throughout June and July, and in the latter from June till November, allowing for an occasional rest between each period of flowering. A perpetual Rose, to justify its name, should always produce blooms at the end of each shoot. As examples of finely formed and perfect Roses the following may be instanced:—Cupped: Madame Vidot, Comtesse Cécile de Chabrillant. Expanded: Madame Charles Wood, Souvenir de la Malmaison. Globular: Reine du Midi, La Reine. *From "Cultural Directions for the Rose," by John Cranston.*

—— A Show Rose should possess—1, beauty of form, petals abundant and of good substance, regularly and gracefully disposed within a circular symmetrical outline; 2, beauty of colour—brilliancy, purity, harmony, endurance; and, 3, must be exhibited in the most perfect phase of its beauty, and in the fullest development to which skill and care can bring it. *"A Book about Roses," by Canon Hole.*

THE FAIRY ROSE.

One of the most pleasing flowers of early spring that comes into Covent Garden market, and meets with a ready sale, is the Lawranceana or Fairy Rose

Fig. 2.—The Fairy Rose, sketched in Covent Garden.

(a variety of Rosa indica), the first of which was introduced from China in 1810. These Fairy Roses have long been popular for pot culture and for edgings to Rose beds, growing no higher than about a foot, and when well grown covered with their tiny but exceedingly pretty blossoms. The first of the Fairy Roses generally make their appearance in Covent Garden as early as February, and the supply lasts up to May, or later. There are not many of the market growers who prepare any large quantity of Fairy Roses, and perhaps the Messrs. Hayes, of Edmonton, at the present time grow the greatest number of all. The plants in the proverbial 48-pots are exceedingly well-grown, as shown in the accompanying illustration (fig. 2), and for domestic decoration in their season there are no more interesting or more pleasing objects of care.

A GOSSIP ON ROSES.

"That sweet lovely Rose."—*Hamlet.*

About the time when Dr. Lindley published his monograph of Roses, M. Villaresi at Monza (a royal gardener) startled the horticultural world by his hundred seedling varieties from Rosa indica. Then followed in Britain a batch of sportive seedlings from the Scotch Rose. Here then was the beginning of all subsequent improvements. The latter history belongs to us, but does any Rose grower remember the period previous to the publication of Lindley's work? Before that is "improvement's innovation"; when the ill-developed Four Seasons was sold for double the price of our newest Rose of to-day—when Semperflorens was an inmate of a greenhouse, and the Cabbage, the Tuscany, Maiden's Blush, and the Moss Rose were not absent from any single garden in the land; when Lee and Kennedy introduced such new French kinds as Couleur de Feu and Carmine Brillante; and when in carriages and on horseback people flocked to the popular Vineyard Nursery to see them in bloom.

Truly, Roses were loved singlemindedly in those days. Basket-beds were formed with them upon lawns; in many instances strong-growing kinds were grown and twisted over so as to form the handle, and in this position the double cupped rose-coloured Drummond's Thornless, of Rosa alpina origin, formed a smooth, rounded, and twisted handle. The dwarf and variously-coloured Scotch Roses were judiciously planted below, and when in bloom during the fifth month may well have given rise to the exclamation—

"O Rose of May."—*Hamlet.*

Roseries, in huge beds of a horse-shose pattern, but interlaced so often that, to get to the centre, a labyrinth or maze had to be traversed, consisted of species, or the first "flushed" improvements of Rosa gallica, R. alba, R. indica, R. centifolia, R. damascena, &c.; whilst for smaller beds the lovely Rose de Meaux was all in all.

Then, as now, the most valued bouquet for a princess or a peasant's daughter would consist of such older kinds as these and others—buds and blooms culled from the violet-scented white-flowered Banksian, or half-opened Moss Roses, which possess a singular rosebud odour, unique in themselves, for even in matter of fragrance,

"Masked are Roses in their bud."
Love's Labour Lost.

What should we say were our gardens suddenly restored to their former state, and we were again familiar with beds of the true old double Provence, the origin of which is doubtful? The normal kind has at times been confounded with the Damask, though its name is derived, no doubt, from that district in France from whence so many were brought for the Paris markets. This smaller double or normal form grows wild on the southern banks of the Caucasus, by no means an exception, as Italy boasts many double forms growing in a wild or half wild state. The White Provence, Crested Moss, &c., are intimate relations of it. This is the Cabbage Rose, bearing fragrance as of old Cabbages! And the old Moss Rose is but a sport from it, for it is notorious that the Messrs. Lee once possessed a plant bearing the original and the sport both on one stem, and subsequently many similar cases have been noted.

Where are the Striped Moss and Laffay's Perpetual, striped and very beautiful, with red and rose-coloured bars? We should not, with our more intimate knowledge, mistake the older, smaller "Provins" for the larger ones sometimes seen, and which was once known as the larger or "greater Holland Rose"—the showy large flower which, no doubt, Shakespeare referred to when he wrote—

"Two Provencal Roses on my razed shoes."
Hamlet.

When shall we meet again with beds of York and Lancaster, having red and white coloured blooms; or with such old favourites as the Village Maid, prettily striped, and called variously Provins panachée nouveau, Belle Rubanée, &c.? Another lovely form, named Picotee, possessing dark purple velvet petals, striped with white, has disappeared, as have also Tricolor, or Belle Alliance and Rose Marguerite, &c. All these were of French origin.

Every one knows the Rosa lutea, but the variety named bicolor or the copper Austrian Briar is scarcer. A branch in bud and bloom lies beside me; the similitude of its colour to new copper should not have prevented it from being called the Scarlet Rose. It is a lovely object, on which we could dwell long in the contemplation. But we lay it aside, with its five rounded petals and its elegant yellow stamens, to pick up Macartney's distinct forms, with lovely shining dark green leaves; the hybrid Maria Leonida, with large, concave flowers with a white centre, blushing as it expands from the bud form. The original single forms, vera and scabricaulis, are noteworthy and meritorious.

The Scotch Roses will not readily be lost. Like the ruddy mountaineers of their native country, they live whilst others starve, and insinuate themselves into any soil, upon any ground, to attain the precious roothold

for life and living. But, unfortunately, we have to ask, where are they all? Where are the lilac Marquis of Townsend, the crimson-purple Lady Hatton, the cupped Duke of Hamilton, the striped Hector, and the blotched Monstrosa, all of which ought to be in every garden—certainly in every Rose garden. The lovely white or *crême* Marquis of Queensberry bushes of which we have planted as edgings to our rosery-beds, is now in full bloom. The edging, being a foot in height, 1 foot across, and about 200 feet in length, is exceedingly handsome.

We have lost sight of the Magnolia-scented moisture-loving Pompon Jaune—some older branches of the famed Bourbon family, so popularised by the incessant blooming of our modern Queen of the Bourbons. They all originated upon the Isle of Bourbon, between the Rose of Four Seasons and Rosa indica, and were such as Rose Blush, White Blush, Blush Four Seasons, with many "charming cousins," as Crimson Perpetual, the striped Quatre Saisons panachée, the Lettuce-leaved Bullée, &c.

The rusty Sweet Brier, to translate its Latin name, is of singular distinctness. How few are there who know more than the one common kind. But what of the yellow Eglantine?—that Eglantine which Lord Bacon once mistook for a very different flower, and which even in Gerard's day was "a prime raritie." The hispid Sweet Briar, the Rose Superb, and the Chester, seem also to play us truant.

And the Musk Rose, thought to be the true Persian, and on which the Persian lyre so often lavished tones of joy—which Persian poets so often associate with their thoughts of beauty—this, contrary to the general notion, is white-flowered. The flowers hang in clusters in their eastern defiles, and are associates with the Persian nightingale. The Musk Rose is autumnal, and should not be mistaken for the clustered forms of Damask, as it too often is; the good old Madame Hardy being a Damask of this type. It is to be feared that the original species is not to be met with; Moschata nivea comes from too eastern a clime to be able to bear neglect within our latitude.

Older Pompon Roses, such as that gem, Rose de Meaux, which is so exceptionally pretty, though not too free of growth or propagation, increase tolerably freely by layering. The Pompon Varin (Spong's Rose) was once greatly used for forcing. The Pompon à Centre Pourpre (purplish centre) is, we fear, lost. Then of Miss Lawrance's Liliputians the so-called "Fairy Roses" may still be seen in the tiniest of pots in Covent Garden Market: where now are La Mouche, probably the truer "Fairy," Gloire de Lauranceana, Liliputian, and the "Heaven sent," Dieu Donné? If lost the loss is great, however small the flower.

An exhibition which is likely to do so much for the newer forms, by bringing them into public favour, ought to aid in the reintroduction of those delightful old kinds to younger votaries and others who may have little knowledge regarding them. Granted Maréchal Niel has earned a well-merited place at exhibitions, why should not the gallant Maréchal be staged *vis à vis* with the most primitive example of Rose à odeur du Thé, or with Jaune Desprez, if a more aged relative cannot be found? Let Belle Alliance or Village Maid be staged with Kean, if the latter still exists upon life's stage — the Damask with Madame Zoetmans—"a worthy sire and a worthier son!"—Harrisoni, or Persian yellow, with the Austrian copper!—the Macartney alba simplex with fair and blushing Maria Leonida—the old Moss and Mrs. William Paul, and so forth. Break away from convention and wearisome stereotyped iteration. Seek more variety and better arrangement. Make "old Roses the rage," as are now the new, and a fresh branch of industry will arise which will push floriculture beyond its present standpoint, bring beauty to the fore, bring back to us the primitive fragrance, and renew the enfeebled constitution of our Roses. *William Earley.*

Fig. 3.—Specimen Plant of Charles Lawson (H.C.), grown by Messrs. Paul and Son, Cheshunt.

CULTURE OF ROSES IN POTS.

As we are now just entering a new year, as it were, for Roses in pots, a few hints on their culture may prove advantageous. The flowering season, generally speaking, being now over, those that have not already been repotted should be potted at once, to encourage a free growth, which is very essential, as it forms the groundwork for next year's flowering. The best compost is two parts of good rich yellow loam, one part thoroughly decomposed manure, with the addition of a little leaf-mould and good sharp sand well mixed together. As soon as they are repotted, place them in a cool house or pit, and sprinkle overhead with a syringe morning and evening.

Should the weather be very bright, a slight shade will be necessary for the first week or so, until such time as they have fairly made root, when they

may be gradually hardened off and placed out-of-doors, and remain there until autumn, when they should be brought back to the house or pit, giving them plenty of air day and night, except in very severe weather. Keep them tolerably dry through the months of November and December.

Plants that are required to flower early in March should be pruned in the early part of December, if wanted earlier they will require a little more time. In pruning cut away all weak surplus wood, leaving only such as will be likely to flower; cut them back to about three eyes, except the very strong growing varieties, which may be left from 3 to 6 inches. Care must be taken not to over-water them at this particular period, or they will break weak; start very gently at first, increasing the temperature as the plants advance, sprinkle overhead with the syringe in the morning in fine weather, as that will greatly assist their breaking. As soon as the flower-buds are set, a little manure-water should be given. Continue syringing overhead every morning in fine weather until the buds show signs of opening. Shading will be necessary to protect the flowers from the hot sun as they open, and should be continued according to the weather until they are out of flower.

As there are so few Roses that are really good for pot culture, I append a list of the very best, good foliage being most essential as well as fine blossoms:—John Stuart Mill, Royal Standard, Alba rosea, Camille Bernardin, Céline Forestier, Beauty of Waltham, Edward Morren, La France, Juno, Miss Hassard, Duke of Edinburgh, Madame Lacharme, John Hopper, Madame de St. Joseph, Rev. J. B. M. Camm, Madame Victor Verdier, Madame Willermoz, Miss Ingram, Dr. Andry, Mdlle. Thérèse Levet, Maréchal Vaillant, President, Victor Verdier, Marie Van Houtte, Marquise de Castellane, Marie Baumann, Perfection de Montplaisir, Souvenir d'un Ami, Princess Beatrice, Paul Verdier, Charles Lawson, Camille Bernardin, Madame Margottin, Horace Vernet. *Charles Turner, Slough.*

Fig. 4.—Specimen plant of Paul Perras (H.C.), grown by Mr. Turner.

THE ROSE AND ITS ENEMIES

FUNGI.

It appears to be one of the compensations of life, animal and vegetable, not only that all which is fair must fade, but that all which is beautiful should have its foes which seek to destroy its beauty, and bring it down to the level of ordinary common-place things. This is especially true of Roses, which, though amongst the most beautiful of flowers, have as many spiteful enemies as jealousy and envy could desire. Unpleasant as it may be to call attention to these misfortunes at a time when all are singing the glories of the Rose, it was nevertheless an old custom even at a feast to bring in mementos of death, in order to remind those who were supposed to have attained the climax of enjoyment that there was a final destiny to which all must succumb.

Homilies on disease and death are by no means welcome topics to be introduced at seasons of enjoyment, and it will perhaps be regarded as *mal à propos*

on our part to cast a gloom over the feast of Roses. There still remains the consolation that the contrast may enhance the beauty and intensify the odours of sweetness, so that the jewels may shine more brightly than one which "has no foil to set it off."

Those who are most intimately acquainted with the Rose know best that its foes are numerous, and even if we do not reckon the insect marauders there remain still a very sufficient list for a homily.

Rust and Brand.

Of these the best known, and perhaps least respected is the "rust." Minute description of such a well-known parasite is unnecessary. A sickly jaundiced hue takes possession of the whole plant, the under-surface of the leaves is sprinkled with a golden-yellow dust, which in time becomes mingled with little black specks, and with a tenacity worthy of a better cause the "rust" and the "brand" together maintain possession of the foliage till it falls to the ground, and nothing remains but the gaunt skeleton. Should the gods have bestowed upon us sufficient equanimity to enable us to investigate still further the source of so much mischief, we shall find by aid of the microscope that the orange dust consists of myriads of nearly globose yellow cells, mixed with a less number of colourless cells of slightly different shape. Earlier in its history the barren cysts and the orange cells would have been found together, supported on slender stems, and collected in clusters. But still more imposing are the black specks interspersed amongst the orange powder. These consist of sausage-shaped bodies, of a deep brown colour when magnified, standing upon uncoloured slender stems about as long as themselves. Each of these brown bodies is several times constricted, as though some slender cords were tightly bound at equal distances around them, and moreover the surface is studded with little glassy warts. In the catalogues of science the names which are given to the "rust" is *Lecythea rosarum*, and to the "brand" *Phragmidium mucronatum* (fig. 5.) At one time each was regarded as a distinct and separate parasite, but now, on the contrary, it is maintained, for excellent reasons, that the one is but a condition of the other, and that all these manifestations are but different phases of the same unwelcome guest.

Mould and Mildew.

Another enemy makes its appearance in the autumn which has kindred with the Hop mildew, and less intimately with the Vine mildew. This mould on the leaves and young branches gives them a frosted and, on the latter, a grey woolly appearance. The *Sphærotheca pannosa* derives its specific name from the woolliness of its patches on the petioles and branches. It is not so common to find the complete fruit fully developed, but when this is the case small, globose, dark brown conceptacles or hollow cases appear on the woolly threads, and these contain a single sporangium or spore case with eight sporidia. It is deplorable to see the melancholy condition of Roses under this infliction—the leaves are puckered and blistered, the flower-buds and calyces are darkened and distorted, and altogether the plant is comparable only to some poor unfortunate individual stricken with paralysis. The imperfect condition of the parasite is sufficient for all this mischief.

Fifteen years ago another parasite on Roses first made its appearance on a quantity of pot Roses in a conservatory, and was figured and described in this journal,* by the Rev. M. J. Berkeley, under the name of *Peronospora sparsa*. It is certainly the most uncommon of the pests to which we have had occasion to allude, and it is hoped will still remain of rare occurrence. In this instance the affinity of the fungus is with the Potato mould, and if we may judge from its family connections it is likely to be a most devastating pest should it ever become thoroughly established. Irregular pale brownish discoloured spots appear on the upper surface of the leaves, these extend rapidly, and in a short time the leaves become withered and shrivel up, and ultimately the whole plant perishes. A delicate greyish mould is to be seen by the aid of a lens scattered over the under-surface of the leaves, and a higher magnify-power reveals branched threads surmounted by oval bodies having the appearance of spores. It is not clear that the whole history of this parasite has yet been revealed; it is not improbable that these spore-like bodies, or conidia, may, as in some other species, become ruptured when mature, and scatter numerous movable spores or zoospores, each of which, after a short period of active motion by the aid of vibratile cilia, may settle down and commence germination. Should such be the case it is a formidable foe to contend with, and should be at once condemned whenever and wherever it ventures to make an appearance.

Although these are the three most important of the diseases caused by fungi to which Roses in cultivation are subject, there are still one or two others to which allusion may be made. Late in the year roundish purple-brown spots, half an inch in diameter, may be seen on the upper surface of Rose leaves. If these are examined closely the spots will be seen to consist of radiating threads, with here and there small round bodies, like little black dots, seated upon them. This is called *Asteroma rosæ*. Perhaps its power of destruction is not great, but it imparts an unwelcome kind of variegation to the leaves, which could well be dispensed with. Each of the little black dots is a receptacle containing a number of spores, each divided by a single partition, by means of which the stock is prevented from dying out.

Some years ago we observed in one large garden at some distance from London that nearly all the trained Roses had the branches disfigured by the scaly blotches of a fungus known as *Dothidea rosæ*. In this instance the spots are also circular and brown, often several running together, and occupied by raised circles, one within the other, of the darker conceptacles which contain the fruit. When it appears in such force, as in the instance alluded to, it is undoubtedly destructive, for many of the Roses were entirely spoiled, but such an instance is probably rare.

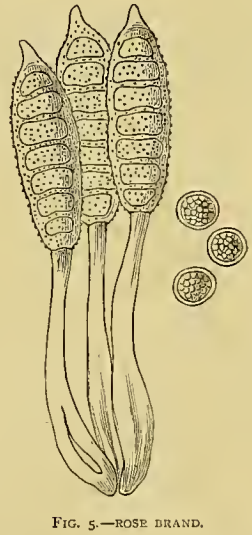

Fig. 5.—Rose brand.

It is hardly necessary to allude to *Septoria rosarum*, which is by no means uncommon on the fading leaves of Roses. Small grey spots are surrounded by a purplish border. The central pale spots are occupied by a few small black dots, which are embedded perithecia, or cup-like cavities, containing the minute spores. When mature the latter are ejected from a pore at the apex.

Rapidly and cursorily we have indicated the "foes of the Roses" coming under our special cognisance as of fungoid origin. Although not so numerous perhaps as the foes of some other plants, they include some which are pertinacious and destructive enough to compensate in quality for what they want in quantity. Let us hope that the majority of our readers, especially those largely interested in Roses, suffer but little from their devastations. *M. C. Cooke.*

* 1862, p. 308.

THE ROSE AND ITS ENEMIES: INSECTS.

There is a great difference in the number of species of insects that attack different plants. Some plants seem to be wholly free from them, as, for instance, Fumitory, Stock, &c.; others have only a very few enemies. The Wallflower has about half-a-dozen, the Poppy about a dozen, and so on. On the other hand, the numbers that attack some trees are very large. Nearly 250 kinds are recorded as preying on the Plum tree, about 180 on the Apple, Pear and Quince, and about 100 on the Thorn; but it is some of the forest trees that support the greatest number. There are upwards of 250 recorded as preying on the Poplar, about 400 on the Willow, and upwards of 500 on the Oak. The Rose occupies a sort of middle place, there being only about 100 recorded as attacking it in Europe. When the Editors of this journal asked me to give a *resume* of the species that attack the Rose, I am afraid they scarcely knew what an avalanche they might bring down upon their heads. All that I can do within such limits as they place at my disposal is to give a few hints which may help rosarians to form some guess, from the mischief done to their Roses, as to the species that is doing it. Beginning with the lower orders of insects, the scale insects come first. Of these only one attacks the Rose.

Scale Insects.

Diaspis rosæ, Sand.—When a Rose tree is badly attacked by this, its stem and branches seem covered by a mealy crust, looking somewhat as if the plant had been badly whitewashed. The scale is a small, roundish, flat, white fluke, with the mark of the first moult or moults towards one side of the scale instead of in the centre. That is one of the chief distinctions between the genus Aspidiotus and Diaspis.

The best remedy for this is the knife, and as with most Roses it may be used freely without harm, the attacked parts should all be cut off and burned.

Greenfly.

Next comes the greenfly: of these several attack the Rose.

Aphis rosæ (*Siphonophora rosæ*, Koch).—This is the commonest of the Rose aphides. It is greenish or pale reddish green in its young stages; green, with blackish spots, in its winged state. Several other species that infest the Rose have been described, viz., Aphis rosarum, Aphis dirhoda, Aphis trithoda, &c.

Typhlocybe rosæ.—One of the small jumping spittle flies that breeds on the Rose. It is yellowish, and in autumn often starts up from the plant in greater or less numbers on any one's appearance.

Thrips, &c.

Thrips minutissima.—We often see the leaves of our Rose trees lose their freshness, becoming hard and getting whitish on the convex parts, as if the nap was worn off the surface. This is the work of the thrips, and is very easily recognised.

Forficula auricularis.—The common earwig, although certainly not a special enemy to the Rose, sometimes destroys its petals and occasionally shows his unwelcome presence among them.

Trypeta (*Spilographa*) *alternata*, Mig.—This is a fly with banded rings, that feeds on the flesh of the fruit of the Rose, mining in it and deforming and affecting its colour; that is, making it partially white where it should be red. It occurs in Germany, but I do not know whether it has been found in England or not. Certainly deformed and parti-coloured Rose-hips are not rare there.

A large number of hymenoptera attack the Rose. There are several species of cynips that make galls upon it, and a special genus, Rhodites, has been made for a portion of them.

Rhodites rosæ, Linn.—This is the species called the Rose bedeguar, which produces the curious mossy galls (Robin's Pincushion) that are found on the Rose tree. It is common in Britain, and at least one other species (R. nervosa) has also been found, although its gall is not known. Several species occur on the Continent and in North America.

Sawflies.

The sawflies that attack the Rose are rather numerous.

Hylotoma rosarum, Fab. (*rosæ*, Linn.), is the one that fixes a chain of eggs on the under-side of a shoot, causing it to bend downwards. The perfect insect has a black head and thorax with a red body; the larva is yellowish on the back, greenish yellow or bluish green on the sides, whitish below, and peppered over with black spots. It attacks the leaves from the margin, eats large spaces out of them, often eating up everything but the ribs, which hang or stick out like dishevelled shreds. An easy mode of diminishing their numbers where they are formidable is to grow a few plants of Parsley near the Roses. To

these the fly retires about mid-day, where it can be easily taken and destroyed in numbers.

The *Athalia spinarum*, Fab., or *Centifoliæ*, Panz., is like the preceding in appearance, but although it is found in gardens in autumn flitting about in the sunshine, it does no harm to the Rose. The Turnip and Cabbage tribes are its food, and it is well known to the farmer under the name of Black Jack or Nigger, the larvæ being almost black, with a slight tinge of green.

Athalia rosæ, Linn.—Smaller but similar to the

Fig. 6.—Antler Rose Sawfly.

preceding, more yellow. This is sometimes very common, and it is its larva that converts the leaves into skeleton network. It does not eat straightforward, like the other, but browses away upon one side only, eating up the parenchyma, but leaving the nervures and the skin on the other side like a transparent wall.

Blennocampa æthiops, Fab.—For a length of time Linnæus' name, Tenthredo æthiops, was applied to the slug-sawfly of the Pear tree. Westwood showed that this was an error, and that the name properly belongs to this species.

The peculiarity of the ravages of this species is somewhat similar to those of the last. It only eats the upper side of the leaf, but does not go so deep nor so thoroughly through it as the last does. Instead of leaving a transparent wall on the under-side it leaves a brown one. It is at the beginning of June, when the flowering of the Rose is commencing, that its attacks show themselves. Until then everything has looked fresh and green, but all at once the leaves become of a pale brown, as if they had been scorched by a sunstroke, and on examining them with attention they are found to have been attacked by the larva of this species in the manner above described. It not only destroys the freshness of the appearance of the Rose, but makes the flowers come badly, from want of nourishment. The larva is pale yellowish green, scarcely distinguishable from the Rose leaf. The perfect fly is shining black except the legs.

Fig. 7.—The Rose Sawfly.

Blennocampa pusilla, Khy.—It is only a few years since this species was recognised as British, but its presence can very easily be guessed at by the appearance of the leaves attacked. These have the edges of the leaves rolled in on the under-side until they almost meet at the midrib, and on unrolling them the small larvæ may be seen—yellowish green, darker on the sides, whitish below. The perfect fly is small and shining black, all but the legs from the knees, which are dirty white.

Monophadnus bipunctata, Khy.—This species lays its eggs on the tips of the young shoots, down which the larva afterwards bores through the pith, but I do not know that it has been met with in Britain. It is a black species, like the last. Its larva is probably sometimes mistaken for the next species, and, according to Taschenberg, has been so by Boisduval, who, he thinks, has jumbled up the habits and characters of the two species together.

Emphytus cinctus, Linn.—This species is common enough in Britain, where it is generally understood to be a borer in the Rose stems. According to Taschenberg, however, it only feeds on the leaves, eating holes in them and bits out of the margin, and when it is ready to pass into the pupa state it goes into the empty pith places in old cut stems or twigs, and thence downwards to undergo its metamorphosis, which takes place in the following spring. I have received quantities of old cut portions of pruned Roses from Dumfriesshire, from which I have bred this species, and in these, like Taschenberg, I have found both larvæ and pupa, and the old cells appeared at least as if they were of the former year, and not having bred M. bipunctata from them is in favour of Taschenberg's view. However, it is a point on which no doubt ought to exist, and I suggest it to the observation of entomologists during the following season.

Cladius difformis, Parry.—The style of work of this species is to make small holes from the under-side through the leaf. The eggs are laid on the under-side, and the larvæ feed from there at once. The larva is dark green, and the perfect insect shining

Fig. 8.—Rose Stem-boring Sawfly.

black except the feet. Curtis, writing in 1842, says that some twenty or thirty years previously it had been a rare insect, but was then well established in the gardens around London.

Tenthredo Zona, Klug.—Boisduval describes this species as occasionally found near Paris. I do not know if it has been met with in England. It attacks the leaves in much the same way as the last, living on the under-side, and making holes in them. When feeding the larva is stretched out, when in repose it is rolled up like a Planorbis. It is black, and bright yellow below. The perfect fly is black, with the abdomen partly yellow.

Emphytus rufocinctus, Klug.—Has the same habits and occasions much the same kind of damage to the leaves as the last, living on their under-side. It is also a French species, which is, so far as I know, not recorded in Britain.

Lyda inanita, d. Vill.—This species is well described by Professor Westwood in this journal, 1847, p. 684. He has called it the Rose caddice fly, from the curious cigar-like rolls, composed of leaves that it makes for its offspring. These are shown in the accompanying figure (fig. 9). It is rare in Britain.

Andrew Murray.

AMATEUR GARDENING:

BUDDING.

In feeding with their roots, as explained in previous numbers, and digesting with their leaves, plants prepare what is to form their growths, but how these growths are formed is worth considering.

The moisture drawn in by the roots flows up to the leaves, and evaporating more or less quickly as the weather is more or less warm, or the sky more or less bright, is partly converted into, partly brings with it, the materials to form and fill the cells of which the plant is built up.

On the proper formation of these cells depends our success in what is called "propagation," that is, the multiplication of our specimens by budding and grafting, and by making layers and cuttings, and if we know why the bud joins to the stock, or the cutting sends out roots from the severed extremity, we shall work easily and successfully, for we shall know when and how to vary from directions which cannot possibly suit all circumstances.

The Machinery and its Action.

A plant is made up of minute cells or bladders, little bags of elastic membrane filled with a viscid

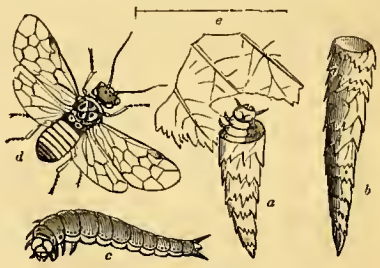

Fig. 9.—The Rose Caddice.

fluid, called protoplasm, and plants grow by the subdivision of this protoplasm into two, three, or more new cells, each becoming clothed with its own coat or cell-wall. These new cells again divide into others, and so again and again, constantly pressing forwards and forming the lengthening shoot and the new growths between the wood and the bark that constitute the yearly increase in thickness alike of the Oak trunk or the stem of the Rose, and indeed of the larger proportion of plants in our own climate.

As long as this viscid fluid or protoplasm is active growth continues, or may continue, but presently the cells alter—some branch, some join end to end, so as to form long vessels, while some become thick and hard as those of the wood and bark. Various parts of the plant have each their own shape of cell; and after a time the protoplasm ceases to exist inside them, and in the absence of this active formative material they can no longer divide and make young ones.

But though the heart-wood, made up of cells no longer capable of division, and therefore is of no use in making cuttings, fluid is drawn up through the cells of the young wood in the outer part of the tree, and by the system of its circulation (too minute and elaborate to be entered on here) new growths are formed year by year between the wood and the bark, in what is called the "cambium region," and it is on this growth

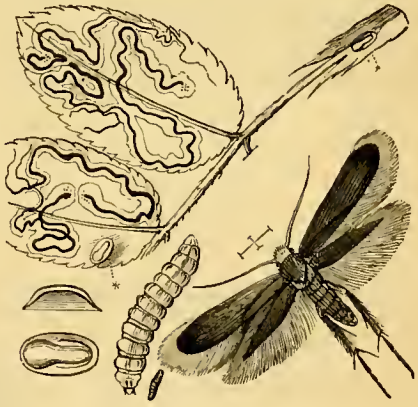

Fig. 10.—Rose Leaf Miner.

between wood and bark that depends our success in matters of propagation.

Budding.

In the increase of specimens by budding it is the young cells forming the inside of the bark and the outside of the wood which unite by the action of the living fluid within them, to form one tissue. In ordinary Rose budding the season at which the operation is performed is selected as being that which is most favourable to this process; and all the steps of the process, the part of plant selected, the manipulation, and subsequent management, are devised with the intent of making the most of the growth of cells between the bark and the wood.

Take a healthy young Rose shoot, choose a well grown bud upon it, pass a sharp fine knife into the shoot about three-quarters of an inch below the bud, and drawing the knife upwards pare off a small shield-shaped morsel of bark with the bud, and the thinnest possible film of wood inside the bark, the knife being drawn out a little above the bud.

For the stock a healthy free-growing shoot should be chosen, a short cross-cut should be made with a sharp knife just through the bark, and another downwards from the centre of it from *a* to *b*, fig. 11; the upper angles of bark on each side of the stem of this T-shaped incision should be raised from the wood with the thin handle of the budding knife, and then

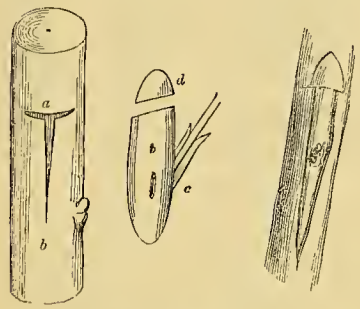

Fig. 11.—T-budding. (see also fig. 12, *g*.)

(the thin film of wood inside the bark shield of the bud having been gently removed so as not to jerk out the growing point inside the bud), this shield holding the bud should be slipped, right way upwards, down the T-shaped incision as in *c*, fig. 11. The top of the bark shield, *c*, must be cut sharply across fig. *d*, so that it may fit cleanly and closely up to the severed bark at the top of the T; their severed cells must thus be in contact, and the shield with the bud closely fitted against the exposed wood of the stock. The flaps of the raised bark being put down again over the bark of the inserted bud, and the bud bound firmly in its place, but not too tightly, with bast or worsted, fig. 12 *g*, or whatever material may be preferred, the operation is complete.

The Philosophy of Budding.

The *modus operandi* of budding may be varied almost indefinitely, but the principle is always the same. A piece of growing bark is transplanted from its own wood to another piece, so that the two growths may unite into one living tissue. It may be useful to trace the process from the beginning.

Firstly, we take the time of year (July to September, with Roses) when the bark separates freely, because it is the presence of the sap forming all the young cells between the bark and the wood that allows the separation to take place. If it did not "run," as it is called, it would be a sign that the young cells were not in action, and the surfaces that we tore and rent away from each other would not have their living coating in a state to unite. Also, buds about the centre of a shoot are often the best, as those at the base are apt to part with difficulty, and those at the top may not be sufficiently ripe.

We start the knife below the bud, that there may be clean edges, as the part where the knife comes out is necessarily frayed; it is best placed where it will presently be cut clean. When the incision is made as an inverted ⊥, the knife is inserted above the bud, and the clean cut is made below. Amongst the many methods of budding the "reversed ⊥" form is sometimes recommended where an excessive flow of sap or "gumming" might be expected to hurt the bud.

Scallop budding consists of paring off a small tongue-shaped bit of bark with the bud, and a thin film of wood, and placing it with the wood where a similar bit has been removed from the stock, fitting the bark either above (as with T budding), or at one side by a sharp cut. This form of budding is less troublesome, but also less certain, than T budding.

Annular budding, fig. 12 *f*, consists of removing a whole ring of bark to a similar exposed surface on the stock, a longitudinal slit allowing removal of the perfect ring. This is used with bark of considerable thickness, but requires some practice to manage nicely.

In some methods and with some plants it is thought best to leave the thin film of wood in the bark, but generally the principle of budding is when bark and wood are being separated naturally by the tide of new formation of tissue between them, so to separate and reunite them artificially that the process may continue.

So long as the edges are clean cut it does not matter how the cut is made. Some use a carpenter's gouge, and scoop off a piece of bark and a bud with great success. Others find it answer to use what is sometimes known as "Lymburn's method," which has been particularly recommended for Peaches, Plums, and Cherries, and which consists of cutting sharply round the piece of bark to be removed with the point of a knife and running it off with the nail, without any wood adhering. The common way, however, is probably the best, for the thin film of wood (which some budders think it well not to remove at all) should remain till all is ready for its insertion, and so the cells inside the bark are kept unexposed and moist till the very instant of placing on those of the stock: and herein lies the secret of successful budding.

If the two surfaces are placed together whilst still moist they will unite, as in animal life the two sides of a cut join together—the cells will grow together, new cells will form amongst them, and there will be a complete union; but if the surfaces are allowed to dry the cells will probably be killed, life will go out of them with the living fluid, which is as necessary to their growth as the blood in our own veins, and the bud "will not take." Here we have the reason of the speed sometimes so much dwelt on—it is only to avoid drying the surfaces, but there is no need of hurry—quiet work will give more likelihood of success, and especially avoid the risk (in hasty jerking out of the film of wood) of also jerking out the centre, the growing point, of the bud. If this happens, though the bud may "take," it will not grow; it is as hopeless for increase as an empty egg-shell.

With regard to the stocks we use young or half ripened wood, for the same reasons that guide the choice of the bud; and because the vital action of plants is strongest near the leaves it is well to insert the new bud a little below a leaf rather than on a long bare stem.

The newly-placed bud depends on good feeding to make its growth; therefore, besides being placed just where the presence of a leaf keeps the current active, there should be several leaves beyond it on the branch of the stock to elaborate food, and the shoot should be "stopped" to encourage growth at the side-buds instead of at the tip. For the same reason a cloudy

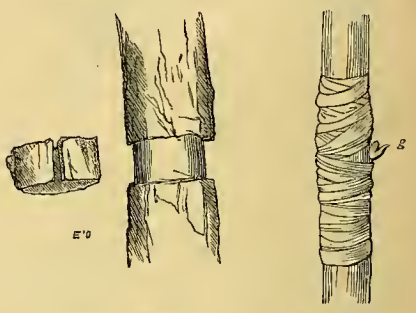

Fig. 12.—Annular budding; *g*, T-bud completed. (see fig. 11).

day or morning or evening are preferable times for the performance of the operation to hot sunshine, in order that the bud should be not too rapidly dried to begin with.

The time of year varies with the plant to be budded; thus, July is suitable for Apples or Roses, August or September for Rhododendrons, the mark of the proper season being the formation of buds in the axils of the leaves of the current year. Unless the plants which furnish the bud and that used for the stock are nearly related junction will not take place, but how far the bud and stock act on each other is a question which is just in the province of the amateur to follow up at leisure.

After-Treatment.

For previous and subsequent treatment of buds, it may be just mentioned that if they must be packed, the bits of shoots containing them will travel fairly in damp moss. After the operation the ties should be watched, lest the swelling growth should make a looser bandage requisite, and in the spring of the year after insertion the shoot of the stock on which the bud is placed should be shortened with a sharp clean cut to just above the point where the bud (which is now a strong young shoot of the newly inserted variety) takes its origin from the stem.

In grafts the process is very similar; in cuttings the whole of the plant powers (save those of reproduction) are brought into action. *O.*

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MESSRS. PAUL & SON,

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CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

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Good Flowering Plants, in Pots, 10*s.* 6*d. each.*

COLOURED PLATES ONE SHILLING EACH.

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CLIVEDEN.

THE "GARDENERS' CHRONICLE" *for Saturday,* JULY 21*st, will contain an account of the* GARDENS *and* PLEASURE GROUNDS *of* HIS GRACE THE DUKE OF WESTMINSTER, *at Cliveden, together with several beautiful Woodcuts, taken from Photographs expressly executed for this Journal by* Mr. ARTHUR SMITH.

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on TUESDAY NEXT, July 17, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS at 3 o'Clock. Band of the Royal Horse Guards, from 4 to 6 o'Clock P.M.
N.B.—The Fruit and Floral Committees on this occasion will meet in the Council-room.

NATIONAL CARNATION and PICOTEE SOCIETY, and CUT ROSE SHOW, will be held at the Royal Aquarium, Westminster, WEDNESDAY and THURSDAY, July 18 and 19. Schedules and full particulars may be obtained on application to
Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or Mr. E. BENNETT, Rahley Nurseries, Barnet, Herts; or Mr. W. W. ROBERTSON, Royal Aquarium, Westminster, S.W.

NEWPORT (Mon.) and COUNTY HORTICULTURAL SOCIETY.—ANNUAL EXHIBITION, TUESDAY, July 31. Schedules and particulars on application to the HON. SECS., Town Hall, Newport.

COVENTRY and WARWICKSHIRE FLORAL and HORTICULTURAL SOCIETY.
The SECOND SHOW of the Season will be held at Combe Abbey, AUGUST 21. Special Prizes open to all England for best collection of Fruit, six dishes, £5, £3, £2; for three bunches of Black Grapes, £2, £1; for three bunches of White Grapes, £2, £1. Schedules and every information may be had on application to THOS. WIGSTON, Sec.
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Much brighter in colour, larger in truss, and very superior in every way to Pelargonium "Captain Raikes."
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SALES BY AUCTION.

Great Clearance Sale of Nursery Stock at the HAMMERSMITH NURSERY.

MR. J. C. STEVENS has received instructions from Messrs. Lee, to offer for SALE by AUCTION, on the Premises, at the Hammersmith Nurseries, Hammersmith, W., on TUESDAY, July 24, and following days, at half-past 12 o'Clock precisely each day, the third and concluding portion of STOVE and GREENHOUSE PLANTS, together with the GREENHOUSES, PITS, BOILERS, &c., the land being required for building purposes.

On view the day prior and mornings of Sale, and Catalogues had at the Nursery, and of Mr. J. C. STEVENS, Auctioneer, 38, King Street, Covent Garden, W.C.

Houghton Estate.

ANNUAL TIMBER SALE.—Twelve miles from Lynn, ten from Fakenham, and seven from Snettisham Railway Stations.

WILLIAM C. HOPKING is favoured with instructions from the Most Noble the Marquis of Cholmondeley, to SELL by AUCTION, on WEDNESDAY, July 25, 200 splendid OAK TIMBERS, many of which are from 30 to 40 feet in length, of great girth and very clean. 130 ASH TIMBERS, and 14 ELM TIMBERS, some of which are 40 feet in length. A large quantity of OAK WRONGS, about 20,000 HARDWOOD FAGGOTS, and two large STACKS of BARK, the produce of the entire fell for this season of 282 Oak Timbers The Bark is secured in very good order, and is of the best quality.

The Auctioneer has particular pleasure in calling the attention of Timber Merchants and the purchasers of Bark to the above-described Sale, it being the finest fell of timber offered for Public Competition on the Estate for many years.

Sale to commence at 10.30 punctually, in the Park, close by the road leading from Bircham to Rudham.

A Conveyance will leave the Globe Hotel, King's Lynn, and Fakenham Station at 8.30 o'Clock for the convenieoce of Purchasers.

Catalogues may be had a fortnight previous to the Sale on application to W. FREUER, Esq., Estate Agent, West Rudham, Brandon; or to the Auctioneer, Great Bircham, Lynn, Norfolk.

TO BE SOLD, on easy terms, a FLORIST and SEEDSMAN'S BUSINESS, with SMALL NURSERY. Good Jobbing connection. Excellent Shop and Premises. Long Lease.
2, Swiss Terrace, South Hampstead, N.W.

TO BE DISPOSED OF in consequence of death in the family, a NURSERY, 7 miles from London. Four large Greenhouses, heated with hot water, all Modern appliances; range of Pits; Water laid on to all parts; Modern Brick Dwelling, seven rooms, gas, and water. Price £500; portion can remain at interest. Lease seventeen years. Low rental of £25 per annum.
Mr. ALCOCK, 35, Great James Street, Bedford Row, Holborn, W.C.

MIMULUS MOSCHATUS HARRISONI, 2 plants (post free) 1s., 12 for 3s. 6d., or 21s. per 100.
AGERATUM, Lady Jane, best in cultivation, 2 for 1s.
CHRYSANTHEMUM, Golden Empress very fine variety, 2 for 1s., other new sorts of 1877 at 6s. per dozen.
GERANIUM, Wonderful, 2 for 1s.
PRIMULA SINENSIS FIMBRIATA, fine strong plants of a splendid Covent Garden strain, 2s. per dozen.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

To the Trade Only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland.—The WHOLESALE CATALOGUE for 1877-78, first part (327A) is now ready, and may be had free on prepaid application by Nurserymen, Florists, and Seedsmen. The Catalogue contains complete collections of Hyacinths, Tulips, Crocus, Narcissus, Fritillaria, Anemones, Ranunculus, Lilies, Iris, Gladiolus, Pæonies, and a selection of miscellaneous bulbous and tuberous plants. It is perhaps the most complete list ever published of these articles.

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Cabbage Plants!—Cabbage Plants!!

W. VIRGO AND SON can now supply, in any quantity, as under:—
ROBINSON'S DRUMHEADS.
OXHEART CABBAGE.
DRUMHEAD SAVOY.
EARLY ENFIELD MARKET.
All strong, good, healthy plants, 3s. 6d. for cash per 1000. Delivered on rail free.
Wonersh Nursery.

RODGER, McCLELLAND AND CO. have to offer the following:—
DRACÆNA DRACO, 1½ foot, 30s. per dozen.
,, AUSTRALIS, 1½ foot, 12s. per dozen.
CHAMÆPEUCE CASSABONÆ, 4s. per dozen.
,, DRACANTHA, 6s. per dozen.
ARALIA QUINQUEFOLIA, good plants, 30s. to 42s. per doz.
,, SIEBOLDII, 9s. per dozen.
SEMPERVIVUM BOLLII, 4s. per dozen.
,, TABULÆFORME, 6s. per dozen.
ECHEVERIA METALLICA GLAUCA, very strong, 12s. per dozen.
BEGONIAS, tuberous, good plants and sorts, now out-of-doors, 6s., 9s., and 12s. per dozen.
CENTAUREA BABYLONICA, strong, 6s. per dozen.
CEANOTHUS DIVARICATUS, strong, 9s. to 12s. per doz.
,, AFRICANA, strong, 9s. per dozen.
,, VEITCHII, 9s. and 12s. per dozen.
64, Hill Street, Newry

TESTIMONIAL to Mr. F. W. WILSON

(Late of the Crystal Palace).

"DURING the past quarter of a century Mr. Wilson, by his genial disposition, obliging manners, and thoroughly zealous efforts to promote and successfully carry out the various interesting natural history and other shows held at the Crystal Palace, has earned the respect alike of his colleagues and a wide circle of friends amongst the general public."

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A. Wiener, Esq. ..	2	2	0
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Mr. W. Hayhoe ..	0	2	6
	£137	10	0

Subscriptions will close on the 25th inst., by order of the Committee.

The DINNER will be held on SATURDAY EVENING, AUGUST 4, at the Crystal Palace. HARRISON WEIR, Esq., the Chair. Tickets, 7s. 6d., exclusive of wine.

Any of the Committee, having received subscriptions, will greatly oblige by forwarding particulars of the same to me, as under. Intending subscribers, and those gentlemen who have promised to subscribe, but have not yet forwarded their subscriptions, will also confer a favour by kindly forwarding the same at their earliest convenience.

CHARLES EDWARD ELLIOTT,
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By DRAINAGE, ENCLOSING, CLEARING, and the ERECTION of FARM BUILDINGS and COTTAGES.

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The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

Pine-apple Nursery, Maida Vale, London, W.

E. G. HENDERSON AND SON can supply Seed of the following; quality of strains are the best that can be grown:—

PRIMULA SINENSIS FIMBRIATA, mixed colours or separate, 2s. 6d. per packet.

PRIMULA SINENSIS FIMBRIATA, double-flowered, mixed, 2s. 6d. and 5s per packet.

PRIMULA SINENSIS FIMBRIATA, Maiden's Blush, new double, 2s. 6d. and 5s. per packet.

CINERARIA and CALCEOLARIA, 2s. 6d. each packet.

CYCLAMEN PERSICUM GRANDIFLORUM, 1s. and 2s. 6d. per packet.

PANSIES, best English, and blotched flowers, 1s. 6d. each pkt.

CARNATION and PICOTEE, 2s. 6d. each packet.

Invaluable for Filling-up Vacant Root Crops—FOR PRESENT PLANTING AND SOWING.

GEE'S SUPERIOR BEDFORDSHIRE-GROWN CABBAGE PLANTS, Enfield Market, Drumhead, and Thousand-headed, all very fine strong plants, at 3s. 6d. per 1000. Terms Cash.

TURNIP, MUSTARD, COLE, CABBAGE, and all other kinds of Seeds and Plants of superior excellence, for the Farm or Garden.

See CATALOGUES, with lowest prices, Testimonials, Opinions of the Press, &c., on application to
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SPECIALITIES.
ROSES, FRUIT TREES, CONIFERS.

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Come and See.

My 700 Varieties of

ZONAL PELARGONIUMS are now a grand sight, same with VERBENAS, PETUNIAS, FUCHSIAS, LOBELIAS, ANTIRRHINUMS, PANSIES, VIOLAS, and ROSES, &c., now in full bloom—in fact, the whole Nursery is highly interesting, and will continue so throughout the season, as all the choicest Florist Flowers are under the most careful cultivation, and all lovers of the same are invited. Many thousands of Seedling CINERARIAS, CALCEOLARIAS, and PRIMULAS, are now ready to be posted off.

CATALOGUE of CUTTINGS of the above free on application. H. CANNELL, Swanley, Kent.

ROSES,
CRANSTON'S NURSERIES,
KING'S ACRE, HEREFORD.

(ESTABLISHED 1875.)

THE LARGEST ROSE GARDENS IN ENGLAND.

MESSRS. CRANSTON & CO.

Beg to announce that their ROSES (extending over many acres), are now in full bloom.

As considerable time will be required to inspect the whole of their Collection, Visitors to the Nurseries should take the morning trains arriving at Barr's Court, or Barton Stations, 2½ miles from the Nurseries, where conveyances are to be had.

Rose Blooms for Decoration supplied.

Joseph Smith, deceased.

Pursuant to the Act of Parliament of the 22d and 23d Vic., cap. 35, intituled "An Act to Further Amend the Law of Property, and to Relieve Trustees,"

NOTICE IS HEREBY GIVEN, that all Creditors and other Persons having any CLAIMS or DEMANDS upon or against the Estate of JOSEPH SMITH, late of Tansley, near Matlock, in the county of Derby, Nurseryman, deceased, who died on the 1st day of June, 1876, and whose Will was proved on the 11th day of July, 1876, in the District Registry at Derby attached to the Probate Division of Her Majesty's High Court of Justice, by Samuel Smith and James Smith, both of Tansley aforesaid, Nurserymen, the Executors named in the said Will, are hereby required to send particulars of their CLAIMS or DEMANDS to the said EXECUTORS on or before the 1st day of AUGUST next; and Notice is Hereby also Given that after that day the said Executors will proceed to distribute the assets of the said Joseph Smith, deceased, among the parties entitled thereto, having regard only to the claims of which the said Executors shall then have had notice, and that they will not be liable for the assets, or any part thereof, so distributed to any person of whose claim or demand they shall not then have had notice—Dated this 10th day of June, 1877.

ARTHUR HARWARD, Wirksworth,
Solicitor to the said Executors.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.
Fresh SPHAGNUM, 10s. 6d. per sack.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, in 4 bushel bags, at 1s., bags included; 100, 20s.; or Truck-load, 30s. Delivered free to any rail in London.
J. STEVENS AND CO., Fibre Works, Greyhound Yard, 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 1s., bag included; truck-load, loose, free to any Rail, 25s.
POTTER OYLER, Spitalfields Market, N.E.

COCOA-NUT FIBRE REFUSE may be had at 1s. per 4-bushel bag, bag included; a truck, 250 bushels, £1 5s.; one-horse load may be had at the factory, 3s., by sending for it.
M. GAREY, 57, Old Montague Street, Whitechapel, E.

COCOA-NUT FIBRE REFUSE, as supplied to Carters, Veitch, Wills, Bull, Ewing, Daniels, &c. Cheapest and best advertised. SILVER SAND, PEAT, LOAM, LEAF-MOULD, per bushel, sack, ton, or truck; SPHAGNUM, RAFFIA, &c. Write for Price List.
M. H. BENTOTE, Nunhead, S.E. (near Junction).

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.

The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to
C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

NEW RUSSIAN MATS
For 1877.

The First Importation is now on the way from Archangel, and Prices can be obtained on application to

J. BLACKBURN & SONS,
4 and 5, WORMWOOD STREET, LONDON, E.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60s. to 100s. per 100; superior close-wove, 40s., 50s. and 55s. per 100; Packing Mats at 20s., 30s., and 35s. per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
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WILLIAM S. BURTON,
39, OXFORD STREET, W.

GARDEN NECESSARIES, consisting of ARCHES, BASKETS, FLOWER STANDS, WIRE-WORK, &c.:—

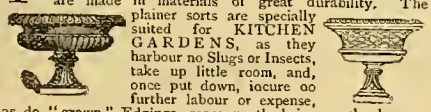
GARDEN SYRINGES	4s. 6d.	to	26s.
GARDEN ENGINES	30s. 0d.	to	126s.
GARDEN WATER-BARROWS	45s. 0d.	to	87s.
GARDEN ROLLERS	40s. 6d.	to	86s.
GARDEN CHAIRS	7s. 6d.	to	32s.
GARDEN SEATS	20s. 0d.	to	100s.

GARDEN TOOLS and WATERING POTS.
PATENT LAWN MOWERS, 25s. to 120s.
To cut 6 inches, £1 5s.; to cut 8 inches, £2 10s.; to cut 10 inches, £3 10s.; to cut 12 inches, £4 15s. Suitable for a Lady.—To cut 14 inches, £5 16s.; to cut 16 inches, £6 17s. Suitable for a Gentleman.

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER, by appointment to H.R.H. the Prince of Wales, sends a Catalogue containing upwards of 850 Illustrations of his unrivalled Stock, with Lists of Prices and Plans of the Thirty Large Show-rooms, post-free.—39, Oxford Street, W.; 1, 1A, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard. Manufactories, 84, Newman Street, and Newman Mews, London, W.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, require no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
See addresses above.

SILVER SAND, fine or coarse grain as desired. Prices by Post per Ton or Truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
F. ROSHER AND CO.—Addresses see above.
N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

GRANITIC PAINT
for Sanitary Purposes.
SILICATE ZOPISSA COMPOSITION. All colours. For Damp Walls, either internal or external.
LIQUID SILICATE ZOPISSA COMPOSITION. Colourless. For Preserving Stone, Brick, or Cement. All washable and durable. To be had genuine only of the Original Manufacturers,
THE SILICATE ZOPISSA COMPOSITION AND GRANITIC PAINT COMPANY, removed to
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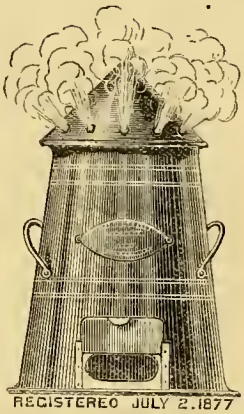
TEBBS' UNIVERSAL FUMIGATOR.



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Price, 3s.; large size, 4s. 6d. each.
This cheap and thoroughly effective Fumigator will burn Tobacco, Tobacco Paper, Tobacco Rag, Sulphur and Paper, or any other Fumigating Material. It is self-acting, requires no attention when once lit; there is no fear of flaming, no waste of material, every particle being consumed and given off in dense smoke, thus insuring the entire destruction of insect life.
To be had, Wholesale and Retail, of
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Established over a Quarter of a Century.

FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING

Is in use over many thousand miles,
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.
It is constructed with
POWERFUL WINDING STRAINING PILLARS,
RIGID INTERMEDIATE IRON POSTS,
STRONG and DURABLE WIRE CABLE STRANDS,
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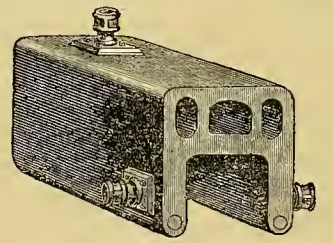

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From Mr. F. DENNING, *Gardener to* J. Fenton, Esq., *Yardsley, February* 26, 1877.

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."

CINERARIA, Weatherill's Extra Choice Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Mr. J. WEST, *Gardener, Cheadon Park, May* 21, 1877.

"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

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SATURDAY, JULY 14, 1877.

THE FOLKLORE OF THE ROSE.

AMONG the many flowers round which in the lapse of centuries a popular history has accumulated, there is none which occupies a more prominent place than the Rose. Whether we look to the position which it occupies in the poetry of almost all lands, to its historical, literary, and legendary associations, to its individual popularity as a garden flower, or to the attention which it has attracted among horticulturists for these many years past, we shall find the Rose pre-eminent among flowers. In common with the Lily, the Violet, and one or two other favoured blossoms, the Rose seems to have become regarded as a synonym of a flower; and hence we find its name applied to plants of widely separated families, not only in our own tongue, but in that of many other countries. The poetical references to the Rose would occupy by themselves a volume of considerable bulk, while to trace out fully all its associations, to describe its varieties, in a word to monograph its history, would require many books, and such a task is hence obviously far beyond us on the present occasion. We will, however, briefly bring before our readers a few of the more interesting facts connected with the place occupied in history and legendary lore by the "Queen of Flowers."

It would probably be impossible to ascertain when the Rose was first recognised as the emblem of England, but it has certainly been associated with our country from a very early period, for Pliny, speaking of the name Albion, seems in doubt whether this name referred to our white cliffs or to the white Roses which abounded in the island: "*Albion insula sic dicta ab albis rupibus quas mare alluit, vel ob rosas albas quibus abundat.*" The popular idea that the white Rose was first adopted by the Yorkists during the civil war to which our flower lent its name, is not a correct one, in spite of the sanction which it receives from the "immortal bard." Dr. Brewer states that it was a hereditary cognisance of the house of York, and had been borne by them ever since the title was first created; while the red Rose was the accepted badge of Edmund, first Earl of Lancaster. The "rose noble," a gold coin first struck by Edward III. in 1334, bore upon one of its faces the figure of a Rose. It ceased to be coined during the reign of Henry V., but its name is not unfrequently met with in old writers. Later on we again find the white Rose employed as a political symbol. It was adopted by the Jacobins as an emblem of the Pretender, apparently because his adherents were obliged to help him secretly, or "under the rose." This last phrase, by the way, appears to date from classical times, when Cupid gave a Rose to Harpocrates, the God of Silence, as a bribe not to betray the amours of Venus. The Rose was subsequently suspended from and sculptured on the ceilings of dining-rooms, as a hint that sentiments uttered in the course of friendly gatherings should not be repeated elsewhere. Newton, in 1587, speaks of the hanging of Roses over the tables as a common country custom in parlours and dining-rooms; and Peacham, in 1638, says that they were painted in position as well in England as in the Low Countries. The plaster ornaments which are often seen in the centre of our modern ceilings are still called Roses.

The Rose held an important place in mediæval ecclesiastical history, the blessing of the "golden Rose" upon mid-Lent Sunday being a ceremony which was confined to Rome itself, the reigning Pope being the officiant upon the occasion. Different Popes are credited with the introduction of this ceremony, the dates at which it was instituted being given by different authors as ranging between 1048 and 1247. The former is the date assigned by Calmet in his *Vérification des Dates*, who states that the ceremony was instituted by Leo X. There is an old mosaic in the church of St. Susan at Rome, in which Charlemagne is represented kneeling and receiving from St. Peter a standard covered with Roses. The Rose, having been blessed by the Pope, was subsequently sent by him as a mark of especial favour, usually to some king or queen; it was not, however, exclusively bestowed upon persons of high rank, and the present Pope has upon at least one occasion sent the golden Rose to a singer distinguished for her personal excellence. Pope Julius II. sent, in 1510, a golden Rose, duly blessed and perfumed, to Henry VIII., to whom it was presented by the hands of Archbishop Warham. Besides Mid-Lent Sunday, another one, that within the octave of the Ascension, is associated at Rome with the Rose under the title *Dominica in rosis;* this has reference to a twelfth century tradition, which states that, during a sermon of the then Pope in the church of St. Maria Rotunda, a shower of Roses fell from the roof.

If we stray into the field of ecclesiastical tradition, we shall find the Rose a prominent object. Roses and Lilies were the flowers found in the tomb of Mary after her assumption into heaven; Roses, again, were the blossoms sent by St. Dorothy from the heavenly garden, in response to the challenge of Theophilus; Roses replaced the alms of Elizabeth of Hungary when her apron was rudely torn from her grasp by those who shared not her charitable zeal for the poor; and from the chaplet of Roses shown by the blessed Virgin to St. Dominic the popular Catholic devotion known as "the rosary" takes its name. "Rosa mystica" is one of the titles applied to Mary in the Litany of Loretto; and it was probably some vague reminiscence of ecclesiastical association which induced Lord Beaconsfield to represent (in his novel, *Lothair*) the Rose of Jericho as figuring in a Roman religious procession. It is unnecessary to state that the insignificant Crucifer to which this name is usually applied would be quite unfitting for employment on such an occasion.

Ecclesiastical tradition and secular history are agreed as to the institution of the *Rosière* in France by St. Médard, Bishop of Noyon, who in French weather-lore—and indeed throughout Europe—fills the position which we enlightened Britons still popularly give to St. Swithin—

> "Quand il pleut pour le Saint Médard,
> Il pleut quarante jours plus tard."

St. Médard was born at Salency, not very far from Noyon, and some time before his death, which took place in 545, he charged his family estate with a sum of money which was to be given with a crown of Roses to the most virtuous girl of that village. Until the time of the French Revolution, this ceremony, which was attended with much religious observance, and partook of the nature of a *fête*, was annually observed upon the 8th of June (the feast of St. Médard), and after a brief cessation was revived again in 1872, and has continued down to the present time. It has, however, undergone certain modifications, and the *Rosière* now receives 300 francs, half of which sum is given by the municipal council.

Nor is this the only occasion upon which the Rose figures in the history of France. In 1227 a custom called the tribute of Roses (*la baillée*

aux Roses) was instituted at Poitiers under the following circumstances. Parliament was convoked there early in May to decide upon an important matter. The Vidame de Bergerac, who had been married three times, had left seven children of each union, and it was necessary to decide whether the children of the first marriage should share his property equally with the younger branches, a point upon which laws and customs were not in accord. The Count Philibert de la Marche, to whom the report of the case had been entrusted, pleaded the cause of the orphans so successfully that his views were adopted by the magistrates, and the Regent, Queen Blanche of Castille, to perpetuate the remembrance of the day, and to remind the young peers how the most tender feelings should be turned to the advantage of justice, ordered that they should each year present to the Parliament a tribute of Roses. This custom was carried on up to 1589, the tribute being presented by the youngest peer of France; but in that year the League, no longer considering the Parliament as a court of Peers, abolished the custom, which has never been revived. *B. M.*

(*To be continued.*)

THE COLORADO BEETLE.

The Dublin correspondent of the *Daily News* telegraphed to that journal on Tuesday last, that the unwelcome Doryphora made its appearance the previous day on the Dublin quay. The specimen discovered is said to have been a large one, and was found crawling on a rope close to the Liverpool docks. Confirmation of this report has not been forthcoming—indeed it has since been stated that the insect found in Dublin was not the Colorado beetle, meanwhile every grower of Potatos should keep a strict look-out for the dreaded enemy, and farmers and gardeners especially should instruct their *employés* to report at once the appearance of any insects on Potatos with which they may not be familiar. The Colorado beetle may be easily identified. The perfect insect looks at first sight like a very large Lady-bird, or Lady-cow, as that pretty little insect is sometimes less poetically called, but the colour of the Lady-bird is red with black spots, that of the Colorado beetle pale brown, with ten black lines or stripes arranged longitudinally down its back. It is not the perfect insect that is the most destructive, but the long bulbous-bodied spotted grub or larva, which feeds voraciously on the haulm. The eggs, the larva, and the perfect insect, should be destroyed as soon as discovered. The most effective remedy, as we have before stated, for the beetle, that has yet been discovered is Paris-green—a preparation of arsenic, and consequently a most dangerous poison.

The most convenient method of using the Paris-green is, we repeat, by means of a tin can capable of holding about 8 gallons, made of a shape to rest easily on the back of the labourer, as a knapsack or Cassiobury fire-engine would do. To the lower end of the can are attached two indiarubber tubes, each terminating in a "sprinkler" like the rose of a watering-pot. There is a convenient lever at the bottom which presses the tubes and shuts off the outflow at will. When about to be used "two bucketfuls of water are first poured into the can, then three tablespoonfuls of good green well mixed with another half-bucketful of water, and strained through a funnel-shaped strainer, which prevents the larger particles of the green from getting into the can and clogging up the sprinklers. Five to 8 acres a day can be sprinkled by one man, and from 1 to 1½ lb. of good green, according to the size of the plant, will suffice to the acre. . . . The walking serves to keep the green well shaken, and the flow of liquid is regulated at will by a pressure of the fingers at the junction of the tubes with the metallic nozzles." It may not be amiss to suggest the absolute necessity of using the can and other implements employed in distributing the Paris-green for no other purpose whatever, and to insist rigorously on thorough cleanliness on the part of the workman when his work is done.

New Garden Plants.

Cypripedium albo-purpureum, *n. hybr.**

This is a hybrid raised from Cypripedium Dominyanum and Schlimii, the latter being the mother: hence it is a very great curiosity, the father parent being itself a mule. At first sight I looked for the anthers. They are exceedingly small in proportion to the other parts of the column, and have very little pollen, looking exceedingly flaccid. It is much to be desired that Messrs. Veitch may see whether this pollen has still the power of impregnation. I scarcely believe it, but a few granules might prove capable of doing their duty, and the offspring would be even far more interesting, being the nephew of a mule grandfather.

The flower is even a good deal larger than that of lovely C. Sedeni. It is whitish, with purplish on the borders of the lip, and many spots of same colour under it. The spots on the inflexed lateral lobes which nearly cover the mouth of the sac are much darker, and make a nice impression, since those lobes are ivory-white. The sepals have a slight purplish tinge on their borders. The petals are totally purplish and twisted, hanging down and exceeding much the length of the lip. The staminodium is light purplish, and adorned on each side with many bristles. All places where such a flower bears hairs, as the bases of petals and the sac of the lip internally abound with an unusual richness of hairs. I believe it is Mr. Seden's work, since I have to thank for it Messrs. Veitch. *H. G. Rchb. f.*

Cypripedium Parishii, *Rchb. f.*

I have just obtained a small flower of this well known plant with a black labellum and unusually dark petals. It has flowered on a spike with small normal flowers, where it is peculiar by an abortive stigma which I never saw before. I have to thank my excellent correspondent, our highly valued orchidist, Mr. Day, for this great curiosity. *H. G. Rchb. f.*

Dendrobium arachnostachyum, *Rchb. f., supra*, 334, vol. vii.

A fresh spike, kindly sent by Messrs. Veitch, proves this species to have light green flowers with internal decoration of the finest violet. The front of the column is totally violet; the lip, of a more yellowish tint, when compared to the sepals and petals, has the three longitudinal keels and the lateral veins of side lobes violet. Let me add that these are indeed green spiders, so that nobody needs being offended by the name. *H. G. Rchb. f.*

Masdevallia (Amandæ) Lehmanni, *n. sp.*†

This is a very nice Masdevallia, more florid than its ally, Masdevallia polysticta, with yellow-orange flowers, rounded membranous bracts, and peduncle a span high, longer than the oblong acute long-stalked leaves. A basketful of such inflorescences would be a novel aspect for Orchidists who are desirous of being excited by new impressions. It stands nearest M. tridens, Rchb. f., was discovered in Ecuador by Mr. Lehmann, who sent many good Ecuadorian things (up to Selenipedium Wallisii!) to Mr. Low. Mr. Lehmann's name gives me the hope of his being my compatriot. There is, however, a strong indication of his having been in contact with English. Not because he sent a very beautiful collection of dried specimens—specimens, indeed, not scraps!—of Ecuadorian Orchids to Mr. Low for me. No, no! I am sorry to say *ce temps n'est plus*—collecting specimens is no more the general custom of English collectors, as in the glorious days of both the Lobbs, Purdie, the Cunninghams, and Gardner. No! It would seem that the English do not acknowledge a plant to be a specimen unless it be glued down. I have obtained splendid specimens glued down abroad on the most miserable grey blotting paper. I could not help thinking of the old General who declared a mantle was a useful thing for a soldier, provided it was neatly rolled on his back. After all it is much better to obtain a glued, or fastened specimen, than none at all, and I recommend myself to Mr. Lehmann for more such niceties by dedicating to him most thankfully this lovely Masdevallia. *H. G. Rchb. f.*

Aloe (Pachidendron) platylepis, *Baker, n. sp.**

Stem simple, attaining in the specimen examined a length of a yard below the rosette of leaves, and a diameter of 2—3 inches. Leaves 30—40 in a close rosette, extending over a length upon the stem of 1½—2 feet, ensiform, 1½—2 feet long, 2½—3 inches broad at the base, narrowed gradually to a long, acuminate point, unspotted, slightly glaucescent, channelled down the face, broadly rounded on the back, ½ inch thick in the middle, the prickles deltoid, spreading, furnished with a minute horny tip, those at the base of the leaf about ⅙ inch, and the upper ones about 1/12 inch long. Raceme dense, 6 or 8 inches long, 4 inches in diameter when fully expanded; bracts deltoid, ½ inch long and broad; pedicels erecto-patent, the lower ones as long as the bract. Perianth cylindrical, 12—13 lines long, pale scarlet or yellow, tipped and striped with green, the campanulate tube about ⅛ inch long, the ligulate permanently imbricating segments about an inch long. Six stamens all decidedly longer than the perianth; filaments pale greenish-yellow; anther oblong, ⅙ inch long; pollen scarlet. Style exserted half an inch from the perianth.

Aloe (Pachidendron) chloroleuca, *Baker, n.sp.*†

Stem simple, attaining in the specimen examined a length of one yard, and a diameter of 3—4 inches below the rosette of leaves. Leaves 30—40 in a dense rosette, ensiform, 2—2½ feet long, 2 inches broad at the base, narrowed gradually to an acuminate point, plain green, without any spots or bands; the upper half of the face rather channelled, the centre half an inch thick, the back rounded, the prickles crowded (in the lower part of the leaf five or six to an inch), deltoid cuspidate, 1/12—⅛ inch long, the upper ones especially upcurved. Raceme dense, nearly a foot long, 3½ inches in diameter when expanded; bracts lanceolate-deltoid, ⅜—½ inch long; pedicels erecto-patent, just equalling the bracts. Perianth tubular, straight, 12—13 lines long, a pale yellowish-white; tube campanulate; segments ligulate, keeled with green. All the six stamens exserted from the perianth a length of ¼—⅜ inch; filaments lemon-yellow; anthers yellow, oblong, ⅛ inch long, pollen bright orange. Style as long as the stamens. Closely allied to A. platylepis, from which it differs mainly by its denser, longer, narrower leaves, longer raceme, and differently shaped bracts.

There are two Aloes of the Pachidendron group, which we have had for some time in the Kew collection, ranged whilst the flowers remained unknown under A. Salmdyckiana, from which in habit and leaf they present no material character of difference. This spring my attention was called to them in a flowering state by my colleague, Mr. N. E. Brown, and we both agreed that they ought to be considered as distinct species. There is a good figure and description of A. Salmdyckiana in Salm-Dyck's monograph of Aloe, under section 27, fig. 1. It has a bright red flower, 1½ inch long, with a pedicel nearly as long as the perianth and twice as long as the oblong-rhomboid spathulate bract. No doubt both of them are Cape plants, but we do not know their complete history in detail. Many specimens of the three species may be seen at the present time growing side by side in the Succulent-house at Kew. *J. G. Baker.*

Gasteria colubrina, *N. E. Br.*

Plant about 15 inches high, with a spread of 18 inches or more. Leaves spreading; in young plants distichous, or sub-spirally distichous, ligulate, straight, 6—8 inches long, 1—1½ inch broad at base, 4—6 lines thick, flat or very slightly convex above, convex beneath, not truncate on one side, apex obtuse, shortly cuspidate, the edges cartilaginous margined and rough to the touch at the apex, but towards the base becoming obsoletely tuberculate. As the plant gets older the leaves gradually become multifarious, and much longer and of a different shape, being in an adult plant 9—14 inches long, 1¼ inch broad, 3—4 lines thick, acinaciform, straight or slightly fal-

* *Cypripedium albo purpureum*, n. hyb. (Dominyanum × Schlimii).—Aff. Cyp. Dominyano et Schlimii; sepalo summo oblongo acuto; sepalo inferiori subæquali, labellum paulisper superante; tepalis linearibus tortis margine lævibus, disco furfuraceis; labelli sacco oblongo ostio antice retuso; lobis lateralibus inflexis rotundatis, implicitis, staminodio transverso postice emarginato, antice tridentato; lateribus ciliato. Flores albi, purpureo aspersi.—Selenipedium albo-purpureum (Dominyanum—Schlimii.)

† *Masdevallia* (*Amandæ*) *Lehmanni*, n. sp., H. G. Rchb. f. —Aff. M. tridenti, Rchb. f. Foliis longe petiolatis cuneato oblongis acutis trinerviis pedunculo apice racemoso, bracteis semiovatis obtuse acutis cucullatis ovariis subæqualibus, ovariis crispo tripteris; sepalo summo oblongo, sepalis lateralibus oblongo-ligulatis, omnibus in caudas æquilongas extensis, margine inferiori aspero ciliolato muriculatis, tepalis oblongis acutis, lateribus serrulatis, labello ligulato ante apicem constricto, obtuse acuto; columna clavata acuta. Flores flavi semipollicares.—Ecuador, Lehmann! (ded. amic. St. Low).

* *Aloe* (*Pachidendron*) *platylepis*, Baker, n. sp.—Caule producto simplici; foliis 30—40 laxe rosulatis ensiformibus acuminatis bipedalibus leviter glaucescentibus immaculatis, dentibus parvis deltoideis; racemo simplici denso semipedali; bracteis latis deltoideis; pedicellis bracteis æquilongis; perianthii subpollicaris pallide scarlatini vel lutei tubo brevi campanulato, segmentis ligulatis; antheris omnibus exsertis; stylo longe protruso.

† *Aloe* (*Pachidendron*) *chloroleuca*, Baker, n. sp.—Caule producto simplici; foliis 30—40 dense rosulatis ensiformibus acuminatis 2—2½ pedalibus viridibus immaculatis, dentibus parvis deltoideis; racemo denso subpedali, bracteis lanceolato-deltoideis, pedicellis bracteis æquilongis; perianthii sub-pollicaris luteo-albidi tubo brevi campanulato, segmentis ligulatis viridi vittatis; antheris omnibus exsertis; stylo longe protruso.

cate, sometimes a little twisted, very concave above from the base up to about 1½ inch below the obtuse cuspidate apex, which latter 1½ inch is flat or slightly convex, convex beneath, one side truncate from a unilateral carina, which extends from the base to the apex, and there forming the margin, the true margin disappearing before reaching the apex, one margin and apical third of the carina cartilaginous margined, and slightly rough to the touch, the other margin and middle part of the carina with slightly elevated cartilaginous tubercles. Both forms of leaf smooth, minutely white punctate under a lens, dark green irregularly mottled and banded with oval, more or less confluent pale green spots, which towards the base are much more elongate. Flowering stem 4 feet or more high, erect, branching just below the middle (if simple then usually much shorter), terete with the basal fourth compressed and sharply two-edged, dark green tinged with purplish upwards, terminal parts pale coral-red, everywhere covered with a glaucous meal, floriferous from about the middle, racemes rather lax, bracts acuminate, as long as the pedicels (3 lines) in the uppermost, and twice as long (7 lines) in the lowermost flowers; pedicels 3—4 lines long; flowers 7½ lines long, curved, the globose inflated lower part 3½ lines thick, glaucous, basal part pale coral-red shading into very pale greenish white towards the lobes, each lobe with a broad green central stripe.

A native of the Cape of Good Hope; sent by Mr. Bolus to the Royal Gardens, Kew, where it flowered early in May, 1876, and has lately flowered again. As a species it is perhaps nearer to G. dictyodes of Salm-Dyck's Monograph, § 29, f. 4, than to any other published species, but the leaves are very much more concave, with larger and fewer spots, and the perianth is more inflated. When out of flower it has much the look of G. acinacifolia, but the short perianth at once removes it from the section to which that species belongs, and places it in the group Breviflorae; it is also allied to G. Bowiana, G. maculata, and G. pulchra, from all of which it is at once distinguished by its very concave, differently-shaped leaves. *N. E. Brown, Kew.*

THE FRUITING OF THE HOLLY.

THE paper read by Mr. M'Nab at the June meeting of the Botanical Society of Edinburgh (*Gardeners' Chronicle*, June 23, p. 782) is incorrect and very amusingly illustrates the adage that warns the man who wants a thing done to do it himself. Mr. M'Nab is too experienced and careful an observer to be allowed to remain in error as to the floral characters of Hollies, and he has but to look about him even now to discover that the list supplied to him by Mr. Johnston, of the Lawson Company, is in several particulars wrong. As regards the occurrence of hermaphrodite flowers, a plantation of common seedling Ilex will supply many examples. During the recent flowering season I examined about 200 fine young plants raised from berries sown in 1859, and I found very many flowers in which both sexes were perfectly developed, and in my collection of over seventy named varieties I noted that laurifolia, lutea, Smithiana, and Silver Queen produced a few hermaphrodite flowers, although all except one of these—*i.e.*, lutea—are to be regarded as males, and therefore not "fruit-bearing Hollies." There are two named varieties that claim consideration before all others in the study of the sexual characters of Ilex Aquifolium, and I respectfully direct Mr. M'Nab's attention to them. Laurifolia is entered in Mr. Johnston's list as a fruit-bearer, but it never produces fruit. It is the most floriferous of all Hollies, and bears flowers so freely as to present a really splendid appearance when at its best. In respect of beauty, when in flower it may be compared with Acrophyllum venosum, and its flowers are so fragrant that one old plant will perfume a large garden as effectually as the most fragrant Cratægus. For purposes of comparison, laurifolia may be regarded as a typical male. On the other hand fœmina, not entered in Mr. Johnston's list, is a typical female, for the flowers are all stigmatic, and the plant bears berries more profusely than any other of the garden Hollies.

Another mistake of Mr. Johnston's is entering Shepherdii as a male. Any one who will examine established plants of this variety now will probably find a few berries on them. It does not fruit freely, but plants that have not yet grown to the height of a foot will show a few berries, and the flowers are invariably females.

The most conspicuously fruitful of the named Hollies are fœmina, lutea, flava, balearica, and selected female plants of the typical Aquifolium. I cannot at this busy time enter into particulars as I would wish, but I present a short list that may be useful:—

Male-flowering Hollies.

ferox or Hedgehog	Silver Queen
Gold, few spined	doningtonensis
longiflora aurea	heterophylla
Smithiana	laurifolia

Female-flowering Hollies.

lutea	maderensis
Scotica	platyphylla
Shepherdii	glabra
Golden Queen	flava
fœmina	balearica

Hermaphrodite-flowering Hollies (producing Hermaphrodite Flowers Occasionally).

Smithiana Silver Queen heterophylla laurifolia	Male flowers predominating, berries rarely or never produced	lutea flava	Female flowers predominating, berries plentifully produced

Shirley Hibberd, Stoke Newington.

POTATOS AT CHISWICK.

I HAVE made a careful examination of all the Potatos at Chiswick, but it would be premature to attempt any description of the general effects of the disease at present. According to my estimate the Potatos named Excelsior and Alpha are by far the worst, so bad are these that it is probable after the lapse of a week or two they will have totally disappeared: after these for badness of disease I estimate Hardy's Glory and Early Gem, then American late Rose and Long Red. None of these have been treated by me with Salus; all six, especially the two first, which are prostrate, are notably attacked by the secondary condition (or resting-spore state) of the disease. On all six the Peronospora may be seen in small quantities.

As for the remainder of the Chiswick Potatos, they present so many diverse aspects of growth, habit, and health, that it is impossible to speak of them in a short letter. Many of the sets have totally perished, others have withered, and present brown and dry, and sometimes ill-grown and rotten haulm. As for the Potato fungus proper, last Monday I could see very little indeed of it. What it may be after the lapse of a week or a fortnight I cannot venture to suggest. Neither is it easy at present to compare the plants treated by me with those not treated, for at present the Peronospora in its typical state is almost absent.

1. In the open there are fifty York Regents planted by me, twenty-four cut and twenty-six uncut, these all up and well; this Potato, under ordinary circumstances, is a very uncertain plant. Amongst the trees, where York Regents are again planted, there is only one case of doubtful disease amongst forty-three whole tubers, and out of thirty-nine cut tubers three have disappeared, and one is withered.

2. Coming now to Striped Don, a Potato which has a similar habit of growth with the last, out of the twenty-six uncut tubers in the open all are up and well, and out of the twenty-five cut three have perished. Under the trees the same Potato shows a loss of four plants only out of eighty-five.

3. American Early Rose.—This is an uncommonly bad Potato for taking the disease. Fifty plants were set in the open: of these four have perished, and fifteen are ill-grown. Amongst the trees seventy sets were planted; of these eight have not grown, and seven are ill-grown; the latter in every case I hope to recover.

4. Bresee's Prolific.—This Potato has a very bad character, like the last, but in the open all the twenty-six uncut tubers are up and well; amongst the twenty-four cut only two have not grown. Amongst the trees, out of seventy-nine plants cut and uncut, all are good except four, which appear not to have grown.

5. Paterson's Victoria.—This is a Potato of the very first class; out of fifty plants in the open only two have failed to grow, all the rest are up and healthy. Of the eighty-nine plants amongst the trees, cut and uncut, nine have perished or have not grown.

6. Lapstone.—According to my estimate a very bad Potato for falling a prey to the disease: in the open fifteen out of fifty plants have vanished, but my Salus was exhausted when I reached the last sets in the open, so that the last mentioned were virtually not treated by me. Amongst the trees out of fifty-seven whole tubers two only have vanished, out of thirty-three cut twelve have disappeared. As far as my experience goes cut tubers are commonly under a disadvantage when subjected to such extremes of cold, heat, and drought as we have had this season. At present I have not seen the Peronospora on the above plants; the next few weeks will prove whether my method of growing will have any decided effect on the attacks of Potato-murrain.

Elsewhere at Chiswick the failures of growth are in some instances very much worse than anything in my lot; for instance, American Late Rose in a row of seventy-three plants, thirty-seven have perished, and in the twelfth row from the corner amongst the trees thirty sets have perished out of about sixty or seventy; in row 6, twenty-eight have failed, and many are ill-grown; at the same time it must be confessed many rows are in apparently vigorous health both in the open and amongst the trees.

But as I said at first, it is premature to discuss the condition of all the Potatos at Chiswick at present, as the next few days may work some surprising changes. What is just now wanted is a good plainly-written label at the end of each row. Many rows are, unfortunately, without labels. *W. G. Smith.*

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

TRACHELOSPERMUM (RHYNCHOSPERMUM) JASMINOIDES.—In this we have a climbing plant of moderate growth, alike suitable for a trained pot specimen or for clothing a pillar or rafter, where the space to be covered is not too large; for although, in common with almost all other plants indigenous to China, it is a free grower, yet it does not attain the size of many climbing subjects. From the locality in which it is found, Shanghai, it is very nearly hardy in this country, succeeding on a sheltered wall, with a little protection, in the south of the kingdom: yet it is a plant that will thrive under a very considerable range of temperature, and will do equally as well in a cool stove, or intermediate heat, as it will in a greenhouse; but, of course, the progress made, in growth especially, during the early stages, from a small state upwards, is much quicker when it is subject to heat than when treated cooler. It will bear forcing: its white fragrant Jasmine-like flowers are produced in profusion from the ripened growth of the preceding summer. The shoots are of a semi-twining habit, and when the plant is in vigorous health will extend to considerable length in a single season, particularly if submitted to a warm humid atmosphere. The perfume is very agreeable, but not objectionably powerful; a small plant in flower will load the atmosphere of a large house. The ease with which it may be grown, even by those who have not had much practice in plant-growing, commends it to the inexperienced. When in a strong vigorous state each bunch contains a number of flowers, which open in succession, keeping the plant gay for several weeks consecutively.

It is well adapted for conservatory decoration, as the hard texture of the leaves renders it little subject to injury by keeping, whilst in flower, somewhat crowded amongst other things in a way that is often unavoidable in such structures. The somewhat short foot-stalk renders the flowers less servicable for using in a cut state than if longer; nevertheless, if not subjected to too much heat in opening, they are a useful addition for bouquets. As this Rhynchospermum can be kept for a long time in a small pot, and still have a fair appearance, yet nevertheless in reality be so stinted as to preclude the possibility of its growing freely, it is necessary to be careful in selecting young plants for growing on to see that their roots have not become too much matted, and the shoots of the thin, wiry character that indicates a condition to be avoided. One-year-old plants raised from cuttings the spring previous are much to be preferred to hard, older examples. These should be potted about the end of March, giving them a 2 or 3-inch shift according to the strength and quantity of their roots. It will succeed in either peat or loam, but I prefer the latter, as it will induce quicker growth, and in it the leaves have a darker, more healthy tint, which adds much to the general appearance, especially when in bloom, the dark glossy green Myrtle-like foliage forming a good background for the flowers. Let the soil be of a good fibrous description, using it from the first in a moderately lumpy state, as their roots are naturally strong. Add enough sand to keep it open, and drain the pots sufficiently. When the potting is

completed put half-a-dozen sticks 3 feet long in the new soil just inside the the rims of the pots. Round these train the shoots, at the same time pinching out the points to cause the production of an increased number of growths, for although really a climbing plant, and as such not necessarily requiring so much stopping as if it possessed a shrubby habit, still enough shoots should be formed to furnish the trellis which the plants will ultimately require. Place them in a house or pit, if such is available, where there is a night temperature of 50°, with a rise of 10° in the daytime. This will answer well for them, and so treated they will make much greater progress than if grown cooler; do not give much water at first until the roots have got possession of the new soil. Syringe the plants overhead every afternoon, and close the house at the same time; as solar heat increases the temperature they are subjected to may be proportionately raised. Very little shade will be required except for a few hours in the middle of the day in very bright weather, give them plenty of light, or the growth will become too much elongated and weak. The shoots as they grow must be kept regularly trained round the sticks, never bringing the points too low down, but allowing them to retain an upright position; a continuance of this treatment will be all that is needed through the summer, giving enough air in the middle of the day. By the middle of September discontinue syringing, and give more air with a drier atmosphere to discourage further progress and ripen up the growth.

Through the winter the plants will do in any house or pit where the temperature is kept at 35° in the night, giving just as much water to the soil as will keep the roots slightly moist. Again, in the spring, about the same time, remove into pots 4 or 5 inches larger, using similar soil. Uncoil the shoots from the sticks, and replace them with others longer and thicker that will support the increasing weight of the shoots, and train them regularly as before. It is not advisable to use a wire trellis until the season following; if the shoots are not sufficiently numerous, or there is an appearance of their extending too far, so as to be deficient near the base, again shorten the leaders. Treat through the spring and summer as in the preceding season, as before giving less water and more air in the autumn. I have said nothing about flowering during this summer, although the plant is such a free bloomer that it will have pushed its bunches from the base of the leaves at every joint made the preceding summer; but as the object will be to induce as much growth through the season as possible, the treatment when in flower should have been such as to keep them on growing.

Keep through the winter in a temperature such as in the last, and repot again in the spring, giving a shift 3 or 4 inches larger, in proportion to the quantity of roots the plants have got. As before, take them off the sticks round which the shoots have been trained; they will now be large enough to cover a moderate-sized wire trellis, some 2 feet diameter by 2½ feet high above the pot; over this train the shoots regularly from the base to the top, and place them in a temperature similar to that they have each preceding spring been submitted to, if they are required early in bloom—if not they may be kept 5° cooler. When the flowers are about to commence expanding they can be moved to a conservatory, or any house where they will not be kept much above an ordinary greenhouse temperature, and receive a little shade from the sun which will prolong their flowering, after which, if they are not required to be grown on larger without delay, they may be treated through the summer similarly to the rest of the greenhouse hard-wooded stock; if, on the other hand, it is deemed desirable to grow them on to a larger size without loss of time, they should be submitted to a temperature such as hitherto used during the growing season. Be careful that the shoots as they extend do not get entwined round the wires of the trellis, or there will be some difficulty experienced in getting them loose to place upon a larger one, which they will require in the course of another year or two, when more root-room will be needed: thus treated the plants will last for many years.

When required for training up a pillar or rafter, it is well to grow them for a season in pots so as to get some strength in them before turning the roots out in a border: this should be well-drained and consist of good fibrous soil with enough sand and crocks, or charcoal, to keep it sweet and porous. Have the shoots from the first regularly trained, not allowing them to become entangled, and as the space they are to fill gets covered the superfluous growth may be shortened back immediately they have done flowering each season. When the soil gets exhausted some of the surface may be removed every spring, and replaced by new, and when grown in this way, or in pits, manure-water will be a great assistance when the soil becomes filled with roots. There is a variegated form of this plant that will succeed by being treated in the above manner. It is scarcely so desirable a variety as the green-leaved sort.

Insects.—The stout nature of the leaves is such as not to suit the tastes of red-spider or aphides, although these insects will live upon the plant, but can be easily kept down by syringing. If scale makes its appearance it must be carefully removed by the use of sponge and brush. For mealy-bug, syringe and dip with a strong solution of insecticide in the winter when at rest. *T. Baines.*

THE GENUS AGAVE.

(*Continued from vol.* vii., *p.* 622.)

Series I.—Coriaceo-carnosæ.—Texture of the leaf rigid, not at all fleshy nor yielding to the touch when mature. End-spine large, hard and pungent.

Group IV. Americanæ.—Edge of the leaf without any distinct horny border; teeth large, deltoid-cuspidate, comparatively few in number.

We come now to the oldest and best-known group of the whole genus, which I will take in two subdivisions, first the species with oblong-spathulate leaves, like Scolymus and potatorum, secondly the species with oblanceolate leaves, like flavescens and americana. All the species of the Scolymus set of which the flowers are known have the Euagave inflorescence.

26. *A.* (*Euagave*) *Seemanniana*, Jacobi, Nachtrage, p. 29.—Acaulescent. Leaves 20 in a rosette 1—1½ foot broad, oblong-spathulate, 6—9 inches long, 3—3½ inches broad at the middle, narrowed to 2 inches above the dilated base, slightly glaucous, the face flat except close to the top, the base ½ inch thick, the centre ⅛ inch, the pungent dark brown end spine ½ inch long, the moderately close deltoid-cuspidate teeth slightly curved upwards or downwards. Inflorescence unknown in cultivation. Flower-stem said by Dr. Seemann to be 6 feet high.

A native of Guatemala, brought to England by the late Dr. B. Seemann, about 1868, and distributed by Mr. Bull. It is closely allied to Scolymus, from which it differs in colour, and by its smaller teeth with margin not repand between them.

27. *A.* (*Euagave*) *Parryi*, Engelm. Notes, p. 23.—Acaulescent. Leaves oblong-spathulate, 10—12 inches long, 3—3½ inches broad at the middle, the robust pungent end spine 1 inch long, and running down the edge of the top of the leaf for an inch or more; the teeth ½—1 inch apart, deltoid, only about ⅛ inch long, straight or slightly curved. Scape 8—12 feet high, bearing numerous large deltoid erect bracts with scarious brown margins and sharp points. Panicle about 3 feet long and 1 foot broad, the stouter branches considerably flattened, ½ foot long; ultimate pedicels ⅙—¼ inch long. Perianth, including the ovary, above 2 inches long; tube 4—4½ lines long and broad; lobes ¾ inch long. Filaments inserted at the throat of the tube, more than twice as long as the lobes; anthers 10 lines long. Capsule oblong-trigonous, 1¾ inch long; seeds punctate, ⅓ inch broad.

A native of Arizona and New Mexico, discovered by Lieut. Emory in 1846, and distributed in European gardens by Dr. Engelmann from seeds procured by Dr. Parry in 1868. Jacobi seems to have included it under his A. crenata, which appears to be a variety of A. Scolymus. I have not seen the present plant growing, but a full account of its characters and history will be found in Dr. Engelmann's paper.

28. *A.* (*Euagave*) *Wislizeni*, Engelm. Notes, p. 32; *A. scabra*, Salm-Dyck; Jacobi, Monogr., p. 88.—Acaulescent. Leaves about 30 in a dense rigid rosette, which is under 2 feet broad, oblong-spathulate, 3—3½ inches broad above the middle, narrowed to 2½ inches above the dilated base, where it is 1 inch thick, very glaucous, concave in the upper part, the hard pungent dark brown end spine 1 inch long and decurrent down the border a little, the base ½ inch, the centre ⅙ inch thick, the dark purple deltoid-cuspidate moderately close spines ⅛—⅙ inch long, the margin not distinctly repand between them, those below the middle of the leaf smaller and curved downward. Scape 12 feet high. Panicle thyrsoid, its branches 3—6 inches long; ultimate pedicels 1—2 lines long. Perianth, including the ovary, 2½ inches long; tube and lobes equal in length, both taken together as long as the ovary. Filaments inserted some distance down the tube, exserted ¾ inch beyond the lobes; anthers 10—10½ lines long. Capsule cylindrical-trigonous, 18—22 lines long, 7—8 lines in diameter; seeds under ¼ inch broad.

A native of the province of Chihuahua in Northern Mexico, where it was discovered by Dr. Wislizenus, in 1847. It is now widely spread in European gardens. I follow Dr. Engelmann, from whom my account of the inflorescence is taken, in rejecting Prince Salm-Dyck's name of scabra as inappropriate. It comes very near some of the forms of Scolymus.

29. *A.* (*Euagave*) *Scolymus*, Karwinsk.; Jacobi, Monogr., pp. 83 and 231; Baker, in Saund. Ref. Bot., t. 328 (fig. 3).—Acaulescent. Leaves 20—30 in a dense rosette 1½—3 feet broad, oblong-spathulate, 9—18 inches long, 3—6 inches broad above the middle, very glaucous, ¾—1 inch thick at the base, narrowed suddenly to a hard pungent end-spine an inch or more long, the teeth deltoid-cuspidate, chestnut-brown, the upper ones ¼—⅜ inch long, with the edge repand between, those of the lower half smaller and directed downwards. Scape 14—16 feet high, including the thyrsoid panicle, which is about 4 feet long by half as broad, furnished with copious lanceolate erect green bracts; branches few, with the flowers at the end in very dense clusters. Perianth greenish-yellow, 2½—3 inches long; ovary oblong-trigonous, above an inch long; lobes under an inch long, equalling the broadly funnel-shaped tube; filaments exserted ¾—1 inch beyond the lobes; anthers an inch long.

A native of Mexico, introduced into European gardens about 1830, and now very common. It has numerous named forms and varieties, of which the principal are *A. Schnittspahni*, Jacobi, Monogr., p. 83; *A. amœna*, Lemaire; Jacobi, Monogr., pp. 84 and 234 (a smaller plant than typical Scolymus); *A. Verschaffeltii*, Lemaire, Ill. Hort., t. 564; Jacobi, Monogr., pp. 84 and 234; Baker, in Saund. Ref. Bot, t. 306; *A. Saundersii*, Hook. in Bot. Mag., t. 5493; Jacobi, Monogr., p. 223, tab. nost. (leaves about a foot long, teeth very large); *A. cucullata*, Lemaire, Jacobi, Monogr., p. 82 (leaves round-obovate, not more than 4—5 inches long, 3 inches broad); *A. crenata*, Jacobi, Monogr., p. 229; *A. Mescal*, K. Koch (less glaucous than the type), and *A. auricantha*, Hort. (leaves fifty or more in a rosette, thinner than in the type, moderately glaucous, with prickles ⅙ inch long). There are two good coloured figures of different forms of the plant in the *Refugium*, and one in the *Botanical Magazine*.

30. *A.* (*Euagave*) *potatorum*, Zuccar.; Jacobi, Monogr., p. 78.—Acaulescent. Leaves about 20, arranged in a dense rosette 4—5 feet broad, oblong-spathulate, 2—2½ feet long, 7—9 inches broad above the middle, narrowed to 4—5 inches above the dilated base, where it is 2—3 inches thick, a dull, glaucous green, the face slightly concave, the hard, pungent end spine 1½—2 inches long, decurrent a little down the borders, the deltoid cuspidate prickles ¼—⅜ inch long, with the edge repand between them. Scape 12 feet high, including the thyrsoid panicle, which is 4—5 feet long. Perianth greenish-yellow, 3 inches long, including the ovary; segments about an inch long; filaments twice as long as the perianth-segments; anthers nearly an inch long.

A native of Mexico, introduced into Europe about 1830, and now widely spread in collections. Whether it be distinct specifically from A. Scolymus may be doubted. The principal difference is in size. The flowers are described by Jacobi, and there is an account in the *Revue Horticole* for 1875, p. 443, of a plant that flowered at Paris; but a figure is still a desideratum.

31. *A. ferox*, K. Koch; Jacobi, Monogr., p. 75.—Acaulescent. Leaves about 20 in a rosette, oblong-spathulate, 6—8 inches broad above the middle, narrowed to 4—5 inches above the dilated base, where it is 1½ inch thick, the face nearly flat, except at the top, a dull, slightly glaucous green, the hard, pungent point above an inch long, and decurrent a little down the borders, the margin repand between the large dark brown deltoid cuspidate teeth, which are ¼—⅜ inch long, and curved at the top, principally downwards. Inflorescence unknown.

A native of Mexico, first brought into notice in 1861. Intermediate between A. Salmiana and and Scolymus. A plant which I saw in Mr. Peacock's collection called A. Bonnetiana comes very near this. A. Guedeneyri, Houllet, in *Revue Hort.* 1875, p. 465, judging from the description, must come near to ferox. It is said to have bright green leaves 2½ feet long, a stem 11—12 feet high, with numerous large reddish-violet bracts narrowed to a black point, a thyrsoid

panicle with twenty branches, yellowish-green flowers, and much exserted stamens. It flowered in the collection of M. Guedeney at Vesinet in 1875.

32. *A. Galeottei*, Hort. — Acaulescent. Leaves 30—40 in a dense rosette 2—3 feet broad, oblong-spathulate, 1—1½ foot long, 4—6 inches broad above the middle, narrowed to 2—3 inches above the dilated base, where it is ¾—1 inch thick, the face flat or rather covex, green, hardly at all glaucous when mature, the centre ⅛ inch thick, the hard pungent end-spine ¾—1 inch long, and decurrent a little down the borders, the close deltoid cuspidate purplish-black prickles ⅛—¼ inch long, straight or slightly hooked. Inflorescence unknown.

This is a well-marked plant, which I do not find described, which I have seen under the name adopted both in the Saunders and Peacock collections. From the name I presume it to be a native of Mexico. It is marked in this subdivision by its green colour, and comparatively small teeth. *J. G. Baker.*

A VISIT TO THE WEST INDIA DOCKS.

To understand the wealth of the vegetable kingdom, and its importance in supplying the necessities of man, as well as the great part it plays in the commerce between this country and the various ports of the world, one need pay a visit to those great emporiums of merchandise, the different docks—at which some of the noblest vessels discharge their valuable and varied cargoes, and ship others for transference to distant parts of the world. We may read of shiploads of this, that, or the other commodity being brought to this country, and perchance consumed by the population; we may also study tables of statistics, and express susprise at the mass of figures, but we have no idea of the actual bulk of any special product unless we happen to see a ship unloading, or, still better, pay a visit to the store buildings or warehouses of one of our great import docks.

These thoughts are brought to mind from what was seen in the course of an hour or two on a recent visit to the West India Docks. In the lofty warehouses rising from the landing quays of these extensive receptacles of foreign merchandise, are stowed property of almost fabulous value, and of course of great variety. One lofty block is perchance filled with tea, another with coffee, and another with sugar, each one of these articles has in itself a history interesting enough, but, moreover, one that has been often told, and therefore it would seem that nothing new can be learnt or said about them. On the contrary many scraps of information can be picked up at these places, from the men in charge of the different floors, to each of which is allotted a special commodity, and though these men are from outward appearance working men in the true sense of the word, it is remarkable the amount of intelligence displayed by them in the history and sources of the several articles with which they are individually concerned. Thus in the tea warehouse we were treated to quite an accurate account of the nature of the Tea plant and its cultivation. The same may be said with regard to coffee: both these products being of a dry nature, the former contained in chests, and the latter in barrels or bags, the warehouses in which they are stored, and the ships from which they are unloaded, have a clean and trim appearance. This is not the case, however, with the sugar warehouse, the floors of which are saturated with the saccharine juice; and the quay, upon which, at the time of our visit, bags of Mauritius sugar were being landed, was literally swimming with molasses, so that one stuck at every footstep. Sugar is imported in various kinds of packages—the large hogsheads, often seen in grocers' shops, are the most unwieldy; they are, however, the most cleanly in appearance; for though upon landing their contents is more than apparent, owing to the sugar oozing through between the staves, they have not that soddened, dirty appearance that the bags have; for most of the Mauritius sugar comes in loosely made bags, formed with the leaves of Pandanus utilis, and the East Indian sugar in gunny bags woven from Jute: both of these become so thoroughly soaked with sugar that after being emptied of their contents they are sold to itinerant dealers, who boil them to extract the sugar and sel the bags to the paper makers. Whatever the nature of the package, or indeed of the cargo generally, they are all hauled up out of the hold of the vessel by cranes worked by hydraulic pressure; and insect life is also very abundant in some cargoes, the sugar-bags often teeming with cockroaches. One particular kind of sugar attracted our attention, occurring as it did in lumps or masses apparently closely compressed, each mass or package being between 2 and 3 feet long by 18 or 20 inches wide, and 1 foot thick—these were sown up in a kind of coarse sacking, and we learnt that this particular kind of sugar was shipped from Odessa; this of course dispelled the notion of it being cane sugar, and went to prove its origin to be the Beet, which was conclusive upon testing a sample, which left in the mouth a strong earthy or rooty taste, lasting a long time. This sugar is of a fairly light colour, and is, it seems, now brought into England in considerable quantities for the purpose of clarifying and crystallising. A sample of sugar from the same port, and from the same plant, crystallised before exportation, was also shown to us, and this, though in very small crystals, was as white as ordinary lump or loaf sugar, illustrating the degree of perfection attained in clarifying and crystallising sugar obtained from this source—a source, moreover, from whence we are fast obtaining our principal supplies, for statistics show that the produce of the Cane derived from all countries during the year 1876 amounted to 2,140,000 tons, while that from the Beet in the same period gave 1,320,000 tons; and this last is supplied only by Germany, France, Russia and Poland, Austria, Hungary and Holland, against tropical countries far and wide, where the cane has been for years, and is still cultivated to a very considerable extent—as for instance, Cuba, British, Dutch and Danish West Indies, Brazil, China, Java, Manilla, Mauritius, Central America, Mexico, British India, and other countries.

FIG. 3.—AGAVE SCOLYMUS VAR. SAUNDERSII.

If, as seems probable, the Beetroot will to a very large extent supplant, or at least compete with the cane in the production of sugar itself, an important commodity is still left to the cane, and that is in the production of the well-known spirit, rum, which is principally furnished by our own colonies, and for which there is always a large demand for supplying the navy. The official returns for the year ending December last, showed that no less than 10,476,503 gallons were imported, of which 5,024,419 gallons were entered for home consumption. These figures appear large, but a visit to the rum vaults at the West India Docks—where, of course, only a tithe of this quantity is stored—brings to our minds the reality of statistics. These vaults are fine specimens of ground brickwork, the arches being semicircular, and the piers square, broad at the base, and narrowing just before the spring of the arch. Looking diagonally across the vaults so that the arches intersect each other, a series apparently of equilateral arches are formed, which become more acute or pointed according to the change in the position of the person. The whole extent of these vaults is cleanly whitewashed, and notwithstanding the forest of casks, which however do not intrude themselves in the prevailing darkness, though, unfortunately, the odour of rum does, one can imagine themselves in the crypt of some immense Gothic cathedral. The only light obtained is from side windows, outside of which are fixed reflectors, and as the vaults are perhaps about 100 feet wide, it can be readily supposed that the centre is totally dark. The casks are arranged so that alleys or passages are left the whole length or width of the vault, and the ends of the casks form a wall on the right and left of these alleys, each cask being marked on this end with the rotation number and date of year when unloaded. These figures are marked with white paint, and when any particular cask is wanted, a reflector formed of a piece of common tin nailed on a piece of wood, is held up above the head so as to catch the light from the nearest window; the reflected light is thus thrown down on to the cask, and the number easily read. This plan, which is quite effectual, is adopted on the score of safety from fire, as no candle or lamp is allowed to be taken in. This plan of utilising reflected light is ingenious, and another ingenious contrivance is the instrument used for drawing samples from the various packages. Thus, for instance, if a sample of sugar be required from a large hogshead, a long iron instrument in the shape of an auger with a very deep groove and a stout wooden cross handle is driven through the side of the hogshead with a mallet, it is then twisted round till it reaches the centre of the hogshead, from which a sample of the sugar is withdrawn. These instruments are made sufficiently long to reach the centre of the package whether it be hogshead, cask, bag, or sack, so that it may be discovered whether the whole bulk of the article is of equal quality.

We spoke at the commencement of this article on the intelligence displayed by the men having charge of, or attending upon each floor. This was farther illustrated by the interest shown by some of them in making collections of the several products which are brought into the docks. These specimens are mostly kept in glazed cupboards or drawers, thus forming a miniature commercial museum, and the men who have been instrumental in bringing them together, though unacquainted with their scientific names, talk learnedly about their commercial or native names, the countries of their growth, production and uses. Some years since a small museum was formed with these products so collected, and a room set apart—in connection with an already existing institute and library—for the proper exhibition of these specimens, glazed wall cases being provided at the expense of the directors of the Dock Company, and the collection arranged on a commercial system. Many of the specimens in this collection were very fine, and some even rare, having been obtained immediately on the arrival of the vessels in the docks. This little museum bid fair to become the nucleus around which a fine collection might have been gathered, but a "reorganisatio

of officers displaced those who had taken a lively interest in it, and the result is that the collection has not been touched, apparently not even for the purpose of dusting, since it was first arranged some years back. Consequently rival collections are formed, which are kept by those interested in them, in different parts of the docks, instead of being conveyed to one centre. In one such collection as these we saw several articles which, though commonly imported, are seldom seen except by dealers, in their natural state, simply because the sole object for which they are imported is for the adulteration of other articles. Of such we may mention what are known in trade as mother Cloves, which are the fruits of the Clove tree (Caryophyllus aromaticus). They are black, fleshy-looking ovate oblong fruits, about an inch in length. Fluckiger and Hanbury, in their excellent *Pharmacographia*, describe them as being much less rich in essential oil than Cloves, and farther say that "though occasionally seen in the London drug sales in some quantity, they are not an article of regular import. As they contain very large starch granules, their presence as an adulteration of ground Cloves would be revealed by the microscope," nevertheless we are assured that they are used for the above purpose. That these mother Cloves are sold at a very low price is evident by a note in the work above referred to, to the effect that in a fortnightly price-current of a London drug-broker, dated Nov. 27, 1873, occurs an announcement of the sale of 1050 bags of mother Cloves at 2*d.* to 3*d.*

Another product of the Clove plant, which is imported in larger quantities, is the stalks of the flowers or flower-buds. These appear to have been known from an early period, for we gather again the following information from the *Pharmacographia*, where we are told that Clove stalks "were an article of import into Europe during the middle ages, when they were chiefly known by their low Latin name of *fusti*." Both the stalks and leaves of the Clove tree seem to have been articles of trade at Constantinope about the middle of the 14th century, and the latter were imported into Palestine so early as the 12th century, and likewise occur in a list of drugs sold at Frankfort about the year 1450. They are not known to be in use anywhere at the present time though the stalks are "still a considerable object of trade, especially from Zanzibar, where they are called by the natives *vikunia*. They taste tolerably aromatic, and yield 4 to 5 per cent. of volatile oil; they are used for adulterating the ground Cloves sold by grocers. Such an admixture may be detected by the microscope, especially if the powder after treatment with potash be examined in glycerin. If Clove stalks have been ground, thick-walled or stone cells will be found in the powder; such cells do not occur in Cloves." Thus three distinct products are furnished by the Clove plant, though they all have the same economic application, that of a spice.

Under the name of "Myrobalan flowers," some peculiar hard, brownish irregular objects attracted our attention. That these were no flowers or even fruits was apparent on cutting one through, which solved the secret of their being galls. These galls, or so-called Myrobalan flowers, which appear to contain a large quantity of tannin, are gathered from the trees of the species of Terminalia yielding the Myrobalans of commerce. Whether, however, they are produced equally from Terminalia Chebula, T. Bellerica, and other species we are not able to say. It seems, however, that they are imported for the same uses as true Myrobalans, namely, for tanning.

A peculiar looking fruit, divided into from five to ten carpels, but united into a point at the apex, is imported from San Domingo under the name of "Flor de Cupez." Each fruit is about the size of a Walnut, hard and brittle, of a dark brown or blackish colour, and contains a large quantity of dark, brittle resin; the whole fruit burns freely, in consequence of this resin, and gives off a balsamic but not odoriferous fragrance. They are the produce of Clusia rosea, and are imported only occasionally, it is said, for the sake of the resin. Indigo, it is well known, is the produce of Indigofera tinctoria and I. Anil, and perhaps other species growing in the East and West Indies, South America, &c., and is obtained by cutting down the plants and throwing them when freshly cut into water, in which they thoroughly macerate for some hours, when the liquid is drawn off and thoroughly stirred and beaten with bamboos or poles; the blue colour settles at the bottom of the vessels in the form of a sediment or mud, which is afterwards boiled for some time, and finally spread out on canvas frames to completely drain and dry, when it is cut into cubes or made into bales, and is ready for exportation. As many as 88,680 cwt. of indigo from all countries were imported into England during 1876, of the computed value of £2,129,986. The bulk of this, however, is reshipped to the Continent, our average consumption ranging between 15,000 cwt. and 20,000 cwt. At the time of our visit to the docks a very large quantity of Guatemala indigo was then in store. The packages or serons are formed of bullocks' hides, laced up very tightly with strong cord, the hairy part of the hide being inside. After being emptied of the contents these hides are sold to the tanners, fetching on an average about 2*s.* 6*d.* each.

It is needless to say that the area over which the dock premises extend is something enormous, though we are unable to give the extent in acres. It will suffice to show that the distance from the warehouses in which are stored the articles just described to the timber sheds, where is stacked vast piles of foreign timber, is quite a journey. On our way we pass piles upon piles of a dark, nearly black wood, in uniform lengths of 4 or 5 feet. Each piece shows plainly that the sap-wood has been roughly removed, and the whole has a weather-worn appearance. These numerous piles are all Logwood (Hæmatoxylon campechianum), a valuable black or deep red dye-wood, brought annually in very large quantities from Campeachy, Honduras, and other parts of Central America.

In the timber sheds—that is, under cover, but open at the sides—are quantities of Lignum-vitæ, the immensely hard wood of Guaiacum officinale, which is imported from Jamaica, and used chiefly for blocks and pulleys, skittle-balls, pestles and mortars, rulers, &c. Satinwood is also found here in thousands of billets, but upon inquiry we were told that the bulk of the Satinwood now imported is not brought from Ceylon, but from the West Indies, and chiefly from Bahamas. It is, therefore, conclusive that the wood is not that of Chloroxylon Sweetenia, which is usually known to botanists as the tree furnishing Satinwood, but is probably the produce of some ebenaceous tree —the Dominica Satinwood, which is of a bolder figure than that of Ceylon, being derived, it is said, from a species of Maba: the logs occur in long square pieces about 6 or 8 inches thick. The East Indian wood is mostly imported in circular logs, and is not now so highly valued as that from the West.

It is impossible to notice even a tithe of the woods found here, but before leaving the sheds, and thus concluding our visit to the docks, we are struck with wonder at the immense size of some logs of mahogany; many of them appeared to be quite 20 feet long, and perhaps 3 feet square. The trunks after being felled are roughle squared to enable them to be more conveniently carried on trucks to the rivers to be floated down to the coast; some of the logs indeed are said to be so large as to be impossible to remove from the place where they were first felled. Looking at the logs as imported it seems wonderful that they could have been brought over the seas in sufficient quantity to make them remunerative.

As we before said, many are the lessons to be learnt from a visit to such places as our import docks. The time thus spent is certainly not wasted. *J. R. J.*

ABIES ENGELMANNI.

Your correspondents who have been trying to clear up this knotty point appear only to get deeper into the dilemma.

I went over to Knap Hill the other day, partly to see Mr. Waterer's very beautiful Rhododendrons, but principally to have a peep at the new Spruce, about which we have heard so much. When I saw it I immediately recognised a very old friend, which, rightly or wrongly, we have been selling for the last ten years under the name of Abies Engelmanni.

The plants which Mr. Waterer had under that name were so disfigured by spring frosts that they were very difficult to recognise, and I hesitated to express an opinion, although I had a very strong suspicion of what they were, which suspicion was thoroughly verified yesterday on comparing one of these plants (which Mr. Waterer at my request kindly forwarded to us) with a batch of plants in our possession.

In 1875 we purchased at Messrs. Stevens' auction rooms two parcels of seed under the name of Abies Engelmanni; after a time we discovered that we had two distinct varieties, one lot being the Abies Engelmanni, which is correctly described by M. André, with leaves very thickly set on the upper surface of the branchlets, slightly recurved and appressed, and shorter, thinner, and much less sharply pointed than the other variety, which is correctly described by Gordon on p. 5 of the last edition of his *Pinetum*, under the name of "Abies commutata Parlatore, Engelmann's Spruce, syn., Abies Engelmanni, Parry. Leaves thickly crowded all round the branchlets, three-fourths of an inch long, four sided, rigid, smooth, sharp-pointed, and either straight or slightly curved, particularly when young, and of glaucous white colour."

This description is perfectly correct, with the exception of the colour, which only applies to a portion of this variety, many being of a dull green colour, and others of every shade of glaucous green, some with a far bluer tint than is ever seen on Picea nobilis.

The former of these varieties we soon discovered was utterly worthless, each year being cut by spring frost; we therefore ceased to sell it, although it is still growing in our nursery; and I may here say that this plant is identical with that grown by Mr. Waterer under the name of Abies Engelmanni. I have also found it growing in Continental nurseries under that name.

The other variety, which is identical with Mr. A. Waterer's Abies Parryana, we continued to sell under the name of Abies Engelmanni, the glaucous specimens at a high price.

It fully deserves everything that has been said in its favour. It has never been touched by any frost, and will grow and thrive in the bleakest situations, where all other Abies (at any rate as single specimens) are cut to pieces. Messrs. Fisher, Holmes & Co., of Handsworth, have a large batch raised from seed purchased at the same sale, and will fully bear me out in what I say. Whether they had any of the worthless variety among theirs I cannot say, but it is very strange that out of a batch of four-year-old seedlings raised again from two parcels of seed purchased at Messrs. Stevens' under the name of Abies Engelmanni, one lot has turned out the worthless variety, and the other the good one. The question still remains which of the two is Abies Engelmanni? If the first, then ought not the other one to be called Abies commutata?—as this is the variety described by Gordon under that name, and evidently the one referred to by M. Roezl in his letter to M. André.

I had a conversation with M. Roezl at Cologne in 1875 about Abies commutata, and from his description I came to the conclusion that it was identical with the plant which we were selling as Abies Engelmanni.

Since writing the above I have carefully read Dr. Engelmann's description of Abies Engelmanni, published in the *Gardeners' Chronicle* of October 31, 1863, and I have come to the conclusion that the early growing worthless variety is the one intended. The plant there referred to as Picea Menziesii I fully believe to be the Abies Menziesii Parryana of M. André, or Abies commutata of M. Roezl.

And now I come to the gist of the matter. I must enter my protest against Abies Menziesii being mixed up in the controversy at all. Abies Menziesii, true, is a distinct species from either, and is not, that I am aware of, found in that locality, its habitat being in Northern California, and a variety of it very distinct although given by some authorities as a synonym, viz., Abies sitchensis being found as far north as the sland of Sitcha.

The leaves of Abies Menziesii are much longer, wider and thinner than those of the variety which I will call for convenience Abies commutata, a leaf cut in two and strongly magnified presents a totally different section. The leaves are much more thinly set, and only on the upper side of the branchlets, they are a vivid green above and glaucous beneath, whereas Abies commutata is rather more glaucous above than it is beneath.

The habit is totally different, and the growth of Abies Menziesii in one season is double that of Abies commutata; above all, the cones are dissimilar.

I have before me a cone of Abies Menziesii grown at Elvaston Castle, also a cone of Abies Menziesii pulled from a tree in the Rocky Mountains in Northern California by our Mr. Syme, likewise a cone of Abies commutata sent home by M. Roezl in 1874, which, from his letter, is undoubtedly the same as the plants referred to as growing in Denver city, and in Professor Sargent's garden at Brookline.

The cones of the two species differ considerably, although I do not dispute that they are nearly allied.

We have seedlings raised from seed sent out by M. Ortgies in 1875 through Messrs. Sander & Co. as Abies commutata, which we fully believe to be the right thing, but it is impossible to speak positively about such young plants. The question now is what is to be the name, as most certainly it is deserving of a name to itself, and should not be hung on to Abies Menziesii, from which it so much differs. *John Barron, Elvaston Nurseries, Borrowash, Derby.*

NOTE ON THE MIMULUS LUTEUS.

MANY years ago my attention was drawn to the excito-contractility exhibited by the lipped stigma of Mimulus luteus, the structure of which I then gave an account of in the *Proceedings of the Edinburgh Botanical Society.* In connection with my recent investigation of the excitatory variation in Dionæa I have, during the last few weeks, in co-operation with Mr. Page, made experiments for the purpose of ascertaining whether in this organ, as in the leaf of Dionæa, the change of form provoked by mechanical stimulation is accompanied by a similar electrical disturbance.

Mimulus luteus is a favourite window plant on account of its showy flowers, and the facility with which it can be cultivated. The mechanism of the contraction of the stigma can be best studied in the inferior of the two lobes, of similar size and form, of which the organ consists. In the unexcited state, when the flower is in full bloom, this lobe is curled outwards. The curling outwards is due, as I long ago observed, to the turgidity of the layer of loosely connected conducting cells, ending in papillæ, which constitute the stigmatic surface. So long as this tissue is turgid the elastic lamina by which it is backed is prevented from straightening itself, so that the whole lobe forms a scroll of which the axis is transverse. The effect of touching any part of the lobe, and particularly the papillary surface, is to diminish the turgidity of the tissue, as the result of which the organ slowly expands so as to face and ultimately meet its fellow.

The excitatory change of form which I have described is, as in the case of Dionæa, associated with an electrical disturbance, of which the following are the most important features:—(1.) The sign of the variation is the same as in Dionæa, the excited structure becomes negative to the rest of the plant. (2.) The extent of variation is somewhat less than in Dionæa, the electromotive force developed between the stigma and style being usually about twenty-five thousandths of a Daniell, whereas in Dionæa the variation may amount to from forty to fifty thousandths. (3.) The variation is of relatively long duration; it reaches its maximum at the ordinary temperature of summer, about five seconds after excitation. It subsides at first rapidly, then very gradually, so that the effect may not have entirely passed off until two or three minutes have elapsed.

As in Dionæa, the period of electrical disturbance is shortened by increase of temperature. Thus in five stigmas in which the period was measured at 20° C. (68° Fahr.) and at 37° C. (98° Fahr.), the mean duration of the interval of time between the commencement of the electrical disturbance and the moment at which it began to subside was 6.2 sec. at the higher temperature, and 3 sec. at the lower.

In general, the stigma, when in the unexcited state, is positive to the style. As, however, it can be shown that other factors, not concerned in the excitatory process, are operative in the production of this result, not much importance is to be attached to it.

I send this short note in order that physiologists interested in the subject may be able to repeat the observations during the present season. *J. Burdon-Sanderson, University College, June 27, in "Nature."*

THE ROYAL GARDENS, KEW.

[We take the following extract from the Report of the Director for the year 1876, just published. EDS.]

BOTANIC GARDENS.—The further rearrangement of the plants in the Palm-house was proceeded with in the course of last spring, and may now be regarded as practically completed. A great improvement has been obtained in the general effect. As mentioned in my report of last year, it has been found necessary to cut down nearly all the large Palms on the north side of the transept, and plant out others in their place. The following are the more important changes:—

Arenga saccharifera, cut down and replaced by Sabal glaucescens; Livistona inermis (L. australis), *Bot. Mag.* 6274, cut down and replaced by Phœnix dactylifera; Sabal glaucescens, transplanted and replaced by Astrocaryum rostratum; Acrocomia sclerocarpa, cut down and replaced by Thrinax aculeata; Sabal umbraculifera, cut down and replaced by Livistona chinensis; Veitchia canterburyana, transplanted and replaced by Ceroxylon andicola; Phytelephas macrocarpa, removed and replaced by Attalea Cohune. Areca alba cut down and replaced by Euterpe pisifera.

A selection of the larger tropical Ferns, Aroids, Marantaceæ, &c., have been planted in the beds under the Palms, which have hitherto been quite bare. They now are covered with an undergrowth of singular picturesqueness and luxuriance. The gigantic Screw Pines (Pandani) which are such a conspicuous feature in the north wing are rapidly becoming too large for the positions they occupy; and as it is impossible to give them more space, they will have to be cut down in the course of one or two years at the farthest.

I must again urge the desirability of a reform in the heating apparatus of this house, as detailed in my last year's report, as a measure of economy even more than of efficiency. With the exception of the immense improvement in both heating power and reduced consumption of fuel, obtained by bringing the flues up through the roof of the wings instead of conducting them underground to the shaft near the Richmond Road, no material improvement has been introduced into this building since its construction nearly thirty years ago. The re-arrangement of the staircases leading to the gallery, proposed in my last report, has been reported upon by the Board's works' department, and unfortunately proves to be impracticable. Some means of draining off the moisture due to condensation which accumulates on the gallery floors during the winter is however urgently needed.

In the AROID HOUSE (No. 1) the superb tropical Tree-Fern (Cyathea princeps) having outgrown suitable dimensions, was with great reluctance on my part taken down in the course of the summer, and replaced by a smaller specimen from the tropical Fern-house.

The whole collection of Aroids has been very carefully revised, and a catalogue prepared by Mr. Brown, second assistant in the Herbarium. It comprises upwards of 300 species, and should eventually be printed for distribution to other botanical establishments. The whole collection of Calami (Rattan canes) is now also arranged in this house, the moist heat of which suits them better than the Palm-house.

The FERN-HOUSES (Nos. 2 and 3) retain their pre-eminence, whether for the number of species in cultivation or the health and vigour of the plants; but the constant humid temperature necessary to their growth so damages the painted woodwork of the houses that they are under frequent repair. I am strongly of opinion that, seeing how much shade Fern-houses require, the side walls should be of brick up to the eaves, with large side sashes, and that the woodwork of both roof and sashes should be of some of the durable colonial woods, as the Jarrah of West Australia, which would probably not require internal painting.

The species of Cheilanthes in the Cool Fern-house which have proved very impatient of pot culture have been planted on a broad side shelf covered with stones, potsherds, and soil well drained below, and promise to do well under this treatment. Many of the smaller Ferns in the same house, which, when in small pots, were watered either too much or too little, have been similarly accommodated with obvious success.

The number of species and varieties of Ferns in the Royal Gardens is now upwards of 1000.

The labour and expense of keeping up both the interest and beauty of the ORNAMENTAL CONSERVATORY (No. 4) throughout the year, by a mixture of commoner with the rarer ornamental plants, is a subject to which I have, especially of late, devoted a considerable amount of attention. It has occurred to me that as regards the common plants of merely decorative interest, of which it is desired to display a fair quantity as affording a very great gratification to many visitors, it might be more economical and satisfactory to buy than to raise them ourselves, and to devote our attention to the cultivation of the rarer sorts alone and to purchase the commoner.

The SUCCULENT HOUSE (No. 5), which is by far the most interesting in the garden in respect of the magnificent collection of plants of grotesque habit and singular form, has also been re-arranged, and some of the large duplicate Euphorbias, Aloes, and Cacti removed to the Palm-house. Several of the largest Agaves and Fourcroyas (commonly called American Aloes) have flowered during the past summer, and the flowering stems rising to a considerable height were allowed to pass through the roof, presenting a striking and singular appearance.

The collection of ECONOMIC PLANTS has been carefully revised, extended, and entirely re-arranged. It is now probably one of the most complete series of medicinal and useful plants ever brought together. The nomenclature has been checked and a manuscript catalogue prepared.

The following plants of especial botanical interest, amongst others of less importance, have flowered during the past year in the Royal Gardens:—

Agave dealbata, Lem.
,, ensiformis, Hort.
,, micracantha, Salm-Dyck.
,, Sartorii, K Koch; Bot. Mag. 6292
Albuca juncifolia, Bak., n. sp.
Anthericum Gerrardi, Bak., n. sp.
Bongardia Rauwolfii, C.A.M., Bot. Mag. 6244
Chlorophytum arundinaceum, Bak., n. sp.
Dasylirion glaucophyllum, Hook.; Bot. Mag. 5041
Fourcroya gigantea, Vent.
Fritillaria recurva, Benth.; Bot. Mag. 6264
Gasteria dicta, N. Br., n. sp.
Mesembryanthemum vittatum, N. Br., n. sp.
,, ficiforme, Haw.
Moricandia sonchifolia, Hook. f.; Bot. Mag. 6243
Oxalis enneaphylla, Cav.; Bot. Mag. 6256 (from rhizomes sent to Kew from the Falklands by Mr. Moseley, Naturalist of H.M.S. "Challenger")
Stapelia Sarpedon, N. Br., n. sp.
,, varians var. adnata, N. Br.
Telfairia occidentalis, Hook f.; Bot. Mag. 6272
Thamnocalamus Falconeri, Hook. f. (erroneously known in gardens as Arundinaria falcata, Nees)
Tulipa Hageri, Heldr.; Bot. Mag. 6242
Tupistra macrostigma, Bak.; Bot. Mag. 6280
Turræa obtusifolia, Hochst.; Bot. Mag. 6267
Xanthisma texanum, D. C.; Bot. Mag. 6275

I may take this opportunity of noting that a well-known stove foliage plant of gardens, Theophrasta imperialis, Linden, proves from the examination of specimens in fruit sent to us by M. Glaziou, to be a species of Chrysophyllum belonging to a different natural family, Sapotaceæ.

ARBORETUM (IN THE PLEASURE GROUNDS).—The digging of young plantations, trenching for new ones, and removal of dead and dying trees, continues to absorb much of the labour of this department.

Flagstaff Dell.—The old gravel pit having been laid out as described in my last report, has been planted with the classified collection of shrubby Polypetalæ (Thalamifloræ). They comprise 56 genera and 500 species and varieties.

INTERCHANGE OF PLANTS AND SEEDS.—The receipts during the past year have been 6033 plants of all kinds and 2487 packets of seeds, from 244 contributors.

BALSAM OF COPAIBA.—Some well-ripened seeds of the Para Copaiba ("Copaifera multijuga") have been brought by Mr. Cross from the forests of Para, and germinated freely. The tree which produces it is described as gigantic, the trunk sometimes rising to a height of 80 feet before branching. The Para balsam, called Copaiba blanca, is chiefly sent to France, where it obtains the highest price of any. A single tree, if tapped at the right season, is said to yield about 84 imperial pints of balsam. Very little is known of the history or botanical characters of this plant, which has been only imperfectly described. It is greatly to be desired that this tree should be introduced into the East Indies.

BALSAM OF PERU.—This beautiful tree (Myroxylon Pereiræ) was introduced into Ceylon in 1861 by the exertions of the late eminent pharmaceutist, Daniel Hanbury. It has succeeded there admirably, and last year I received several parcels of seeds from Dr. Thwaites, which I have distributed to various tropical colonies. Dr. Thwaites speaks in warm terms of the beauty of its foliage and habit.

CHOCOLATE.—This was introduced into Ceylon, and samples were sent home in 1873. It is now being rapidly improved, and will unquestionably soon become an important article of trade with that island. I have no further report of its prospects in the Terai district of the Sikkim Himalaya, which is, I fear, too dry for it in winter.

CINCHONA CULTIVATION IN ST. HELENA.—In my report for 1874 I pointed out that "the suitability of the soil and climate of that island for Cinchona cultivation has now been indisputably proved." It is a melancholy conclusion to the efforts made by Kew on behalf of this doubtless dispirited, but I am afraid I must add spiritless, colony that nothing has been done to utilise so easy a source of revenue. In a private letter recently received, I am

informed, "up to within a few months since a man was paid by the colony to look after the Cinchona plants on Diana's Peak, but even he has been disestablished, and the plants are overgrown and almost hidden in Ferns and dense undergrowth of native vegetation."

(*To be continued.*)

Foreign Correspondence.

Spring in Minorca: *Balearic Islands, Spain.*—There is a small mail steamer, of about 350 tons burden, which leaves Barcelona every Tuesday, at 4 P.M., for the island of Minorca. This steamer reaches Aleudia, a port on the north-east coast of Majorca, the next morning at 5 or 6, then crosses the strait which separates the two islands, and reaches Port Mahon, at the southern extremity of Minorca, about 2 or 3 in the afternoon. The entire voyage from Barcelona thus occupies about twenty-two hours. Wishing to join this steamer at Aleudia on the Wednesday morning, I had to sleep there. The road from Palma crosses the level plain which occupies the centre of the island, deflecting to the north-east. There is a railroad, recently opened—a satisfactory evidence of incipient energy and progress, entirely constructed by Majorcan capital, which is destined to connect the two towns. It is, however, so far only completed to Inca, a small agricultural town of the central region. Eight or ten miles of road have still to be got over in the omnibus, a species of covered cart on half-springs, holding eight persons, including the driver, very much like an old-fashioned English market cart.

Majorca.

The country that we traversed was thickly studded with villages and small towns, and carefully cultivated. The rocks that occasionally showed themselves through the soil were limestone, and the agricultural produce was principally, indeed all but entirely cereals—Wheat and Barley; the grain fields being dotted, at the distance of thirty or forty feet, by Almond, Fig, Carouba, or Olive trees. It appears that these fruit trees greatly add to the value of the land, and, consequently, to the rent paid for it.

We found homely but clean shelter at the little *fonda* at Aleudia, an old Moorish fortified town, with ramparts and ditch still intact. We were roused at 5 the next morning to proceed in our market-cart omnibus to the port, about a mile distant. There we saw the Barcelona steamer lying at ease on the green Mediterranean waters, and by 6.30 were fairly off. The Bay of Aleudia is wide, deep, sinuous, and affords perfect shelter in deep water from all wind but the north-east, to which it is quite exposed, as is Majorca generally. Aleudia is only 24 miles distant from Cindadela, the capital of Minorca, but directly opposite, at the northern extremity of the island; whereas Port Mahon, which occupies the south-eastern extremity, is 45 miles distant. The weather was fine, but there was a heavy swell running, the remains of a former gale, so our little steamer rolled very freely. The French steamers for Algiers pass through these straits on both journeys, and we were fortunate enough to cross the bows of one of the largest as it calmly advanced on the rolling waves like a floating castle. We were dancing about on the top of the swell in our small craft, and envied the majestic steadiness of the *Said*. This fine ship was crowded with passengers, who lined the side next to us, watching, no doubt, our erratic movements with deep commiseration.

Port Mahon.

After a passage of six hours at half-past 2 we entered the splendid harbour of Port Mahon. It is 3 miles in depth, and protected from every wind by its sinuous, serpentine character. Port Mahon is said, indeed, to be one of the finest harbours in the world. The town is situated on its inner and western shore on a rocky elevation, about 70 or 100 feet above the sea level. We found very comfortable accommodation at a small *fonda*, or inn, with sash windows, as in England, and the cleanliness of which was beyond all praise. The entire town is clean beyond belief or description, the houses appearing to have been recently whitewashed both inside and out, and the streets being cleansed and brushed that a pin would be seen on the ground. This extreme cleanliness continued to be the characteristic of the island wherever we went. Villages, towns, lone houses, all must be whitewashed, inside and out, every month, week, or day, for the walls are all white as snow. Indeed, I was told that whitewashing is a national tendency or craze, and that if a Minorcan gains a peseta (10*d.*) he spends a quarter of it in whitewash! I felt quite humiliated at my own individual shortcomings, and determined that when I reached home again I would imitate my Minorcan friends, and begin a vigorous and oft-renewed whitewash crusade on my own premises.

It is, no doubt, owing partly to this whitewashing mania, and to the horror of dirt which it implies, that Minorca owes its reputed great healthiness and its special freedom from zygmotic or dirt diseases. The custom gives a very peculiar character to the landscape, for as the roofs are often whitewashed as well as the walls, the houses, villages, and towns stand out in the glare of the sunshine like masses of chalk. Is this excessive cleanliness owing to Minorca having been during the greater part of the eighteenth century in the possession of the English, or is it a remains, a trace of early possession by the Moors, who reigned over it for centuries?

Minorca is 33 miles in length and 13 in breadth where broadest, the circumference is 62 miles, and the area 300 square miles. Its longest diameter is N.W. by S.E., the latitude is 39° 47′, longitude between 3° 50′ and 4° 23′ E. It presents the character of a rocky, undulating plain, with a ridge of hills running across the island in a slanting direction, from north-west to south-east. This ridge culminates in the centre of the island near the eastern coast, at Monte Toro, about 700 feet above the sea. The southern third of the island has not even this slight barrier to the north winds. It is totally unprotected.

Vegetation of the Island.

Wishing to study the vegetation of the island we took a carriage to Cindadela, the capital, 24 miles north of Port Mahon, making a leisurely progress one day, and returning the next. This journey proved a very pleasant and a very interesting one. The road, which passed through the centre of the island, was very good, and the covered omnibus market-cart which conveyed me and my companion was of a much better description than those we had ridden in at Majorca. It was on firm wheels, and was supplied with much better springs. These conveyances are, no doubt, the very thing for the climate of the Balearic Islands, which, during a great part of the year, is characterised by ardent sunshine, intense glare, and much dust.

The groundwork or skeleton of Minorca is a secondary limestone, but the ridge of hills that crosses the island is volcanic, and probably connected with some similar development in Majorca, for the direction of the mountain chains in the two islands is all but identical.

The weather was lovely, enchanting, as I have always found it in the Mediterranean in the month of May—the mid-day heat in the shade being 74° or 75°, and the night temperature from 60° to 68°. Every plant was green, fresh, beautiful; the sky clear, with only a few fleecy clouds, and all Nature was bathed in glorious sunshine.

In the lower or southern third of the island there are scarcely any trees, owing to there being no protection whatever from the sea winds from whencesoever they come. The country, rocky and undulating, is cultivated all but entirely with cereals. Barley quite ripe, partly cut, May 10; Wheat turning colour, and here and there a field of Oats. What is not under cereals, or fallow, was planted with broad Beans, ripening; Potatos, 18 inches high, in flower; and red Clover, recently introduced, and thriving on the most sterile limestone soils. Formerly the Vine was extensively cultivated, and much wine made; but the oidium destroyed the Vines, and they have been replaced by cereals. The ground was divided into small fields separated by walls 3 or 4 feet high, and 2, 3 or 4 feet wide, made with the stones taken out of the fields. Here and there were rocky patches in the process of formation into fields by the clearance of the stones and rocks, and by their erection into walls. Where the road was below the surrounding level, in slight depressions of surface, not yet brought into cultivation, I recognised the old familiar plants of the Mediterranean limestone flora, the "maquis" of Corsica and of Sardinia, Lentiscus, Alaternus, Cistus, Smilax aspera, Prickly Broom, Blackberry, Honeysuckle, Asphodel out of flower; Ferula, the same; Convolvulus, variegated Thistle, Geranium, Cineraria maritima, the universal Shepherd's Purse, Gladiolus, Chrysanthemum segetum, Myrtle, Rosemary, Thyme, Rue, &c. Evidently this part of Minorca was, once upon a time, covered with this kind of vegetation, and if left to itself for a few years would soon return to the wild state, and be covered by these plants, the denizens of the warmer regions of the Mediterranean, or limestone soils.

About 9 miles from Port Mahon we reached the base of the interesting ridge of hills, at the foot of which, slightly protected from the north-east winds, vegetation became more luxuriant, Fig trees and small Olive trees appearing. Up to that time all watercourses had been quite dry; they were clearly mere winter torrents, full for an hour or a day, and then dry. Here we saw a small watercourse, a mere rivulet, all but dry, fringed with Tamarisks. I looked for the Oleander, the usual companion of the Tamarisk along the beds of streams and torrents in Algeria (only 190 miles distant), but I did not see any. The Ilex, or evergreen Oak, a common Mediterranean tree in schistic, granitic soils, also appeared.

The road entered a depression in the hills, and the nature of the soil and rock changed, becoming schistic, volcanic. The Ilex were more numerous and larger, and the brushwood was principally composed of Arbutus, Mediterranean Heath, Calluna vulgaris, and Cistus or Rock Rose, as is usually the case with such soils in the Mediterranean. After winding for a few miles through these low hills, covered with a thicket of Ilex and brushwood, we again emerged into a calcareous rocky plain, which reproduced the vegetation and cultivation of the southern region already described, reaching Cindadela for dinner.

Cindadela.

Cindadela is a very clean "whitewashed" little town, with a population of 8000. It is the legal and Government capital of the island, Port Mahon being the commercial and military one, with a population of 18,000. The fortifications still extant are of Moorish origin. Here we got very comfortable and exquisitely clean accommodation, at an inn kept by a man who had been many years cook on board a United States man-of-war, and who received me and my companion most cordially. There was a public garden at Cindadela, a *rambla*, as it is called in the north of Spain, and I made a note of what I found, viz., white Lily, red Valerian, Nasturtium, Wallflower, Hollyhock, Centifolia Rose, Bengal Rose, Cytisus, Poppy, Antirrhinum, Adonis, fancy Pelargoniums, very poor; Oak-leaved Geranium, Sweet Pea, Phlox, Carnation, Delphinium, and two or three Palms, 30 feet high, the only ones I saw in Minorca. All these were in full flower, and were thought by the natives to constitute a marvellously beautiful and choice garden. They are found in all gardens of the Mediterranean islands and shores, constituting the principal spring garden flora. I presume they occupy the same position of honour in "cottage gardens" all over the temperate regions of the world.

Where the Oranges Grow.

Both at Port Mahon and at Cindadela there were plenty of Oranges to be had, and yet after crossing all but the entire island I had not seen a single Orange tree or shrub. Where could they come from was the question I asked. I was told that they all came from one garden or orchard, an hour's ride from the village of Ferarias, a few miles from Cindadela, near the main road; so we determined to stop on our way back and examine this wonderful orchard, the existence of which on an exposed island like Minorca puzzled me greatly. Two hours' drive brought us the next day to Ferarias, where we mounted donkeys, and scrambled over rocky hilly paths for an hour in the glare of the sun, without seeing the vestige of a garden, of trees, or of anything else but the field and occasional hedge or wall vegetation already described. We were nearing the sea also, and between us and it there seemed to be nothing but stony eminences, declivities, and stone-enclosed fields planted with cereals. All at once our guide pointed to a cleft in the rocks on our left, the beginning of a sinuous depression which, at 100 yards' distance, seemed like the depressed bed of a river, occupying a gorge with cliffs on both sides. Our donkeys entered the cleft between two rocks, 20 feet apart, by a narrow path, and we at once found ourselves in cool welcome shade, in the midst of most luxuriant vegetation. The path and the valley or gorge soon expanded, and we discovered

that we were truly in a "happy valley." We had been transported in two minutes from burnt-up, scorched rocks, with a scanty spring vegetation, to a tropical forest of Pomegranate trees, quite timber trees, Orange, Lemon, Fig, and Olive trees, growing in the greatest possible luxuriance. The ground and rocks were covered with rank grasses, with Buttercups, Periwinkle, Geranium, Sage, Docks, Ivy, Clematis, and with Capillus-Veneris, Scolopendrium, and Polypodium vulgare Ferns.

This wonderful valley is a mere cleft, rent, depression in the calcareous rocks of this part of the island. It is about 1½ mile long, sinuous, of variable width, from 50 to 300 feet, with cliffs about 150 feet high on the west side, and about 70 feet or 100 feet on the east. It reminded me very much of the sinuous cleft, depression, gorge, or valley which constitutes the harbour of Port Mahon. But the Ferarias valley has no communication with the sea, is much narrower, and its cliffs are higher and more precipitous, its serpentine direction helps to protect it from wind, whencesoever it blows, as is likewise the case with the harbour of Port Mahon.

The central, widest, and most sheltered part of the valley is entirely occupied by large healthy Orange trees, with trunks 2, 3, and 4 feet in circumference, grown as timber trees, and they have not suffered as yet from the *secco*, although I could not discover that they had been grafted. The farmer told us that this orchard not only supplied all Minorca with Oranges, but enabled the owners to export large quantities every year. They had just sent off 50,000, and yet the entire area occupied by the Orange trees did not amount to more than a few acres.

I learnt here, as in Majorca, that the size of the fruit depends, not on the species of the tree, but on the number of fruit the tree is allowed to bear. If few they are large, if numerous small, as is the case with fruit in general. The contrary opinion reigns all over the western Mediterranean. The large Majorca Oranges, which are always sold at 20c. a piece, twopence, are supposed to be a distinct species. As usual with all fruit, not only is the size thus increased, but the flavour seems to improve along with the size.

Thus in Minorca the Ferarias Orange orchard reproduces in a different way the history of the Soller Valley Orange orchard in Majorca. The one is a gorge, or fault in the rocks, thoroughly protected from winds, as the other is a kind of crater-like amphitheatre, also inaccessible to wind. Both are natural stoves, orchard-houses, offering complete protection from every wind, which seems an indispensable condition to Orange culture.

Fig. 4.—PHŒNIX RUPICOLA.

Importance of Protection.

The luxuriant vegetation of these sheltered localities reproduces what I have found all over the Mediterranean. Exposure to north winds is quite incompatible with subtropical vegetation anywhere in the Mediterranean, even on its southern shore. The north winds sweep right down into the desert, whenever they meet with no barrier on their way, and peel the rocks, leaving nothing but Pines and aromatic shrubs. Such, however, is not the case with south winds, if there is protection from the north, as evidenced by the Genoese Riviera from Nice to Genoa. In the more sheltered regions Lemon trees clothe the hills down to the sea-shore, and even Orange trees can grow and flourish near the shore if they are protected by a high wall. Thus once more Majorca and Minorca illustrate the lesson of the inestimable value of protection from north winds in estimating climate, and of the extreme influence that it exercises on vegetation in subtropical as well as in northern regions. We see repeated in these islands the facts brought to light in every other region of the Mediterranean shores and islands that I have studied and described in my large work, *Winter and Spring on the Shores and Islands of the Mediterranean. J. Henry Bennet, M. D., The Ferns, Weybridge, June* 15.

PHŒNIX RUPICOLA.

This very graceful Palm is described by Mr. Bull, to whom we are indebted for the accompanying illustration (fig. 4), as being of acaulescent habit while young, with wide-spreading arching pinnate leaves, having a slender rachis and very short petiole, which is dilated at the base and partially encircles the growing point. They are broadly lance-shape in outline, with long narrow pinnæ, the lower of which become gradually reduced to spines. It is an introduction from India, and promises to prove of great value as a decorative plant.

Natural History.

Bird's Nests.—In the *Gardeners' Chronicle* of the 30th ult. I see that a correspondent draws attention to the fact of a pair of tomtits having built their nest in a pump. For three years past a nest has been built by tomtits in a disused pump in the stableyard here. This year four out of a hatching of seven young birds left the nest just three weeks ago. The entrance to the nest was by a hole under the handle. This hole, however, was not the sole channel of egress, for I have several times witnessed the old birds coming out by the spout.

Nearly or about the same time that the young tomtits left the nest I found some young blackbirds seated on the branches of a Laurel, in which there was a nest. They had evidently only just a few moments before got out of the nest, for the old birds were calling to them. I caught a couple of the young birds, and took them indoors to show my children, the hen bird following me into the inner hall right up to the drawing-room door. After showing the young birds to the children, I replaced them on the Laurel, and had the satisfaction of seeing them go off with the parent birds. Two days afterwards, hearing the call of a blackbird, such as is made by the old to the young birds, I walked out of my study, and there in the inner hall was a hen blackbird close up to the drawing-room door. Whether it was the same bird or not of course I cannot tell, but the circumstance seems very much as if it were an exhibition of the instinct existing in birds which led the old bird—say, on missing its young again—to return to the place whence they were returned to the tree on the previous occasion of their loss.

If the above notices of birds are out of the scope of your magazine [by no means], you will, of course, lay this aside; if not, they may interest some who combine a love of wild birds with a love of flowers. *J. A. C.*

A Suspended Swallow's Nest.—It may very probably interest some of the readers of the *Gardeners' Chronicle* to read the following, which occurred some time since. My late father had a round Tulip bed, and for the protection of the buds and blooms from the sun, &c., he had a wicker covering made of Willow rods, similar to a lid of a basket, and resembling an umbrella, with a hole in the centre for a stick to be placed from the centre of the bed, and the cover then put on. After it was not wanted for use the cover was hung up to a beam in a cart-shed by a piece of rope passed through this hole with a knot underneath, and on this knot the swallows built their nest, and as the wind blew it swung about like an umbrella suspended from the top, where it remained for years, as it was then not in use. I am sorry to say the swallows and martens are not so numerous as formerly: as I have a great fondness for them, they receive every protection from injury possible. *J. S. C.*

Florists' Flowers.

Notes on Tulips at the Royal National Show.—For now two seasons in succession the Royal National Tulip Show has had to be postponed, and this has certainly been a worse year for the flower than the last. A late bloom is never a long one, nor a good one, when due to severity of weather at a critical time in the growth of the plant. This year April was not kind for Tulips, and May was a joyless and abominable month. The weathercock seemed nailed to the north-east, and the plants could hardly move at a time when their growth should have been rapid, and could not do in a week what should have been a day's work.

All this stagnation in a plant rapidly and punctually deciduous was sure to have its ill effects, and they were many. Earliest and worst came what is known as "mildew." This attacks the flower-stem at the axil of a leaf, generally either the guard leaf (*i.e.*, the lowest) or the one above it, or else it will appear upon the surface of the leaves themselves. The well-known grey discoloration which it produces spreads very rapidly, rotting an affected leaf, causing an affected stem to fall over, as a ship's mast goes by the board, and injures both the size and health of the new bulb. It is perhaps an after-effect of some mischief first done to the rising plants in April or early May. The foliage seems very hardy, judging by what it will pass through without immediate hurt. But the effects of the shock upon the system are only latent for a while, like the action of a poison; and all at once, upon the very eve of bloom, leaf and stem give way beneath the flower, and it is well if even the bulb survive.

Mildew has been very rife this year, even cutting some beds completely down. Removing affected parts is one way of treating the disease, and perhaps dusting with flowers of sulphur might be useful as checking fungoid growth; but best of all is a watchful attempt at prevention, by taking care that the foliage from the time of its appearance suffers no check or damage, by frost after wet, or by sun upon frost, or by exposure to cutting winds.

The buds themselves suffered much in various ways from continuity of adverse weather. Many on opening showed a rotten petal, and in many the inner petals were oddly crumpled as though they had grown faster than the three outer which enclose them, and which were weatherbound in the bitter wind. There have been also plenty of green and stunted petal tips, and that, too, in plants of which all possible care was taken. Few of us can remember a time that has been so persistently bad for Tulips, though we naturally expect a little rough weather in the best of seasons, and the difficulties make good culture creditable. With me the bloom has been strong and correct, but late and short, and I never knew the plants die down so quickly afterwards. The fact is that the bloom here has been thrown back close upon the usual taking-up time (June 21), and the plants have been punctual in dying down. There has been no interval—no twilight of cool, fading green after the bright day of the bloom. Indeed I am taking them up while yet a few coloured petals cling to pale stalks, like those last stars of tinted lights that will linger on some large pyrotechnic device, when all the rest of the fiery bloom is fallen.

At the Royal National Show no one exhibitor was in the fulness of his strength, either in quality, finish, or size; and therefore flowers won high places, both in the pans and classes, which in a strong year would have had to take back seats.

Along with Mr. Thurston and Mr. Simonite I was one of the judges for the best feathered and best flamed flowers in the whole exhibition; we had, therefore, a critical survey, but we could not find one perfect feathered flower in the whole show—which speaks for the weakness of the year.

There were, however, many fine sorts shown in fine order. Industry, in the "cup stand" was very well done. It is a richly pencilled feathered rose. Mrs. Lee, another finely feathered rose, is still finer when flamed, as it was in the leading stand. Feathered, it will bear no sun, but the colours are faster when flamed. Bessie is a lovely feathered byblœmen—it is of no use if weakly, for the colour is then a feeble brown, and as a flamed flower it is seldom anything. A strong feathered bloom opens greenish white, and then brown, that settles down to almost black and white.

John Morris is a new feathered bizarre with rich long flashed feather, finely pencilled upon a deep golden ground colour, which is alike on both sides the petal—a very important point in the bizarre classes.

Dr. Hardy's famous flamed byblœmen Talisman is a grand flower, always wanted in the best place. There were once a number of feathered breaks of it, but they have largely gone back to a flamed flower. As a feather it is very lovely, and a great addition to a very thin and difficult class; but the only perfectly feathered Talisman I have seen this year was in a cottage garden here. I had given away a few bulbs, and a single Talisman had here done what all my stock, very much more cared for, have not attempted for several years.

Some Tulips evidently are best when flamed, others as feathered flowers, but Talisman is a gem in both. Old Heroine Tea Rose was again brought forward. She is the feathered form of Triumph Royal, and her "hawk petal" tips seemed to be aggravated by the pinching cold of the season. In the second stand of the leading class there was a new flamed rose—Mary Barber. It was bright, but the gem of flamed roses is Annie McGregor, that broke from a bright red breeder known as Martin's No. 2. The scarlet pencilling of her feather, and the brilliant beam of flame upon the snowiest ground colour, make her a most lovely flower, and she is one of great substance. There was also Clara, a feathered byloemen of good shape and rich chocolate feather, but in the heavy style, rather plated than pencilled.

In red bizarres, a class that has latterly formed itself by the advent of some magnificent flowers, there were Dr. Hardy and Orion in fine form. These are two flamed flowers, and seem as if they could not feather, the beam is so strongly marked. There was a fine specimen of the late Dr. Hardy's flamed, viz., Ajax—a very distinct flower, and I think a fine thing too, with some growers an admiration of it seems as though it would have to be an acquired taste. It has this year bloomed in splendid flamed character with Mr. Barlow and myself, from a strain marked feathered, which condition is evidently not its *forte*, though it makes a bold attempt. It is noteworthy that when a Tulip does leave the feathered state for the flamed, it generally makes a beautiful clean flame, as in Heroine to Royal, and Mrs. Lee feathered to flamed. The beam is bright and clean and the flower not "fast" at the bottom, *i.e.*, too heavy with colour. A new rose, breaking from a pink breeder of the very perfection of shape, is Lady Grosvenor, which seems both a feathered and a flamed flower. Modesty is a beautiful feathered Rose, which in the self or breeder state would hardly be kept, being a nondescript colour; only a very correct feather, however, of this sort is worth looking at, for with every defect of colouring there is a dirty stripe or splash of yellow, that it seems to inherit from the breeder form, and which only breaks away in a very clear decided feathered strain. Bacchus, flamed byblœmen, was shown very fine; it is a beautiful constant flower, coming out with the earliest, and though rather thin-looking, living till the last. Mrs. Lomax, which is the same as Mabel, and perhaps even as charming, is beautiful when feathered, and a good marked rose when flamed; the petals turn in at the top, which is more a fault than a beauty. Lady Sefton is a lovely rose, only seen flamed so far; it lives well, and there is a rich vein of pink in the centre of the scarlet beam, which is very beautiful. Ajax has a rich vein of claret in his black beam; and Talisman, a beautiful tint of blue up the centre of his dark purple beam. There is also a grand break of Sir J. Paxton, flamed bizarre, distributed from Mr. Barlow's collection, which is enriched by a dark red beam in the middle of the dark flame. These are all rich breaks, and the rich extra tint is very different from the remains of breeder colour that sometimes haunt a weak break. I saw a bloom of old Lady Crewe, a perfectly feathered old-fashioned rose, but not pure on the stamens, and therefore of a day bygone. Feathered bizarres were not strong this year, though there were some fine attempts by the black and golden Masterpiece, Sir J. Paxton, and Lord Byron, and some seedlings from various exhibitors, and by Mr. Barlow from the late Dr. Hardy's and Luke Ashmole's seedlings, furnished specimens herein. Feathered byblœmens were hard to obtain correct this year, and in the class for them were weak. The strongest flowers as a class were the flamed bizarres, in which, taking both red and dark flowers, we have now some magnificent Tulips. Duchess of Sutherland came often among flamed byblœmens, and is a beautifully pure flower with superb marking; like Masterpiece and a few more, she is better when trained in shape, as the three outer petals are liable to stand away in a triangular manner, known as the "three-cocked-hat" style. Old Aglaia and Triumph Royal are still much wanted for flamed roses, in which we indeed have good flowers, but the best new ones are yet scarce as to stock in hand.

A great deal of interest properly attaches now to the self-coloured classes, technically termed breeders, from which feathered and flamed strains "break." No one can account for this most curious fact in the physiology of the florist Tulip; we only know of it. Many flowers that were high as feathered or flamed are also very valuable in the breeder form. Witness Sir J. Paxton in bizarres, Talisman in byblœmens, Lady Grosvenor in roses. Indeed, some few are better as selfs or breeders than as rectified flowers; for some, and they generally the brightest, break into weak coloured strains. Lord Derby is a rose breeder good as anything else. Horatio generally breaks badly, and there are other illustrations of this which might be named.

A new seedling nearly always makes its *début* into the Tulip world as a breeder, and is so shown until there is a fine break—if there is, that is, such a power inherent in it; if not, it must win as a breeder, and say nothing about its failure at higher work.

Glory of Stakehill is a powerful example of a magnificent new seedling, and its mark is made so far as it has been shown. Lady May would have won the position of best breeder in the show if we could have had her a few hours older. She is from the Stakehill collection of breeders, which are the champion team of the day in the seedling department. But it is very encouraging to see the strong array of seedling Tulips that now come to the Royal National shows. They are deserving of a minute separate notice, and they tell of many years of careful work by a fair number of our Tulip growers. *F. D. Horner, Kirkby Malzeard, Ripon.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—Allamandas in pots that have now been blooming some time will be benefited by a couple of inches of rotten manure laid on the surface. If this is put on in sufficient quantity to even fill up the pots completely level with the rims, it will, from its loose, open nature, interfere little or none with watering; in a very short time it will be completely filled with a dense mass of roots that will enable the plants to go on making growth and bloom all through the autumn to an extent which they are not capable of by the mere use of manure-water alone, for though the latter is very effectual, still the increase of feeding fibres encouraged by the rich surface-dressing exerts a still greater influence. Bougainvilleas will be similarly benefited by a like treatment. The shrubby-habited Clerodendrons will also produce a much finer second crop of flowers when served in this manner. Plants of C. Balfourianum already occupying pots sufficiently large, and that have done flowering and are about to be placed in heat to make growth, will also be much invigorated by surface-dressing of this kind, as also climbing Thunbergias, Hexacentris mysorensis, and any similar free-growing, free-rooting plants that it is not convenient or advisable at this time to either move into larger pots or partially reduce the old soil and replace by new.

Large plants of Ixoras or other bushy-habited subjects, after having produced their first flowers, may be freely cut back even so far as to reduce them to a third or less of the size they have attained. Where the knife is little used to such things, and they are allowed to go on forming an unlimited number of shoots, these are correspondingly weak, and produce small puny flowers; whereas, if headed back now, at the same time cutting out entirely the small weak growth, they will break strong, making shoots that will flower much better the ensuing spring. By means of an occasional severe cutting-in in this way the plants may be kept for almost an indefinite time in a satisfactory state, producing flowers in greater abundance, and quite as large as younger specimens. After they have fairly broken one-third of the old soil may be shook away, replacing it with new.

Fine Gloxinias are now so easily raised from seed, that propagation from leaves is not much practised; but where exceptionally good forms and well-marked colours happen to turn up in this way, or good named sorts are grown, it is advisable to guard against their loss through the winter by raising some young bulbs. The leaves being now firm and well matured are in a right state for the purpose, and there is yet time enough for the young roots to become sufficiently developed to make useful blooming stock for next spring. Flowering stove plants that are required to be used for some weeks at this season in a conservatory should at once be moved there, as after the middle of the ensuing month we frequently experience cold nights. In thus removing

them from the stove or intermediate-house to cooler quarters care should be taken to place them in the closest part of the body of the house, and on no account stand them near the sides where air is admitted that will come directly upon them; neither must they be subjected to cold draughts. Water must also be given very carefully, using no more than will just prevent the young growth flagging. A little shade will in most cases be required. Ferns.—Some of the best and most distinct kinds of Ferns are not so easily increased from spores as the generality of kinds, such, for instance, as Platycerium grande, Brainea insignis, Lomaria cycadæfolia, L. zamiæfolia, and all the Gleichenias; even with the common Adiantum cuneatum many growers are not successful, although where the plant is allowed to stand and shed its spores, and the surface where they fall is sufficiently moist and left undisturbed, they generally vegetate in quantity. The want of success, so far as I have been able to make out, is in most cases attributable to the natural habit of the above-named species which disperse their spores almost entirely in a very short time after the capsules or spore-coverings burst. To succeed in raising these Ferns, I have found it necessary to closely watch for the first indication of the spore-coverings bursting, and to immediately rub out the spores from such plants as the Platyceriums, or to cut the fronds off the others in this early stage, reducing them to small pieces, and at once sowing them; by this means I have been fairly successful, whereas if left longer in the way that suits the generality of Ferns, I was never able to get a single plant to grow—from the fact, I have no doubt, if I may use the term, of sowing the chaff instead of the seeds, after the latter had fallen. The spores of many of the above plants will about this time be arriving at maturity, and those who intend to increase them by this method should watch closely for the first signs of opening in the spore-coverings, and lose no time afterwards. As to the preparation of the pans in which to sow them, they require nothing different from the common sorts of Ferns—good fibrous peat sifted or rubbed fine with the hand and mixed with a liberal amount of grit or sandstone broken fine, and charcoal or crocks broken small, so as to keep the whole quite open and porous, and standing the pans in feeders containing a little water; by this means the material will be kept moist by absorption, and watering overhead is rendered unnecessary; the latter if practised washes the spores down too deep to admit of their vegetating. *T. Baines.*

FLOWER GARDEN, ETC.

All bedding plants are now making good progress, and the showers which have lately fallen have made a visible improvement on the grass and flower-beds. Geraniums are covering the ground and blooming freely, and will require looking over occasionally and any dead leaves or decayed blooms removed: the tricolors and other variegated sorts grown for their foliage look best with the flowers picked off. The old Manglesii makes a fine show either with or without the flowers, and soon fills its allotted space; all it wants is pegging down to keep it in its place, and sometimes pinching out the point to prevent it from rambling beyond its limits. Petunias, Alyssums, Nasturtiums, &c., also require attention to pegging as the shoots advance, and before they get too much entangled. Carpet bedding must have careful supervision, and each sort be kept in its proper place, for effect depends upon the regularity which prevails over the entire arrangement. Attend to staking and training all tall growing and climbing plants. Roses that are blooming freely will be greatly improved by a liberal soaking of soft water with some guano in it, or liquid manure from the tank; any of the over-luxuriant shoots may be cut back, which will regulate and encourage the weak branches. Dahlias, Hollyhocks, and other strong growing things requiring supports want to be frequently examined, in order to prevent accidents to their growing stems. Keep the hoe at work in all places where weeds are beginning to show themselves; the grass should now be kept in the best order possible, and the gravel or grass walks swept or mown as required. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

PEACHES AND NECTARINES. — The preservation of the leaves of these trees in a healthful state materially contributes towards perfecting the elaboration of the sap, and the consequent maturation of the wood and buds; see, therefore, that the same degree of attention is bestowed on syringing and watering as was advised to be given to these matters prior to the fruit ripening, and to facilitate the same object keep all lateral growths pinched back to one leaf above each break, and if more growths are laid in over the surface of the tree than actually would be required to produce fruit the subsequent season these should be judiciously thinned out so that those which are retained will have the benefit arising from the free course of air and light about them. If that unconquerable enemy the red-spider abounds on the trees syringe them occasionally in the evening with strong Quassia water, which will tend in some degree to limit the ravages of this intolerable pest. Towards the end of this, or early in the following month, early forced trees should be fully exposed to atmospheric influences if the construction of the house will admit of its being done, otherwise ventilate the house fully, constantly; and when the natural rainfall is not effective, see that the borders are well supplied with moisture — an arid state of these when the buds are swelling off is doubtless very pernicious in its effects the ensuing year. Trees which are in pots which have been subjected to similar conditions should also be placed outdoors at about the time above-named. It will be an advantage to surround the pots of these at this season with some tan or manure which is free from worms, to prevent the scorching rays of the sun injuring the roots at the sides of the pot; the surface of the soil in the pots should also be mulched with manure. These plants should be fully exposed to sunshine, kept free of insects, the lateral growths pinched-in, and manure-water given to them about twice every week when watering becomes necessary. In houses where the fruit is on the point of ripening pursue former directions which were given under similar conditions as to syringing, stopping, and exposing the fruit, for the purpose of securing high colour. *G. T. Miles, Wycombe Abbey.*

VINES.—Early houses from which the fruit has been cut, particularly if they have been used for bringing on Azaleas and stove plants, should be carefully examined, and if any of the insect pests which usually follow this unsatisfactory kind of forcing have gained lodgment, no pains must be spared in their extermination. Soap, sulphur, Gishurst Compound, and, above all, Read's patent syringe in good hands, with plenty of clear water, will soon bring the most troublesome enemy into subjection. Liberal root waterings will also have a beneficial effect, particularly in cases of red-spider. The sudden changes in the weather and temperature being favourable to scalding in varieties subject to this stoning affection, fire-heat should always be at command to meet any sudden depression, and to maintain a night temperature of 70°, with a little air at the apex of the roof, to admit of the escape of superfluous moisture. Give fire-heat to Muscats now ripening, with a constant circulation of air, but avoid cutting draughts. Aim at a temperature of 70° at night, with a rise of 20° by day; and if the root temperature—one of the great secrets of setting and colouring—has been kept up by fermenting materials or any other means in proportion to the temperature of the house, the Grapes will lay on colour, and shanking will be reduced to a minimum, by the simple fact that roots in a warm medium can take up more food in a given time than they can when struggling for life in a cold one. Pot Vines intended for next year's forcing will have completed their growth. Expose them to all the sun and light, with plenty of air, to ripen the buds. Water with care, and cover up the pots with some non-conducting material, to keep the roots in a moderately moist state. Young Vines planted this spring for cutting back in winter may be allowed to ramble over the trellis. If in outside borders keep the roots near the surface by means of mulching and surface watering. *W. Coleman.*

MELONS.—Where late Melons are wanted another sowing should now be made; but these, like late clingstone Peaches, after having good fruit from the end of April, do not always leave a favourable impression of the flavour to be carried forward. The house in which the late Melons are grown should be light, well ventilated, and efficiently heated with hot water. The pot system having now become so general, and its many advantages so thoroughly appreciated, all who can adopt it will most certainly do so for the production of their latest fruit, which will ripen when the nights are long and cold. If bottom-heat pipes are provided, the pots should be placed within reach of their influence when extra warmth is required for setting and ripening the fruit; but for the present fermenting leaves or tan will produce a moist heat more congenial to the growth of the Melon than that obtained from hot water. Moderately strong growing early kinds, like Victory of Bath, Golden and Turner's Scarlet Gem are well adapted for late work; the latter, still one of the best scarlets, is excellent for growing on kerbs and shelves, where strong growing kinds would be a failure. Plants in pits and frames swelling off fruit will now take abundance of water at the root. It is not always advisable to water overhead in these structures, where the plants are more subject to canker than in houses, and red-spider is less troublesome. An occasional flooding of the bed with water at a temperature of 90°, without wetting the foliage, about 4 P.M., with a closing temperature equal to that of the water, will produce an atmosphere highly favourable to the rapid development of the fruit, which should be elevated on pots level with but not above the surface of the leaves, as some kinds are liable to scald if fully exposed to the direct action of the sun. *W. Coleman, Eastnor Castle.*

HARDY FRUIT GARDEN.

The great scarcity of fruit of all kinds will render increased vigilance necessary to preserve what little there is from the ravages of birds, which, owing to the mildness of the winter, are this year more than usually numerous, and particularly is this the case with those bold hardy depredators, the blackbirds, that appear to put all ordinary means of protection at defiance, so persevering and successful are they in finding a way through nets or in pressing them down by their weight sufficiently low or close to the tempting Cherry or Strawberry to reach the fruit between the meshes. To obviate this what nets are used should be of fine make and properly supported by running rods, string, or wire strained tight from stake to stake placed at about 10 feet apart down the centre of each bed where these only consist of three or four rows, but in larger plantations it is better and more convenient for gathering if they are placed at a sufficient height for a man to pass under. As regards Cherries on walls the best way to keep the nets projecting at a proper distance is to run pieces of string from top to bottom at 10 or 15 feet apart, and to strut them out at the middle by the use of slit or forked sticks, by which means the fruit can be gathered daily as required, and the net dropped again in its place. When struts alone are used most of them fall or become displaced at each picking, and there is consequently much loss of time in putting them back in position again. Although an outlay at first, by far the safest and most economical way of protecting Gooseberries and Currants is to use fine-meshed galvanised wire netting, which with care will last a lifetime, whereas that made with string soon rots, and is a constant source of expense without being at all efficient. Till I obtained some of this I had much difficulty in coping with blackbirds, but by surrounding the bushes with wire netting we have always plenty of fruit as long as it will hang on, which in favourable seasons it continues to do up to a late period. For single full-sized bushes from 8 to 12 feet lengths are required to envelope them, but the best plan is to run the wire along each side of a row, or encompass the quarter in which the Gooseberry and Currants are growing, and then strain a piece of ordinary net over the top. Most fruit trees appear to be running riot this season, owing to the lightness of their load, and it will therefore be necessary to go frequently over them to pinch-in any breastwood they may be forming, and to lay in and regulate such as may be required for filling vacant spaces, which, unfortunately, are but too common on both Peach and Apricot walls. Apples and Pears must be attended to in like manner, in order to admit plenty of light and air round about the spurs, and assist them in developing plenty of fruit-buds. Grafts of the above will now have advanced to that stage of growth as to require the removal of the ligatures used for tying them in, for if these remain on after this time the rapid swelling of the scion soon buries them beneath the callus formed, and when this is allowed to take place the union is seldom neat or perfect. To render them safe from being blown out by wind, see that they are made secure to sticks tied to the branches for that purpose, as the next two months or so will be a critical time for them, owing to the increased amount of leafage they will be making from day to day, and the insecure manner in which they are united to the stocks. The present is a favourable season for putting in buds of all kinds of fruit trees that are increased by that means, such as Cherries, Peaches, Nectarines, Plums, and Apricots, and where Apples or Pears have failed, or it may be desired to introduce any choice new kind, they, too, may be worked now just as successfully as any of the foregoing. In carrying out this operation the chief thing is to secure buds from wood in a semi-ripe state, and such as are fat and plump, and if these are taken off and inserted without bruising the bark, scarcely one in a hundred will fail if properly tied in before they become withered and dry. The mild winter has been exceedingly favourable for Figs, which are showing unusually heavy crops of fruit, and that this may have the full benefit of sun and air to ripen it, all superfluous strong wood, such as is generally formed in the body of the trees at this season or springs from their base should be removed, but it is not advisable to stop or interfere with the points of the shoots, as that induces the fruit to start, and become too prominent in the autumn, and which the first severe frost will destroy. *J. Sheppard.*

THE following anecdote is narrated by the late Sir John Malcolm, in his *Sketches of Persia*:—"A breakfast was given to us at a beautiful spot near the Hazár Bágh, or thousand gardens, in the vicinity of Shiraz, and we were surprised and delighted to find that we were to enjoy this meal on a stack of Roses. On this a carpet was laid, and we sat cross-legged, like the natives. The stack, which was as large as a common one of hay in England, had been formed without much trouble from the heaps of Rose leaves, collected before they were sent into the city to be distilled. *Rivers' "Rose Amateur's Guide."*

THE

Gardeners' Chronicle.

SATURDAY, JULY 14, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	July 17	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
WEDNESDAY,	July 18	National Carnation and Picotee Society and Cut Rose Show at the Royal Aquarium, Westminster (two days)
THURSDAY,	July 19	Colchester and East Essex Horticultural Society's Show.
FRIDAY,	July 20	Cleckheaton Agricultural and Floral Show.

IT has been said, and with as much truth as attaches to similar general statements, that every child is a born naturalist; at any rate, a very large proportion of children are so endowed. And what do we adults, in our superior wisdom, do under such circumstances? Why, stamp out the germs of natural knowledge as if they were so many Colorado beetles. We most of us think or act as if we thought the works of man as of far more importance than the works of the Creator. The child has a truer instinct, but we do our best to crush it. Of course there is not the smallest possible doubt of this, and if proof were wanting it might be found in the discussion in Parliament and in the comments in the daily press on the EDUCATION QUESTION. Let it be understood we are speaking particularly of the elementary education of the children of the working classes in purely secular matters, and of the lower grades of the working classes, those whose means do not permit them to expend much money on the education of their children. Those children, it is to be presumed, will have to earn their daily bread by the sweat of their brow. On all accounts it is desirable to make them upright, honest, hard-working, in a word useful citizens. By so doing—omitting all higher considerations, which are beyond our province—we should do our best to promote the welfare of the child and the advantage of the nation. Well, how do we set about all this? We teach the child to read and write—we can do no less, so much is absolutely essential—a knowledge of the multiplication table and of the first four rules of arithmetic are scarcely less essential. These things must be taught, they are the keys of all future acquirements, the stepping-stones to all further progress. Supposing all this done and the general principles of religion and morality inculcated—principles even more essential than the three R's—what next ought to be done? Here, as it appears to us, is the point whereat our educational schemes break down, and where the natural instincts of the child are often most cruelly suppressed and perverted, instead of being cherished and directed. Take the study of history, what do we find? What was our own experience in higher class schools than those we are now alluding to? History, as taught, was in the main an affair of dates and battles. Little or no attempts were made to show the bearing of the history of the past on that of the present—we were left in entire ignorance of the history of our own times—not made aware in any sense that we were ourselves living in the midst of what would in a few years time be history. So with geography—the capitals of Europe, the rivers on which they are situated, the principal mountain ranges, were all taught perfunctorily and got by rote without the slightest real personal knowledge being obtained. It is not necessary to give further illustrations. Every man or woman who has got to adult age will recognise the general truth of our statement. How is a better system to be brought about? The child here is our teacher—watch his eager interest in the animals that fall under his notice—see the excitement and interest with which he gathers huge handfuls of wild flowers. Why let all this keen apprehension run to waste—why not direct it, guide it, make it the basis of our instructional efforts? The observing faculties are those which are most highly developed in childhood, the reasoning faculties assume their fullest development much later, but the two are, or should be mutually interdependent. We want to control the child's apprehension and direct his intelligence, to make him observe—not more quickly, in most cases he does that sufficiently already, but more accurately and systematically, so that when he gets older and his reasoning powers become more matured, he may have a solid basis of self-ascertained fact as well as of second-hand memory whereon to base his reasoning. For elementary schools, especially in country districts, the study of the plants, insects, the birds, the animals of the district, form, as we believe, the best educational training for the majority of children once the three R's are mastered. In studying geography we would commence with the hills and dales, the railroads and rivers, the marshes and woods of the particular district in which the school was situated. The children should be shown geology in progress after a shower, in the drying up of a puddle, or in the effect of frost or wind. If the children are to become gardeners, or farm labourers, or carpenters, or blacksmiths, what possible better preparation could there be than elementary instruction in natural science? Who would do such efficient police service, say in the matter of the Colorado beetle, as well-trained children? Teach them to observe properly, and especially to discriminate carefully, and then there will be no fear, as there otherwise will be, of ladybirds or other useful insects being destroyed with the noxious ones as they now are. If children were trained to observe birds and bird-habits, to note which were the farmer's friends and which his enemies, surely good would result. Teach the child something of the reason why he is called on, or will be as he grows older, to do certain work in a certain manner. Surely the work of the garden will be all the better done if an intelligent appreciation of the why and wherefore be taught. Even for the matters of domestic economy and cookery, which very properly were introduced into a recent debate on education in the House of Commons, a training in the principles of natural history and chemistry forms, together with arithmetic, the best preliminary preparation.

FIG. 5.—DIOSCOREA BULBIFERA.

For the general culture of the faculties, or as a preparation for the general business of life, there can be no better preparation than a sound training in the elements of natural science, while even in the matter of moral training we submit that the reverent study of GOD'S works must be far more beneficial than the study of man's words, however full of wisdom they may be. Oh! but, some may say, how is all this to be accomplished? Your theories may be unexceptionable, but how do they work in practice? We will cite, by way of reply, only one instance—one with

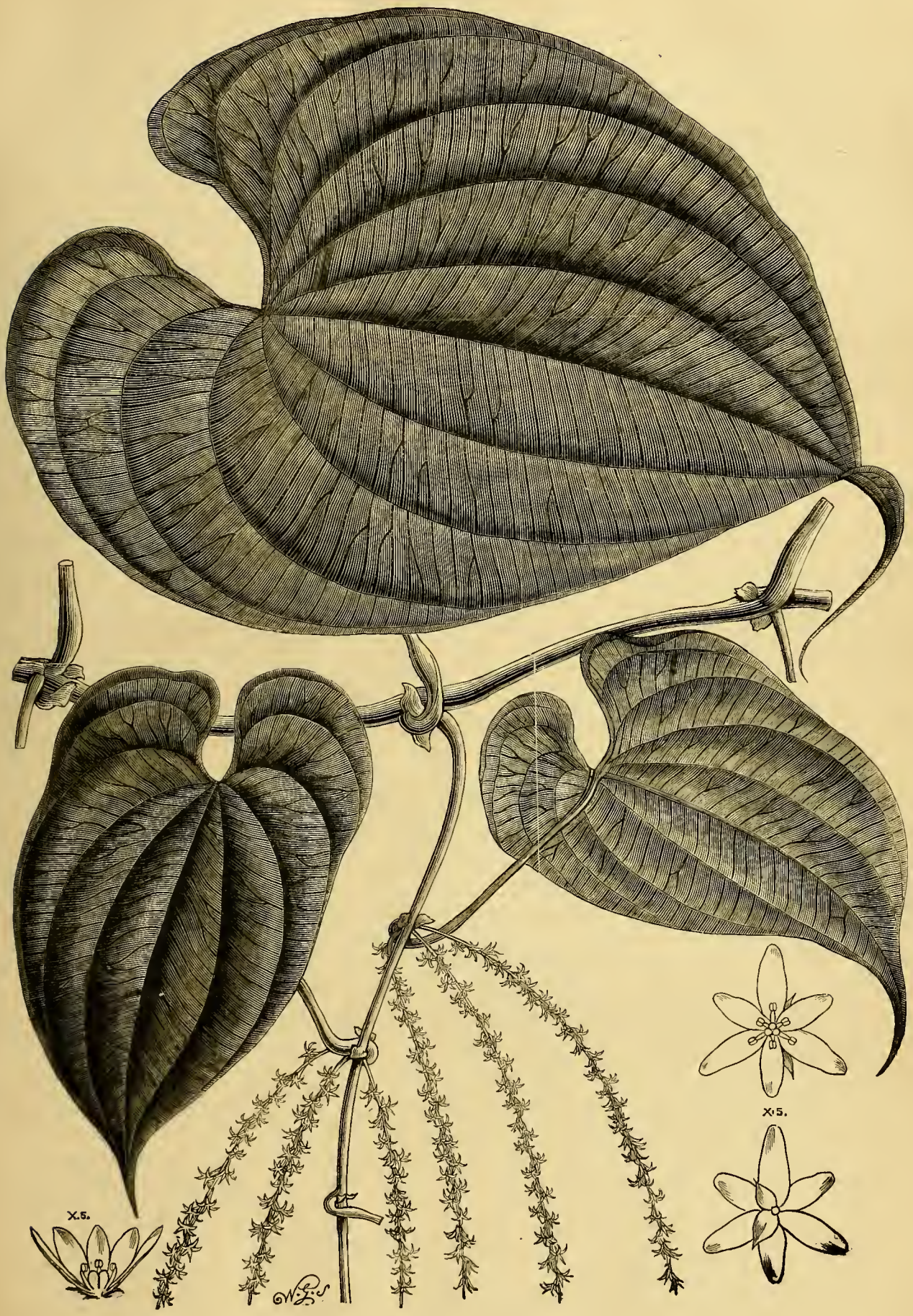

Fig. 6.—DIOSCOREA BULBIFERA.

which the older readers of this journal are familiar—that of the village school established by the zeal and wisdom of the late Rev. Professor Henslow. We cannot all have the same physical strength and mental power that he had, but we may all in our degree imitate his system of educating and training the children of the labouring classes of the rural districts.

We figure a very old garden plant—it was introduced as long ago as 1692—for the sake of illustrating a very beautiful and readily grown climbing plant. Dioscorea bulbifera (figs. 5 and 6), is, like its congeners, of twining habit, with bold foliage, and elegant drooping racemes of greenish flowers. In the axils of the leaves in the species figured are formed small fleshy tubers by means of which the plant is propagated. They were removed before the specimen was sent to the artist for figuring, hence they do not appear in his drawing. We saw the plant lately in the collection of Mr. W. Bull. The tuberous roots of many species are known as Yams, and largely cultivated for esculent purposes in the tropics. The Chinese Yam, D. batatas, a few years ago recommended as a substitute for the Potato, has lost what reputation it had, and it is rarely met with now; though, should Potatos again become scarce, substitutes will have to be employed, and this Yam is by no means the worst of the many proposed substitutes.

—— We received a few days ago from Mr. Johnston, gr. to the Earl of Strathmore, Glamis Castle, some berries of Lady Downe's Grapes, which were ripe in August, 1876, and cut and bottled in the usual way in the first week of January last. The stalks were quite green and fresh, and the berries as plump as could possibly be desired, while the flavour was excellent. Considering the length of time they had been kept, these were the finest of their kind we have seen. As Mr. Johnston observes, there can be no doubt about Lady Downe's being the best late Grape we have. Mrs. Pince's Black Muscat, ripened and treated in the same manner, does not keep well at Glamis after April, but Royal Vineyard and Alicante keep well till May.

—— It is proposed to construct a Pneumatic Railway from South Kensington Station to the Royal Horticultural Society's Gardens and Albert Hall. The rise will be 1 in 48 to the Hall. So then our horticultural friends will be blown thrown a tunnel to their destination. Engineers speak very favourably of the project.

—— A committee, consisting of Sir Walter Trevelyan, Athenæum Club, Pall Mall; Sir Joseph Hooker, Kew; Colonel Trevor Clarke, Welton Place, Daventry; Dr. Maxwell T. Masters, 41, Wellington Street, Strand; R. Marnock, Esq., 20, Spring Gardens; and D. Wooster, Esq., 18, The Terrace, Kensington Gardens Square, has been formed for the purpose of purchasing the only existing portrait of the late John Claudius Loudon, whose manifold services to agriculture and horticulture should insure the gratitude of horticulturists for many generations to come. An excellent portrait was taken by Mr. Linnell a few years before Mr. Loudon's death, and this portrait it is proposed to purchase and present to the Linnean Society, to be hung in the Library of that body. We should prefer that the portrait, when obtained, should be made over to the trustees of the Lindley Library, to be hung in the Council-room of the Royal Horticultural Society, which appears to us a more appropriate place of the two for the reception of such a portrait; but we are told that there are sundry good reasons why the Linnean Society (of which Mr. Loudon was a Fellow) should be selected. Any member of the committee will be glad to receive contributions towards the object in question.

—— The third number of the *Journal of Forestry* is before us, and amply bears out the favourable opinion we expressed as to its predecessors. In manner, matter, and method this journal is good. In the present number are contained, *inter alia*, articles on the timber supply of America, in which the author assumes that if no remedy be applied to ensure a supply for future generations, the timber supply in the Eastern States and Canada will be totally exhausted in fifty years, and a systematic plan of forest conservancy, as adopted in Germany, is recommended as essential. Mr. Burrows' paper on coppice wood, as managed in Kent, is likely to be very useful. In no part of the kingdom that we know of are coppice woods better managed than in Kent, and in none is it more profitable. The Rev. Dr. Brown gives an account of the course of study in the Forest School of Carlsruhe. Mr. Kay, of Rothesay, describes how, in the western islands of Scotland, and with the aid of his transplanting machine, he planted a number of Sycamore trees averaging from 25 to 30 feet in height, as well as (in former years) Oaks, Limes, Yews, Laurels, Elms 30 to 40 feet in height—in all about eighty trees, varying from 20 to 45 feet high. The trees were in no way prepared beforehand, and up to this time only two absolute failures have occurred. The correspondence is varied, and it is to be hoped the editor will know how to prune and cut out personalities. It is rather late in the day to give a review of "Senilis" on *Pinaceæ*, the author of which wild book has gone to his rest some years since.

—— In the last number of the *Revue de l'Horticulture Belge* M. A. de Smet calls attention to the following varieties of Echeveria adapted for outdoor cultivation for edgings, &c:—

E. farinosa, a form covered with mealy pubescence, the lower leaves rose-tinted, the latter tint becoming enhanced by exposure to the sun.

E. glauca, E. bracteosa, E. globosa, with rosettes of leaves of a pale blue colour edged with white. It belongs to the same section as E. glauca, but is superior to it.

E. imbricata, a form with orbicular mucronate leaves. The young leaves are glaucous, passing into rose, and ultimately into bronze. This is a very distinct form, of medium size.

E. imbricatissima, a form with nearly tubular leaves closely compacted, carmine-red in the centre and at the point, edged with silver, forming a splendid variety, resembling at a distance a Dahlia tipped with silver. This was sent out by M. de Smet.

E. metallica, E. metallica glauca, E. Scheideckeri, and E. scaphylla, the latter a form with thick concave bright green leaves.

—— The Hop Plantations around Ashford, according to the *Maidstone and Kentish Journal*, have been doing famously during the week ending July 7. The leaves of the plants are of a healthy colour, and the bine vigorous, with the lateral shoots pushing forward rapidly. The ground has been copiously irrigated, and having been well worked, cleaned, and manured during the dry weather, the effect has been surprisingly beneficial. The prospects of the crop improve greatly, and although there is a certain portion of the growth which no favourable influences can make productive, yet the general result will be far more satisfactory than was at one time thought possible.

—— In a recent issue Mr. Worthington Smith announced the discovery in some Potatos grown at Chiswick, and laid before the Scientific Committee of the Royal Horticultural Society, of the same appearances as he had met with last year in Potatos grown in the same garden. It will be remembered that the appearances were somewhat different from the Potato Disease as ordinarily seen, so much so that when first noted at Chiswick (chiefly in the American varieties) it was considered to be a new disease. Others maintained that it was the old disease known as curl. These statements were followed by the discovery in these Potatos of globular bodies, considered to be the resting-spores (which may be compared roughly with the seeds) of the Potato fungus, and of the smaller bodies known as antheridia, and which may, for the sake of illustration, be compared to the pollen cells of a flowering plant, and by means of which the resting-spore becomes fecundated, and enabled, after a period of rest, to germinate and produce new fungus threads, or under other conditions to break up into a number of fine movable sporules or zoospores. Mr. Smith's discovery was challenged, and by no less an authority than Professor de Bary; but Mr. Smith's subsequent researches served, in the opinion of those on this side of the Channel most competent to judge of so difficult a matter, to confirm his original statements. Professor de Bary, we believe, is still of opinion that Mr. Smith's conclusions are erroneous, and that the structures seen belong not to one but to two or three distinct fungi. We have no desire to comment on this matter now further than to say that our examination of the Chiswick tubers a few days since was entirely confirmatory of Mr. Smith's observations. We had no difficulty in seeing the young resting-spores (oogonia), the smaller antheridia, the male organs, the zoosporangia, or cases containing movable spores, and the conidia or bud-spores, with, of course, the peculiar spawn-threads of the Potato fungus.

—— In reference to the paragraph published at p. 791 of our last volume, referring to the Slow Increase of Tulips, which, in some cases at least, has been observed, Mr. R. Parker informs us of a much more striking case of obstinate refusal to increase and multiply than that above cited. Mr. H. Goldham, of Mitcham, a name well known to Tulip growers of the South, has grown for the past thirty-five years and has still in his possession a bulb of the variety called Rose Lac, from which he has not obtained any offsets. On one or two occasions only, during all this period, has there been an indication of an abortive attempt to form offsets. The plant has nevertheless continued to grow and bloom healthily during all this period.

—— At the June exhibition of Roses and Strawberries, held by the New York Horticultural Society, Mr. William Smith, Morrisania, New York, is reported to have shown some monster fruits of his new seedling Strawberry, President Lincoln, the largest measuring over 11 inches in circumference. Ten berries weighed over 1 lb., and its flavour was pronounced excellent by the judges.

—— Looking round Mr. Bull's nursery the other day, we lighted on a number of plants of a dwarf Rose, a very prickly fellow, with peculiar foliage, four pairs of closely set leaflets, with an odd one at the top, all deep green, regularly crenated at the edge, rough on the surface, like a Potato leaf, and the flowers 3 inches in diameter, of a rich rosy lilac, the petals flat, a little recurved at the margins—such a beauty and so sweet. It was the Rosa rugosa of Japan, lately reintroduced under the name of R. Regeliana. It is quite hardy, and though not a florists' flower it is very beautiful, and should be looked after by the hybridists. At Cliveden a white variety is grown with the ordinary form.

—— You want an Edging for your Rosery?—well, if your soil and climate are good try Rose de Meaux, or the little Fairy Rose, but as these will only do well in exceptional positions then use the double Scotch, and keep it well clipped. There is a very beautiful rosery at Dr. Ingleby's seat at Valentines, near Ilford, and it is bordered with the Rose in question, and nothing can be more satisfactory. The rosery in question is of oblong shape, bounded by four Rose beds trained over wire trellisses breast high. By a happy thought or fortunate accident a few wild Briar Roses are interspersed, and most beautiful they look even amid their more highly cultivated kindred. What a compliment to the wild white Rose, and to the single Boursault, which also figure there, and yet it is true. The hedge in question encloses a number of beds filled with dwarf Roses, and in the centre is a pavilion draped with climbing Roses, enclosing a bed of Moss Roses. On the adjacent wall Mr. Earley has planted the Macartney Rose. The whole garden is old-fashioned, but full of interest, as a garden should be. Beauty without interest is like a pretty doll in a hairdresser's window.

—— In Paris the work of embellishment from a horticultural point of view is still carried on with great energy. From the *Bien Public* we learn that no fewer than five new gardens will shortly be opened to the public. These, like most of the open spaces within Paris, are of small extent, but they will be all the more welcome in a city where the people pass nearly all their waking hours in the open air. According to the same authority Paris now possesses seventy-eight parks, squares and gardens, forming a total area of about 142 acres. This of course does not include the relatively large, as compared with London, open spaces afforded by the shaded boulevards; but altogether the total breathing grounds

of Paris are much smaller in relation to the population than those of London. And as regards the trees of Paris, although we of this generation at least can never hope to see the streets of London so generally planted as those of Paris are at the present time, we may expect to see as good or better trees in London than those in the boulevards of Paris at the present date. Generally speaking the trees of Paris are disappointing, and, from well-known causes, do not exhibit great vigour. In a word their condition seems to warn us against attempting to imitate Parisian boulevards in our narrow streets, where trees have no chance against the many unfavourable conditions. But where there is sufficient space in London for trees, and where their management is entrusted to competent persons, we believe they will succeed better than in Paris.

—— It will be remembered that we have frequently had occasion to mention a PINK SPORT FROM GLOIRE DE DIJON, of which, through the kindness of some of our correspondents, we have now seen several instances. The full history of this Rose has been given at various times in our columns, and was summarised in a paper read to the Scientific Committee of the Royal Horticultural Society and printed in the last volume of the *Journal* of the Society with a coloured illustration. It is then with no little interest that we learn from Dr. SCHÜBELER's last volume on the Vegetation of Norway, that a plant of Gloire de Dijon growing in a garden at Christiania, and grafted on the Brier, was observed to produce a pretty dark red coloured Rose, no doubt similar to that which has been observed here.

—— Our next issue will contain, in addition to the ordinary matter, an account of the grounds at CLIVEDEN, the seat of His Grace the Duke of WESTMINSTER, illustrated with several beautiful wood engravings illustrating the exquisite scenery of this charming domain.

—— How much remains to be done in all tropical and subtropical countries, and indeed one might say in all countries, beyond simply collecting specimens of natural history, is suggested by the interesting facts observed by the more intelligent of travellers in short excursions and under unfavourable conditions for working out their full import. When naturalists tire of describing plants and animals from dried or stuffed specimens, and take more interest in the life history of all organisms, we shall doubtless hear of expeditions to their various native countries, where alone such investigations can be successfully and profitably conducted. Half matured theories will be upset, and valuable and reliable data for a correct appreciation of the laws of Nature will accumulate, until we shall be in a position to understand something of this difficult subject. In a letter published in the *Flora*, 1877, p. 239, Mr. F. MUELLER, writing from Blumenau, province of Santa Catharina, Brazil, gives a brief account of a trip to the highlands of the province, and the western side of the Sierra, in the region of the sources of the Uruguay. One of the most remarkable facts that came under his observation was the number of plants with HYGROSCOPIC BORING SEEDS and seed-vessels, though he had seen none on the eastern side of the Sierra. More than a dozen different grasses, exhibiting this property, were noted on a short visit, among them some exceedingly curious and diverse from those described by FRANCIS DARWIN. In a species of Violet having cleistogamous subterranean flowers, the open flowers appeared to be equally or more fertile than the closed ones.

—— In Northern FRANCE, as in this country, the SPRING CROPS were very backward; and fruit, such as Pears, Cherries, and Plums, judging from limited observation in the vicinity of Paris, very scarce. As an instance of the lateness of the flowering of Apple trees, we may mention that we observed at Orsay, south of Paris, on June 10, a small orchard of Apple trees of one variety, the blossom of which at that date had scarcely attained its full beauty. It was certainly a very late variety, the name of which we were unable to ascertain.

—— We were lately visiting some gardens at a short distance south of Paris, in some of which it was quite disheartening to see the devastation caused by the larvæ of the MAY-BUG or COCKCHAFER. Whole quarters of Potatos, Kidney Beans, and other crops, were completely destroyed, resulting in a serious loss to the small owners. For years the French have been waging constant war with the perfect insect, and in some districts the children of the poor earn many shillings by capturing them in large numbers, for which they are paid at a certain rate. In spite of this activity, the cockchafer propagates so rapidly, that in some seasons and districts it is more destructive perhaps than all our insect foes in England collectively.

—— IMPATIENS JERDONÆ, an extremely rare and pretty species, is flowering in the Begonia-house at Kew. It is epiphytal, with tufted, short, here and there constricted stems. The leaves are ovate, few, and confined towards the growing point. The flowers are of peculiar conformation, coloured with crimson, yellow, and green; the anterior petal is crimson, and consists entirely of a large, curved, and compressed sack—its most attractive feature. It was first introduced to Kew by Mr. MCIVOR, who sent the carious-jointed stems from the Neilgherries, and the present plant was contributed by Mr. W. BULL. Some difficulty is generally found in the cultivation of this species, probably from want of suitable position. Neither in the greenhouse nor stove will it continue to do well, but requires an intermediate degree of moisture and temperature. It has been one of the specialities of Messrs. E. G. HENDERSON, who for a long time kept up a stock for trade supply. It may be grown either in pots or baskets, but should be kept near the glass.

—— In spite of the very large extra number of this journal which was published last week, together with a large coloured plate, the supply has proved much inferior to the demand, and many must, we fear, be disappointed in not being able to procure a copy.

—— HOODIA BARKLYI, a new and quite distinct species, is flowering in the Royal Gardens at Kew. The stems of the three recognised species (trusting to figure for H. Carrori) are extremely similar, though the present is apparently smaller in habit of growth than H. Gordoni, which flowered at Kew some time ago. The present species is conspicuously distinct in having a cyathiform corolla. The first flower open on this plant had a corolla composed of four petals.

—— In an address to the Horticultural Society of Berlin on walking-sticks, Dr. ASCHERSON stated that Dr. BECCARI had discovered the origin of THE RAJAH CANES OF BORNEO to be the aërial roots of a Palm, Eugeissonia minor, Becc. Another kind of stick commonly used in Germany, and called Russian Roots, is supposed to be Acer campestre. They were formerly much used for pipe-stems. Dr. ASCHERSON also exhibited a fine dark brown stick from a variety of the Date Palm, which only grows in the oasis of Jupiter Ammon. It has dark brown midribs, and is known by the name of Phœnix dactylifera Ammonensis. It was also shown at the Amsterdam Congress.

—— Some few years ago (*Botanische Zeitung*, 1873, pp. 529 and 545) BRIOSI sought to show that the first visible product of assimilation in the Musaceæ was not starch, as in other plants, but oil. Dr. E. GODLEWSKI (*Flora*, 1877, p. 215) professes to have wholly disproved this statement. By isolating portions of healthy young leaves in an atmosphere charged with 6 to 8 per cent. of carbonic acid gas he was able to observe or determine abundant formation of starch in the grains of chlorophyll. He also succeeded in detecting starch in the chlorophyll of young leaves growing in the ordinary atmosphere, especially in the evening after a hot day.

—— The preparations for the INTERNATIONAL HORTICULTURAL EXHIBITION to be held at Carlisle next September are now being rapidly elaborated. The exhibition will take place on the extensive meadows called "The Sauceries," which stretch from the ancient battlements of Carlisle Castle to the green banks of the River Eden, a few miles from its confluence with the Solway Firth. The accommodation for fruits, plants, flowers, vegetables, &c., will be considerably larger and more convenient than that prepared for the last International Show at Dundee. The interior arrangement will be somewhat as follows:—The fruit will be placed on tables in a marquee 400 feet long and 30 feet wide. The plants in pots will occupy the centre in a circular pavilion 100 feet in diameter, and other marquees extending to 500 feet in length and 40 feet wide. The vegetables, cut flowers, dinner-table decorations, &c., will be arranged in marquees 300 feet long and 40 feet wide, and the large meadows exterior to the marquees (which will be properly enclosed) will be occupied with collections of Conifers and ornamental shrubs and trees, as well as horticultural buildings and their appliances, rustic summer-houses and chairs, garden fountains and vases, ferneries and aquariums, iron fencing, gates and chairs, &c. Carriages will have a ready access to the show ground, and can set down their occupants at the covered entrance to the marquees, which will be constructed by UNITE & SONS, of Paddington, and will be perfectly water-tight. The judges have all been appointed, and exhibitors will be pleased to learn that the duties of this laborious and somewhat thankless office have been entrusted to gentlemen of undoubted skill and experience. The management of the show has been placed in the hands of Mr. WILLIAM THOMSON, of the Tweed Vineyards, Clovenfords, who will be assisted by an efficient executive committee. The subscription list is being daily augmented with new names, and the committee, being now satisfied that the show will be a great success, are rapidly completing their preparations.

—— LILIUM CORDIFOLIUM is about to flower at Kew, and we believe for the first time in this country. It is nearly allied to L. giganteum, but is not nearly so fine from a horticultural point of view. The flowers are only 4—10 in comparison with 12—20, and besides are smaller in size, with narrower segments. It is certainly a more difficult plant to manage.

—— Mr. B. S. WILLIAMS has again achieved a genuine success at the OPORTO HORTICULTURAL SHOW, having succeeded in carrying off the only gold medal awarded, for six new plants; the 1st prize (silver medal), for ten Orchids; 1st prize (silver medal), for three new Dracænas; also a prize for his four horticultural works—viz., *Stove and Greenhouse Plants*, *Flowering and Foliage Plants*, *Ferns and Lycopods*, and *Orchid Grower's Manual*. The prize of honour was also unanimously awarded to him for the best collection of plants at the show. This was presented by the Municipality of Oporto. It is a superb silver cup, richly engraved and embossed, and valued at £50. The group of plants sent included Orchids (over twenty in number), Pitcher plants, Dracænas, &c.

—— We hear from Mr. CROUCHER that AGAVE MIRADORENSIS, syn. A. Vanderwinneni, and A. Kelackii, will shortly be in flower in Mr. J. T. PEACOCK's collection. It belongs to the Candelabræformis section, and has a spike 12 feet high, the growth of a month.

—— According to Mr. SHIRLEY HIBBERD the number of new ROSES introduced from France in 1864 was twenty-two, and in the succeeding years the sale was as follows:—1865, sixty-eight; 1866, fifty-one; 1867, sixty-three; 1868, seventy; 1869, fifty-seven; 1870, seventy-five; 1872, sixty-six; 1873, forty-three; 1874, fourteen; 1875, fifty-five; 1876, fourteen; and 1877, thirty-eight. English raisers in the same interval have sent out in 1864, two; 1865, four; 1866, four; in 1870, three; 1872, eight; 1873, two; 1874, six; 1876, thirteen; and in 1877, two. The total number being for France 536, for England only forty-four.

—— Many choice plants are in flower on the ROCKWORK at KEW. Meconopsis Wallichi is in fine condition, appearing perhaps at its best. Anemone obtusiloba, not known to be in cultivation elsewhere, is conspicuous with a number of white flowers. It is a native of the Himalayas, whence it was introduced many years ago by the Horticultural Society. The leaves are ample in breadth, and the flowers grow several together on short pedicels within a leafy involucre. Dianthus superbus is in great beauty; the flowers are flesh-coloured, and divided almost entirely into fringe. Orchis foliosa is flowering well and

strongly; it grows up year after year without trouble, as do several others of the hardy Orchidaceæ. Cypripedium spectabile, the Mocassin flower, is quite lovely among the Ferns, where its requirements are perfectly suited. Arisæma concinnum has been out all winter; it has thrown up a strong scape, but the spathe is not so prettily marked as when grown indoors. Delphinium cashmirianum, introduced not long since, is really an ornamental plant, being dwarf in habit, and bearing large blue flowers. Primula sikkimensis has been flowering finely, so also has P. luteola. Phlox ovata is a fine broad-leaved species with pink flowers, well worth growing. The silvery Edelweiss of the Alps—Leontopodium alpinum—is coming into flower. Conspicuous in addition to the above are Pentstemon glaucus, P. puniceus, Erodium Reichardi, and the rare Wulfenia Amherstiana.

BRITISH GARDENERS.

Thomas Bannerman.

The subject of our present note was born in 1840, in Golspie Tower, Sutherlandshire, a village near Dunrobin Castle, the seat of the Duke of Sutherland. At the age of 13 he entered Dunrobin Gardens under Mr. McDonald, and was there for some time employed in the flower and kitchen gardens, after which he was moved to the houses to look after the fires, &c. While at Dunrobin he had a good opportunity of acquiring a sound knowledge of outdoor gardening, under the able superintendence of Mr. McDonald, who always took great interest in imparting instruction to his juniors. He remained there until November, 1857, when he was recommended by Mr. McDonald to the late Mr. Fleming of Trentham, which gardens he entered in the beginning of 1858. Here, after working a few weeks in the kitchen garden, he was moved to the Melon and frame ground, where pot Vines, succession Pines, Melons, and Cucumbers, &c., were largely grown. Mr. Fleming considered this one of the best charges for a young man, and Mr. Bannerman was entrusted with it for eighteen months, and was then moved to the late vineries, and soon after took charge of the early ones also. "I took a great interest in this department, and there were some very fine fruit grown under the management of Mr. Henderson, who was head gardener at Trentham at that time."

In 1861 he was recommended by Mr. Fleming and Mr. Henderson to Lord Bagot, and he went to Blithefield on October 14 of that year. Here the vineries were in such a state that it was found useless to attempt to grow Grapes until the borders were renewed, notwithstanding that his employers were anxious to have a supply of good Grapes. The early vinery was necessarily forced, owing to the obligation to force many plants for cut flowers, and a very poor lot of Grapes was the result.

"I cut the last bunch," he writes, "out of the early house on June 8, and at once commenced to make my first Vine border. I had the house well shaded with mats, as the Vines were quite green in leaf. I took them up, made new drainage, and replanted them in a new border, of which 3 feet was inside and 3 feet outside. I kept the house for ten weeks afterwards at about 65° at night, with a moist atmosphere; the Vines soon commenced to make growth, and by the autumn the border was filled with fresh roots, and the following year we had a very fine house of Grapes ripe at the end of May. My employers were so satisfied with the result, that they had three new vineries put up that autumn, and gave me permission to renew all the other houses. The following year I had them all reheated and new borders made, and the result has been so satisfactory that his lordship has since put up two other ranges of forcing-houses."

Of the success he has had in fruit growing Mr. Bannerman remarks that the gardening public will be the better judges. Suffice it to say that during the thirteen years he has been an exhibitor he has taken over 600 prizes for fruit at the London and local shows.

"I have much," he adds, "to be grateful for in respect to the confidence reposed in me and the kindness shown to me by both Lord and Lady Bagot, by whose desire we are always adding to and improving the gardens."

Home Correspondence.

Vegetable Marrows.—These are largely grown for the town market in the Fulham district. One grower has this season over ten acres of them, and the growers generally consider that they pay nearly as well as Cucumbers. The first sowing is made early in February, and over a thousand yards of framing is devoted to them. As soon as they are fit to handle they are potted into 4-inch pots; in a few days they receive as much air as the weather will permit, stocky plants being preferred. These are planted in frames in the following manner:—Trenches 2 feet wide and 18 inches deep are thrown out, and filled with fermenting manure well trodden down; 6 inches of the soil is levelled back on the top of the manure, and the frames arranged on the top of the trenches; the plants are planted 4 feet apart, and some short litter spread over the surface of the beds—it helps to retain the heat and moisture. They are as carefully attended to as Cucumbers. The tops are pinched over or tied, carefully ventilated, and well covered up at night till there is no danger from frost. This planting generally comes into use about the first week in June, the frames are now raised off the ground and the glass taken off during the day; by-and-bye it is altogether dispensed with, and the plants allowed to ramble at will. The second sowing is made about March 1, and planted under hand-glasses early in April. The rows are marked off 12 feet apart and the plants are planted 5 feet apart in the rows; holes are dug out large enough to contain a bushel of hot manure, which is covered up in the form of a hillock on which the plants are planted and a hand-glass put over them. A mat is allotted to each glass, and they are covered up every night till all danger of frost is over; the 12 feet spaces between the rows are planted with Cauliflower plants or sown with Radishes. When these are cleared off the surface of the soil is covered with littery manure. Marrows luxuriate in a moist, rich soil. The last sowing is made about the end of March, potted off and grown into stocky plants, planted as before, but without hand-glasses; about the end of May and well into June, as ground becomes vacant, the spaces between this planting are sown with Radishes: the long white seems to be the variety generally grown. It is no unusual sight to see as many as two or three waggonloads going from one grower's on a market night. Their cultivation being so easy, any one with a few spare yards of ground and a barrow-load of manure may have them in abundance; they do well to cover the rubbish-heap during the summer, as they like to ramble about. Apples being likely to be scarce, I may notice that the Marrows make a good marmalade or preserve, peeled, cut into pieces, cleaning out all seeds, adding about the same weight of sugar, a few bits of orange-peel, lemon-peel to flavour, and enough golden syrup to give a nice colour. *E. W.*

Cucumber Flowers with Leafy Calyx.—We have those at times something like the one you give on p. 822. We have also had many Melons this spring with proper leaves, sometimes above and sometimes below the proper female flower on the Melons. I have observed, too, that the flowers with three leaf appendages have remained longer on the fruit than those which had none. A Melon of Sutton's Horticultural Prize—a long-shaped, rather Gourd-looking Melon—of excellent quality, however, kept one of those appendages fresh and green until the fruit were almost ripe. We do not seem to have any very good specimens of Melons thus furnished left at present. Should any good shows occur, and you care to have a Melon with such an appendage, I shall send it up at once. *D. T. Fish.*

Bougainvillea speciosa.—With this I send for your inspection a small box of Bougainvillea speciosa. It may be interesting to some of the readers of the *Gardeners' Chronicle* to know that the Bougainvillea speciosa will grow and bloom to perfection in a conservatory or cool-house. The plant that I have cut the enclosed specimens from was planted in the conservatory here six years ago in a well-prepared border. Two years after it was planted it reached the apex of the house, and began blooming. It has bloomed most profusely every year since, but I think it is finer this year than ever I have seen it. I know of no plant better adapted for a conservatory climber than B. speciosa. It retains its foliage all the year, and invariably lasts in flower over three months. I may further add that the conservatory here is about 22 feet high, and the roof is glazed with Hartley's patent fluted glass. *A. Ingram, Alnwick Castle Garden.* [Richly coloured. Eds.]

Triteleia laxa.—Among hardy bulbous-rooted plants now flowering in the herbaceous border by far the most useful and beautiful is Triteleia laxa, which, although introduced from California in 1832, appears as yet to be little known, or it certainly would be more cultivated than it now is. The scapes grow from a foot to 18 inches high, and bear umbelliferous Lily-like heads of bloom, resembling in miniature those of the well-known Agapanthus, but, instead of being of that colour, they are of a rich Tyrian purple and most valuable for cutting, affording as they do one of the choicest bits it is possible to cull from the open ground at this season. Notwithstanding the length of the scapes, they are of a firm, stiff nature, so as to stand erect without support, and, as their interior construction somewhat resembles that of a reed, they take up water so freely as to last almost as long in it as they do on the plant, which is a great recommendation to any flower used in a cut state. I have not as yet tried them for forcing, but hope to do so this next spring; and, if they will stand artificial heat to get them in by March or April, they will form very attractive objects and show up in favourable contrast with Spiræa, Deutzias, Lily of the Valley, and other light flowers usually so plentiful at that time. The best way to treat them is to plant in a partially shaded situation, in moderately rich loose soil, where the drainage is perfect, otherwise they are apt to rot away during the winter; but where the above-named favourable conditions can be secured they grow readily, and soon become fine strong masses that increase in beauty each year. In planting the bulbs should be buried at least 3 inches deep, and be covered with sharp sand to afford them a dry bed when at rest, and if the surface of the ground is then covered with a handful of cocoa-nut fibre, leaf soil, or some other non-conducting material, they will be all the better for it, and flower much more freely than if taken up annually, and subjected to the drying many half-hardy bulbs undergo. As the foliage is always very spare, the plants should receive every encouragement while growing and blooming, by giving them an occasional soaking with liquid manure and keeping them perfectly free from weeds, or being encroached on by others of a more spreading habit, till they ripen off naturally. Triteleia uniflora is also deserving a place in the herbaceous border, however select the occupants of the same may be, as it sends up its flowers in the most profuse manner when once it becomes thoroughly established. The same kind of soil, treatment, &c., required for T. laxa will likewise suit this, or any of the others, all of which are desirable, but the one specially under notice is so exceedingly choice and showy that it should be in the hands of all lovers of this class of plants. *J. S.*

Roses in Devonshire.—Fifty of the finest established exhibition Roses in cultivation which do best with us in Devonshire :—

H.P. Alfred Colomb
H.P. Amelia Host
H.P. Antoine Ducher
H.P. Auguste Rigotard
H.P. Baron de Bonstettin
H.P. Bessie Johnson
H.P. Camille Bernardin
T. Catherine Mermet
H.P. Charles Lefebvre
T. Comte de Paris
H.P. Countess of Oxford
T. Devoniensis, old or climbing
H.P. Dr. Andry
H.P. Duchesse de Vallombrosa
H.P. Duke of Edinburgh
H.P. Duke of Wellington
H.P. Dupuy Jamain
H.P. Edward Morren
H.P. Elie Morel
H.P. Etienne Levet
H.P. François Michelon
H.P. Ferdinand de Lesseps
H.P. Général Jacqueminot
H.P. John Hopper
H.P. Lælia
H.P. La France
H.P. Louis Van Houtte
H.P. Madame C. Wood
H.P. Madame C. Joigneaux
H.P. Madame Marie Finger
H.P. Madame Rothschild
H.P. Madame Victor Verdier
T. Madame Willermoz
H.P. Mdlle. Eugénie Verdier
H.P. Marie Rady
T. Maréchal Niel
H.P. Marguérite de St. Amand
H.P. Marie Baumann
T. Marie Van Houtte
H.P. Marquise de Castellane
T. Moire
H.P. Monsieur E. Y. Teas
T. Niphetos
H.P. Pierre Notting
H.P. Princess Beatrice
H.P. Prince Camille de Rohan
T. Souvenir d'un Ami
T. Rubens
T. Souvenir d'Elise
H.P. Victor Verdier

Henry Curtis, Devon Rosery, Torquay.

Strawberry Pioneer.—This superb new Strawberry is a few days earlier than the Black Prince, rather above medium size, flesh firm, colour bright red, and well flavoured. It is the greatest acquisition yet introduced in the way of early Strawberries. *E.*

Orchids in June.—Not the least recommendation of Orchid culture is that as the summer comes to its height and glass-grown flowers are least desired, the floral products of the houses wane, to come again when the out-of-door attractions are fewer. Nevertheless June has presented the following :—

Dendrobium amœnum (pretty, free flowerer, and deliciously fragrant)
,, Dalhousianum
,, crystallinum
,, Parishii
,, Pierardi latifolium
,, barbatulum
,, fimbriatum oculatum
,, japonicum
,, chrysotis
Cattleya Mossiæ
,, Mendeli
,, Leopoldi
,, Forbesii
,, Schilleriana Regnelli
,, intermedia
Lælia purpurata
,, cinnabarina
Aeranthes species (a curiosity)
Angræcum falcatum
Aerides japonicum
,, roseum
,, affine
,, suavissimum
,, virens Dayii
,, tessellatum
Saccolabium retusum
,, guttatum
,, ampullaceum
Cypripedium longifolium
,, Lowii
,, barbatum nigrum superbum
,, niveum
,, Roezlii
,, speciabile
Vanda suavis
,, tricolor insignis
,, lamellata
Stanhopea Wardii
,, species
Sobralia macrantha maxima
,, Woolley's variety
Odontoglossum stelligerum
,, Rossii
,, roseum
,, angustatum (spike 9 feet, branching, curling in most eccentric fashion. Many hundreds of flowers, very pretty in the mass, and quite unique in colour. Little known, I believe, but well worth cultivating in the cool house)
,, stellatum (pretty, lasts a long time in flower)
,, Pescatorea
,, cirrhosum
,, cordatum
,, Roezlii
,, Lindleyanum
,, vexillarium
,, luteo-purpureum
Mesospinidium sanguineum (bought at Stevens' as O. cirrhosum)
Mesospinidium vulcanicum
Gongora species
Acropera Loddigesii
Bifrenaria aurantiaca
Anguloa Clowesii
Oncidium auriferum
,, Wentworthianum
,, Papilio
,, pulvinatum (a rich mass of flower, very desirable)
,, flexuosum
,, phymatochilum
,, sphacelatum
,, Phelpsianum
,, altissimum
,, triquetrum
,, roseum (a singular flower in form and colour—indeed unique ; should be in every collection ; intermediate)
,, pumilum
,, Marshallianum
,, crispum grandiflorum
,, divaricatum
,, concolor
,, barbatum
,, articulatum (small, but very pretty ; many flowers)
Epidendrum vitellinum majus
,, macrochilum
,, species (named by Reich. atropurpureum)
Disa Herschellii (most disappointing. A very small blue flower, like a pale Campanula ; not worth growing)
Masdevallia Veitchii
,, Harryana
,, Lindeni
,, caudata
,, nycterina
,, amabilis
,, ignea
,, coccinea
,, ochthodes
,, Peristeria
Colax jugosus
Brassia Lawrenciana
,, caudata
Trichopilia coccinea
,, crispa
,, tortilis
Phalænopsis grandiflora
,, ,, aurea
,, amabilis
,, rosea
,, Luddemaniana
,, cornu-cervi
Brassavola species
Lycaste aromatica
,, Harrisoniæ
,, Deppei
Maxillaria tenuifolia
Calanthe Masuca
Bollea Lalindii

Edward W. Cox, Moat Mount, Mill Hill, June 28.

The Cucumber and Melon Diseases.—I have believed from my first acquaintance with this pest, that all along we have been writing of two diseases, hence I called it the new Cucumber disease. Last year I had neither swelling at the roots nor gumming, this year the Cucumbers have gummed, but neither roots nor stems have swollen ; in fact, I have known the disease called gumming for years, but never saw the pest of last year and this until about a year ago. With all deference to Mr. Smith's theory of worms, I should hold that those found were the product rather than the cause of the disease of which I have written. To all appearance the initiative is fungoidal. A few red spots appear on the leaves, this runs into red rings ; the substance of the leaf corrodes as if eaten out by rust. Peculiar spots and circles have appeared on the fruits ; those on the Melons have generally been of a higher colour than those on the Cucumbers, some of the former, in fact, being bright as the red rust on Rose leaves ; and not unlike the exaggerated cases frequently found on such, when the affected parts thicken and swell into a raised red excrescence. In such exaggerated cases the fruit quickly decomposes and is utterly destroyed ; in fact, the appearance and conduct of those red spots and circles are so totally unlike common gumming in any of its stages that it is hard to believe that they are the same thing, only in different degrees of development. The gumming may be the ultimate product of the ruddy spots and rings, but there is this difficulty to be met and mastered before that theory can be accepted—that I have never seen these symptoms associated with gumming before, and that last year the red marks and blotches did not produce any gumming. This season the disease of last year and gumming succeeded each other in the order here stated on the Cucumbers but not on the Melons. Fortunately I have had no personal experience of this disease till now, but I believe it is a fact that Melons seldom gum, while Cucumbers are subject to it. But this new disease has another distinct peculiarity—gumming reveals or developes itself as an excrescence, but most of our affected Melons had a depression over the whole of the scar. It is difficult to account for these differences if all the symptoms proceeded from one disease. Fortunately for the present, and by the exterminating power or stimulative energy of the Salus, I have now no samples of the red rings or spots to send, though I find a little gum on some of the fruits of the Cucumbers, which comes out suddenly—as a sudden eruption of living organisms might be expected to do, or a surplus of poisoned sap. I have been questioned about the strength of our Salus broth ; it was strong. A good thick sprinkle was scattered over the surface at times, and watered on. At others Salus, at the rate of an ounce to a gallon, was stirred up in the water and poured over the roots. The whole of our young crops of Cucumbers and Melons are perfectly clean. The early Melons, badly affected at one time, are now carrying an enormous load of fine fruit—about a hundred in a small house, so that we have reason to be proud of the powers of Salus and grateful to its discoverer. As a proof that Salus does not lower the quality of Melons, it may be added that the flavour is excellent, and that a Reid's Scarlet-flesh treated to very strong doses of Salus broth took the 1st prize from some first-rate green-fleshed Melons exhibited at the horticultural *fête* of the Suffolk Agricultural Society at Sudbury on June 28 and 29. *D. T. Fish.*

Silk Culture in Great Britain.—Permit me, in resuming the brief account of my silkworm education at Colchester, to correct a few statements in your article (p. 756). 1. At the bottom of the first column "Dr. Wallace tells us he has had shoots on 'three' trees, which in one year grew 5 feet to 6 feet long." For "three" read "these," a great number of trees having shoots that length. 2. June 1, the minimum temperature is given at 44°, this being the reading in the cellar ; during the day the thermometer was moved into the silkworm-room, and the temperature recorded there afterwards. 3. In the sixth line of third column the words, "not the common fruiting Mulberry," are introduced ; this is not my expression, and it is not correct. When silk is required then it is desirable to feed the worms on the White Mulberry ; but when grain only is required the Black Mulberry, the common kind, is equally valuable as food. I am, in fact, now using the leaves of the Morus nigra. I wish this point to be generally known, that every one who can command the leaves of the Black Mulberry may be aware that they may be used for grain culture. 4. I omitted to state that of the "vers zebres," or black silkworms—the valuable race from Southern Europe—four hatched out on June 5, and fifteen on June 6 ; two more hatched out on the 13th, making in all 457 worms out of 500 eggs. They have now nearly all moulted or changed their skin for the first time, and are feeding well. On the 13th, finding that even in the cellar, at a temperature of 58°, the young worms began to emerge, I brought up my stock for the year—two cards, containing about 1½ oz. of grain by weight (Brienza race) into the *magnanerie*, and disposed them ready for hatching. On the 14th, 15th, 16th, and 17th nearly all the worms emerged, leaving a few stragglers, which in a large education would be thrown away as *retardaires* and worthless. Since then they have had a change of bed, *délitement*, and are feeding up regularly for the first change. Leaves on the Black Mulberry trees are from 2 to 2½ inches in diameter, shoots on the White Mulberries are from 6 inches to 1 foot in length, leaves 1 inch to 1½ inch, and on some trees 2½ inches in diameter. My *magnanerie* is a room on the ground-floor, facing south and west, and therefore catching a large amount of sunshine. At the westerly window in the afternoon a large amount of sunshine enters, and this accounts for the temperature rising to a maximum at about 3 P.M. There being no room over it, a considerable amount of caloric enters through the slates of the roof. I am thus enabled to keep up a high temperature without the aid of fire during all sunshiny days. The leaves are given to the young worms at 7 A.M., 11 A.M., 3 P.M., and at 6 P.M., cut up into fine pieces with the aid of scissors. "*Délitement*," or "cleaning," is effected by spreading a net over the tray of worms the first thing in the morning, and scattering over it the cut food. Silkworms always follow their food, attracted by the smell which is exhaled from the cut and juicy edges of the leaf. To do this they crawl through the meshes of the net and leave their old bed. At the next feeding time they must be examined, and if they have risen well, *i.e.*, all together, the new net, worms, and food, may be lifted off, and the old net with the dried food and other *debris* thrown away. There are generally a few weakly worms remaining with the *débris* ; these are of no value, and may be thrown away on the rubbish-heap. If the worms have not risen well, which happens sometimes if the temperature is too low, or the old bed too fresh and moist—*i.e.*, if too much food has been given over-night—it will be necessary to feed over the new net a second time with finely cut fresh leaf, to attract the laggards to a fresh repast, and to defer taking off the net till the afternoon. Each day's hatch is kept separate, it being of the utmost importance that each tray of silkworms should go through their change all at the same time. To do this the individuals must all be of exactly the same age, and be kept so throughout the growth. *Alex. Wallace, June 18.*

Temperature of the Silkworm Room.

June	Minimum.	7 A.M.	9 A.M.	12, noon	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain, &c.	Barometer.
	°	°	°	°	°	°	°				
12	61	65	66	67	70	70	68	—6½	E.	Heavy at night, with thunder and lightning	29. 7 9/10
13	64	64	64	65	66	67	65	—6½	N.E.	Dull morning, sunshine at mid-day.	29. 8 5/10
14	60	60	62	64	65	66	65	—6½	N.E., breezy	—	30. 0/10
15	60	60	61	64	67	66	64	—6½	N.E., fresh	—	30. 1 5/10
16	59	60	62	65	67	69	67	—	N.E., fresh	—	30. 1 5/10
17	63	63	64	67	69	70	68	—	N.E., breezy	—	30. 0/10
18	63	64	65	69	70	69	68	—	Slight, E.	—	30. 2/10
19	64	64	66	69	72	72	70	—	Slight, N.E.	—	30 0/10
20	64	64	65	69	71	70	68	—5	N.E., slight	—	30. 0/10
21	63	64	65	68	70	69	67	—5	N.E., breezy	None in forenoon, slight in night	29. 8 0/10
22	64	65	67	69	69	69	67	—5½	Breezy, S.W.	Heavy shower in day	29. 4 4/10
23	64	64	65	66	67	66	64	—6	Breezy, W.	Slight in day	29. 4 9/10
24	58	59	62	67	69	69	67	—5	Slight, N.	—	30 2/10
25	60	60	62	67	69	70	68	—4	Slight, N.	—	30. 1 1/10

Note.—No fire-heat was used. From the 16th to the 21st my hygrometer was sent away for correction.

"Vers zebres" are now in their third age, dark-coloured, and very handsome. Four feeds are given per diem—at 7 and 11 A.M., 3 P.M., and 6 P.M., of Black Mulberry leaves. The bulk of the silkworms are now in second age, the earliest, hatched out June 12, passed their first moult June 19 to 21, and are nearly ready for the second moult. Those hatched out on the 17th are now just passing out of the first moult. White Mulberry shoots are now 12 to 18 inches long, with leaves 2 to 3 inches in diameter. Black Mulberry leaves measure from 2 to 4 inches in diameter. It may not be generally known that picking the Mulberry leaves with judgment from the black fruiting tree, so as to leave the bud and terminal or last leaf intact, does not injure the fruit, but rather the contrary ; the better circulation of air and free admission of sunshine causes the fruit to ripen a fortnight earlier than it otherwise would do, securing it before autumnal rainfall, while the tree in a month's time is again completely covered with foliage. No one who who has not seen this done will believe it, but it is nevertheless true. *Alex. Wallace, Colchester, June 25.*

Identification of Potatos.—At the International Potato Show, held at the Alexander Palace last

autumn, it will be remembered that, excepting Mr. Porter, all the Scotch exhibitors put up Porter's Excelsior under the name of "Handsworth." As I have not grown the Handsworth for several years I procured seed of a true stock from a market grower who has had it for many years, and now find that it is entirely distinct from Porter's Excelsior; the Handsworth has a shorter top and is flowerless. At the same show a coloured kidney was shown as Crimson Ashleaf: this was thought to be identical with Purple Ashleaf, to which it bore in the tuber a close resemblance. I am glad to find that it is distinct. Princess of Wales, a pretty coloured kidney, also sent from Scotland, is identical with our Trout Kidney. Grampian, a good looking red sort from the North, is quite distinct. *A. D., Bedfont.*

Cutting Down Trees.—In the *Gardeners' Chronicle* of June 30 I observed, in an article of Mr. Alexander Forsyth's advocating the cutting away old shy-bearing fruit trees to their base, and encouraging the growth of new branches, &c., he instanced a successful case which I had pointed out to him in my grounds on his going over them heretofore. This having occurred a great many years ago he may well have forgotten the details of the case, which are instructive, and have influenced many operations subsequently. They had no reference to fruit trees, but to an Oak, the specific name of which I forget. This was planted more than forty years ago, and when an ornamental shrub about 7 feet in height, my coachman, after putting his horses in the carriage, left them while going to his room for his coat, during his absence, from some alarm, they rushed out of the stable-yard with the carriage, and broke off my pretty Oak close to the ground. This was carried away, and the earth put in order. In the course of the following year I observed three or four young shoots spring up from the spot on which the Oak had stood, and having selected the strongest I cut away the others. This grew rapidly, and when I called Mr. Forsyth's attention to it, and gave its history, it was probably 8 or 10 feet in height. This must have been more than thirty years ago. This tree is an evergreen Oak of large foliage, and greatly admired. It has grown up with a straight stem, now 7 feet in circumference at 3 feet from the ground, about 60 feet in height, with extended branches covering a space of 40 feet. About fifty years ago I owned a plantation at a distance, chiefly of Larch and Ash, amongst which several common Oaks had been planted. After some twenty years of age they had become stag-headed, and in very unpromising condition, and as soon as I saw the result of my home accident I had all the Oaks I have referred to cut down to their bases, and treated subsequently in the same manner, and they grew away freely with straight upward stems, with every promise of their ultimately becoming fine timber and superior to any Oaks in the neighbourhood. *C. Lawrence, The Querns, Cirencester.*

Coltsfoot.—Your correspondent, "E. W. W.," inquires so earnestly as to the destruction of this weed that I cannot resist offering a few notes upon the subject. Coltsfoot (Tussilago Farfara) is remarkable for a large-branched, brittle, and succulent rootstock. This portion of the plant is highly tenacious of life, so that the least bud left in the soil will be certain to grow. No wonder, then, that "E. W. W." complains that after picking out all the little bits it comes up "as luxuriant as ever;" this, of course, meaning all that could be conveniently got at. But besides this method of increase by division of the rootstock, it should be understood that it is one of the most prolific of seeders, as each head of flowers may perfect from 100 to 200 seeds. The plant flowers before the leaves appear, and the somewhat small yellow stars excite but little attention in early spring, but when the large flat leaves appear the farmer is made sensible of the presence of a noxious weed, and this is just the time that he commences to hoe it up. Now as this is exactly the period at which the seed is ripened, his very bustle either causes much of this to be hoed in on the spot, or it is sent adrift by means of its parachute and so becomes scattered far and wide. Anon, fresh buds spring up from the uncut portions of the rhizome, and hence your correspondent's complaint of the difficulties attendant upon the destruction of Coltsfoot. In some of our stiff marls we had an abundance of this pest which now, I am happy to say, has been so successfully got under that I deem it right to explain our plan of action. The Coltsfoot from its underground growth usually appears in rounded isolated patches, and if these be looked to in time by hoeing before the seeds ripen this fertile source of mischief will be avoided. The leaves will soon after appear, when the hoe should be again brought into use to cut out the buds as deeply as can well be done. By this means the plant will profit but little by its early development of lung. Still the succulent rhizomes will make another effort to get on in life, when a second attack should be made upon the leaves, which, with hand picking at the next ploughing, I have usually found successful. One difficulty, however, in dealing with this plant will be found in the fact that the labourer is not usually aware of the importance of picking up these succulent morsels; his attention is mostly confined to Couch picking, and he understands but little beyond it. Hence, then, we have found that where the plant had become established in the before mentioned centres it can readily be got out with the fork—a plan which I recommend in such cases. *B.*

Roses Duke of Edinburgh and Lord Clyde.—In the article "English Roses" of your admirable and interesting Rose Supplement, these two Roses are cited as being "sent out" by William Paul & Son, of Waltham, instead of by us—an error we of course hasten to correct. We—Paul & Son, Cheshunt, sent them out respectively in 1868 and 1863. The question of their raising has been already fully discussed (*ad nauseam*) in your columns. When to the list of Roses "sent out" by us are added all Mr. Laxton's, we think we substantiate our enviable distinction of having raised or sent out more good Roses than any other English nurserymen. In our Mr. Paul's remarks on seasonable Roses, one of the new Roses of 1876-77 should be Marquise de Murinais instead of Marquise de Nivernais. *Paul & Son, Cheshunt.*

Subterranean Cucumber.—The Cucumber of which we give a figure (fig. 8) was grown by Mr. Elphick, gr. to E. Frewen, Esq., Brickwall, Horthiam,

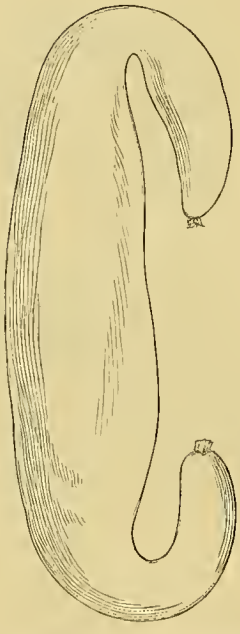

Fig. 8.—subterranean cucumber (reduced).

Sussex. The colour was a very pale yellow, almost white, which is accounted for by the circumstances under which it grew. Mr. Elphick says that he took it from the root of the plant as it pushed its way aboveground. The peculiarity in question may be accounted for by supposing that a flower had been developed underground, or that it was produced aboveground and grew downwards into the soil for a time, subsequently turning upwards. Several cases of underground fructification are known, as the common earth-nut (Arachis hypogæa) and some other Leguminous plants. There are also cases in which the flower is formed underground: such flowers are usually closed and self-fertilising. As we did not see the specimen growing, we cannot be sure what is the correct explanation. The seeds were imperfectly formed in the Cucumber in question. Has any one seen or recorded a subterranean Cucumber? Eds.

Floral Decorations: Amateur and Open Classes.—Your remarks in a late issue upon the exclusiveness of the West Kent Horticultural Society and the opposite course of the Royal Botanic Society, are deserving of consideration by the framers of schedules of several other societies. For their information it should be recorded as one of the results that the number of exhibitors of table decorations at the show of the former Society last Saturday was much smaller than usual, while the number at Regent's Park last Wednesday was greater than it had ever been. But this is not all; a more important fact remains to be mentioned — what you prophesied proved true; amateurs took almost all the 1st prizes. Ladies need no longer be under any apprehension of competing with gardeners or with florists, for a few flowers tastefully arranged with a proportionate quantity of foliage must always be preferred by competent judges to those massive groupings in which the arranger strives, by the quantity of flowers used, to dazzle the beholder and to hide his deficiency in art-qualifications. It is not necessary to strip a greenhouse, or to spend a bank-note at Covent Garden, in order to furnish a dinner-table with floral decorations, artistically arranged. The 1st prize at Regent's Park for a dinner-table completely furnished, and also the 1st prize for a dinner-table florally decorated, were both taken by a lady who used less materials than any other exhibitor there; but then everything that she put on "told," by which I mean that you could not well have added or taken away anything without interfering with the effect. I do not at all mean to imply that amateurs are all capable of doing this sort of thing, but nevertheless it is what all amateurs should aim at, and practise until they can do it. Again, the leading prizes at the West Kent show (which, by the way, is one of the best, if not the best of all the suburban shows, and is always numerously attended) were taken by ladies who used comparatively very few materials, and if any of them happened to be at the Botanic *fête*, and saw the want of lightness in arrangement which characterised the tables of most of the gardeners and florists who exhibited there, they must feel sure that their own natural and unconventional groupings need not fear comparison with the productions of those whose larger experience and greater opportunities of getting flowers places them in a more favourable position, but whose want of elegant taste so often prevents their being able to turn their advantages to account. The charming softness of the colour arrangements produced by the Misses Scott with wild flowers only, and the refreshing coolness of the foliage with which Miss J. S. Lovibond's table was almost entirely decorated, were the subject of general admiration. It is only just to florists and professional decorators that I should add my conviction that the public are far more to blame for what I object to than the trade. I have heard several complain that they dare not supply decorations as they would like, and that they are obliged to send in what they know is wished for. In fact, the public want a large quantity without much regard to quality; they pay readily for raw material, but they will not pay for art, or rather they look upon it as only an excuse for supplying fewer flowers. No one who has attended displays of floral decorations such as those at Bickley and the Botanic Gardens can have failed to notice the marked improvement that has taken place in the art of arranging flowers during the last few years; but unless I much mistake, the improvement will continue for some time to come: assuredly there is room for it in many details, and it will come from amateurs. *W. T. T.*

Two Days' Rose Shows.—The Aquarium Company is the only public body that has this season attempted this, and it is to be hoped that all members of the National Rose Society will remember that they are pledged to discountenance them. *V. W.*

Téosinta (Reana, or Euchlæna luxurians.)—The experiments as to the culture of this plant which I made in 1876 seem to me to be decisive, and to leave no doubt as to the impossibility of using it as really useful forage in France. I have raised more than one hundred plants of it, placed in all aspects except the north, some being watered, the others left without water. The young plants were planted in April, and were checked a little by the coldness of the spring, but made up for lost time during the first few days of May. The plants that were situated in rich soil and watered rose to the height of 2.50 m., or a little more, some even to 3 m., forming large and vigorous clusters of ten to twenty stems, leafy and very tempting as forage; those which had been left without water, and which had suffered from the dryness of the summer, did not exceed 1 m. in height, and the stems formed scarcely any branches. Until the end of October I despaired of seeing these plants in bloom, but on November 7 two terminal male panicles began to unfold. Others followed, and soon nearly all the plants had developed their male panicles, which are exactly like those of Maize. At the same time the female flowers, consisting of small axillary panicles, on the side branches of the main stem, pushed out their long, reddish-purple stigmas, and they would no doubt have been fertilised if there had been any pollen, but not a single stamen had unfolded itself. The nights also were too cold to allow of the ripening of the pollen. At the time when the male panicles began to show themselves all the leaves dropped off and left long stalks entirely stripped. The plant is very sensitive to cold. On the night of November 9 or 10 the thermometer suddenly fell to zero, and that was sufficient to kill the panicles and the leaves of those plants which were without shelter. The lowest temperature of the year 1876 at Collioure

was 14°.7 (58°.5 Fahr.), and the entire amount of heat which my plants received from April 30 to November 30 was 4033° (7259° Fahr.). This is nearly double the quantity needed by Wheat to grow and ripen its seed, and much more than is required by the latest species of Maize, not excepting even Mais Caragua. The resemblance between Reana and Maize is otherwise very great, as is proved by the fact that two of my plants were attacked by Ustilago maydis, which has the same effect on them as on Maize. I consider that in order to bring about the complete fertilisation of Reana luxurians at least 6000° of heat are required, that is to say, the same quantity needed by the Date Palm in order nearly to ripen its fruits. It is only as mild as this in the extreme south of Spain, Sicily, and other similar localities, where the perfect cultivation of Reana may be hoped for, and it would still require copious irrigation. Under the same circumstances Maize would render twice or three times the quantity of forage. But if Reana cannot be utilised in Europe it could probably be used very profitably in the hot and damp tropical countries, as in some parts of Mexico, Guatemala, the Antilles, New Caledonia, India, &c. I think it would make a good forage plant in these countries, possibly too the seed could be used as food by men, or at least for domestic animals. This would be an experiment worth trying. *C. Naudin, Collioure, France.*

Pear-leaf Fungus.—Can you inform me the name of the fungus or lichen affecting the enclosed Pear tree leaves? About two or three years ago I observed it on one tree, but as it did not spread or appear to affect the vigour of the tree I took no further notice of it, but this year it has spread over all the Pear trees (and not on other trees) in my garden, upwards of 100, and has caused them to cast their fruit. I don't know what course to pursue to destroy it, except perhaps a strong dressing and a large admixture of sulphur in the autumn after the trees have been pruned. Any information or advice will be thankfully received. The spores appear to have been driven by the wind, as most of the trees are to the south of the one first affected, and the wind till lately has been long in the north and north-east. The Pear trees are all grown on the pyramid and bush system. *George Wood, Solicitor, Rochford.* [The fungus is Roestelia cancellata, by no means common, but at times it is very prolific and virulent. Eds.]

Salus, Cucumbers, Melons and Carrots.—Our Melons, spite of green-fly, seem to prosper. Last year we had not a single one. Our Cucumbers are also a decided improvement, but Salus has won my gardener's heart for its effect on a bed of Carrots: the appearance of which confirm his raptures. *B., Melksham.*

Notices of Books.

Contributions to Mycologia Britannica. ("The Mycomycetes of Great Britain, arranged according to the Method of Rostafinski." Translated from the Polish by M. C. Cooke.) 8vo. Williams & Norgate. Pp. 96 and iv., pl. lith. 24.

It is a serious grievance when valuable works on natural history are published in a little-known language, as Polish, Hungarian, &c. The work must either remain a sealed book, especially when the specific characters are given in Latin; or, as we speak from experience, we must sit down to obtain such a smattering of an exceedingly difficult language as may enable us at least to puzzle out the descriptions of the figures. Dr. Cooke, however, in his zeal for illustrating the mycology of this country, has done more than this—has placed himself under a Polish tutor, and has thus been enabled to offer to the public a very useful, and indeed, to the mycologist, indispensable treatise. This assuredly was the more needful, as it seemed impossible to procure the original treatise, a single copy, for a time at least, transmitted to us by Rostafinski, being certainly the only one in England. As the work itself is voluminous, Dr. Cooke has very prudently confined himself to that portion of the work which relates to British species, adding from a supplementary publication those species which Rostafinski had an opportunity of studying in England. All the first twelve plates have been reproduced, the only one omitted being a photograph of inferior interest; so that, as far as British mycology goes, the treatise may be considered complete. As the expense of preparing so many figures, in addition to other matters, has been considerable, we sincerely hope that the sale may be such as to indemnify him for the outlay, for no one in this country expects to derive any emolument from works of any branch of natural history which has only a limited number of followers. We cannot give sufficient credit to the translator for the disinterested manner in which he follows out his favourite study, and we feel quite sure that a sense of gratitude for the constant aid which is given to mycological research by his handbook will induce its numerous readers to give (for their own certain advantage) a helping hand in the present instance. *M. J. B.*

The Vine in the Greenhouse.—This might be termed the vinery, but then a vinery is supposed to be a house devoted entirely to the culture of Grapes, whereas a Vine may be grown in a greenhouse with plants below it on the stage, though in this case it is best to have plants that flower before the Vine overhead gets too dense in growth, and which can be stood out-of-doors during the summer, or which, if they cannot be stood out-of-doors, can be placed in a cold frame. But if there be plenty of side light to the greenhouse plants may be satisfactorily grown, as the leafy canopy overhead yields grateful shade; and if the plants get drawn a little, why, there is no great cause for alarm.

At this season of the year, when the days are longest, and warm June has given place to hot July, the Villa gardener's Vine requires considerable attention. As a matter of course, we are referring to a Vine to which no fire-heat has been applied to hasten its growth. Several matters require attention, and one of these is that of stopping the shoots. The fruit being produced upon young shoots of the present season's growth, which started from the mature buds on the young wood of the previous season, it is usual to stop all these young shoots, except the terminal or leading one in a young Vine, at one eye or point beyond the fruit; and where the spur system is practised to stop those shoots which may not show fruit at a similar length, as if allowed to grow longer their shade would injuriously affect the others. This is the general practice of Vine cultivators, and if it is not exactly comprehended by the uninitiated it yet is soon understood when reduced to practice.

In the case of weak Vines—Vines that it is desirable to get into as strong a growth as possible—it is advisable to allow the shoots to grow a few joints further if the extent of the roof will admit of this being done; and for this reason—in order to promote a more vigorous root-action. Vegetable physiologists assert that there is a correspondence between the roots and the branches of a plant, and that the one acts to induce the other to vigorous effort when both are correct in action. Hence it is advisable, in cases, not to cut off part of a shoot, but in due time merely to nip out its terminal bud, as then less of a check will be given to the system. When the shoot thus nipped is found too long for the space, it may be gradually shortened, when the first-formed leaves have so increased in size, or the laterals left are so numerous that the reciprocal action between the roots and the top may be maintained without any great check to the system, though a joint or two at the end of the shoot may be removed. In very vigorous Vines, where, from the size of their leaves, much more space is requisite for their full exposure to light, the bearing shoots may be stopped an inch or so beyond the bunch, taking care, however, to give full exposure, and thus complete justice to the leaf situated close to the bunch, as then it will be sufficient to maintain a requisite flow of nutriment to it.

When it is desirable to strengthen the base end of a young Vine the terminal bud may be nipped out with advantage when the shoot is from 3 to 6 feet in length. In thus removing the terminal bud of a young shoot, to increase its strength at its base, some of the buds near the point will start into growth, and of these the strongest must be selected as leader.

We have put these directions in as simple a form as possible, but if they appear a little difficult at first sight the reader will soon come to understand their application when he has had a season's experience, or, better still, a lesson from a capable gardener.

In a vinery where the house is solely devoted to the growing of Grapes, what is known as the "long-rod system" is that generally employed in cultivation; but for an ordinary greenhouse what is known as the "spur system" is invariably followed, and it is known as the "spur system" because all the shoots produced and retained during summer upon established Vines, and all, with the exception of the leading shoot in young Vines, are cut down in winter to one or more buds. The "spur system" is best for the greenhouse, because it involves least shade. Lateral shoots should be encouraged, but chiefly at the base of young bearing shoots; those nearest the end next the fruit being first removed, and then in autumn, when there is no danger of starting into growth, the smaller-looking buds at the base—those from the point downwards—may be picked out, leaving the leaves untouched, and thus a greater portion of substance will be lodged in the buds and wood ultimately left than otherwise would have fallen to their share. Under such treatment winter pruning may be effected shortly after cutting the fruit, or as soon as the leaves turn yellow, if it be deemed necessary to do so.

The matter of thinning the fruit also needs attention. This should be done as early as convenient, when the berries have attained the size of half-grown green Peas. The fact is, that the sooner the redundant berries are cut out the better will it be for those that are left behind. As a matter of course the thinning should be regulated by the average size that the berries of the respective varieties arrive at—a knowledge gained by experience. In the case of a greenhouse where plants are grown in company with the Vines it is best to thin out more than would be needed in a vinery, and for this reason, that if left thick and firm on the bunch the berries are sometimes apt to become destroyed in part, if not wholly, by the mould and damp in the autumn. Therefore, the bunches should be loosely hung with berries, and that because at the time when they need to be kept as dry as possible the air may circulate freely through them. In thinning it is a good rule to cut out the centre berries, *i.e.*, those that are inside instead of on the exterior of the bunch, and to do this properly, and at the least danger of damage, a pair of sharp-pointed Grape scissors should be used. Some who engage in this delicate work steady and hold the bunch in position by means of a hooked stick, and so avoid the necessity for holding it by the hand. The task of thinning should be done in the mornings and evenings when the weather is cool, and not during the day when the sun shines fully on the house.

Reports of Societies.

The West of England Rose Show: *Hereford, July* 6.—When her majesty the Rose issues cards for her reception all Herefordshire seems to indulge in temporary insanity, for nowhere have I met courtiers more enthusiastic and devoted to their queen than are the inhabitants of the old red sandstone. A beehive is a joke to the Shire Hall as it appeared this morning; the earnest excitement of the ladies who are decorating in the corridors, while the gentlemen are staging their own Roses with their shirt sleeves tucked up, being of itself sufficient to cause wonder and admiration when we look back at what a Rose show was, even ten years ago. "Small," but not so "early" as usual, this gathering of July 6, 1877, will be memorable for the rare quality and colour of the Roses shown.

Judging from the form of the leading exhibitors one would think it was the day of the season for cutting. A sad mistake was made (and this must not occur again) in fixing the same day for Hereford and Oxford. Hereford sadly missed Messrs. Paul & Turner, (who were at Oxford), for their own sakes as well as of their Roses, for these annual *réunions* of Rose-growers have a social charm, and are the origin of many pleasant friendships. The disappointment expressed was genuine on hearing that Mr. Camm had missed his last train, treasures and all.

But to the room. Oh, that we could devise some mode of breaking up the everlasting monotony of the ribbon border of four long rows of flowers all alike into groups, into classes—anyhow, so as to introduce shrubs, Ferns, and Palms. And why not make use of the orchestra, as at St. James' Hall on Tuesday last, for one or two *spécialités*, and to obtain a *coup d'œil* worth traversing England for.

Were I to enter into detail I should find myself on ground thoroughly exhausted by the *Gardeners' Chronicle* of last week. I will, therefore, say generally that the quality of the leading exhibitors, nurserymen, and amateurs was tip-top, and that there were without doubt a larger proportion of faultless blooms here than at St. James' Hall, or any other collection I have seen this year. One could not

suppress a sigh at meeting a few old friends, *e.g.*, Baroness Rothschild, La France, Captain Christy, Mons. Noman, and a few others of delicate petal, looking as if they had passed a restless night; as, in fact, they had, for Herefordshire was visited yesterday with a deluge of rain (and some hail), lasting for many hours. In novelties I noticed among Mr. Cranston's twelve Henry Bennett, Abel Carrière, and La Rosière, all very dark; and Madame Prosper Langier, a bright and distinct carmine. Mr. Noble showed a brilliant box of Queen of Bedders. She answers to her name, and will catch the eye anywhere, but is not a show Rose. To all of these "*a rivederla!*"

Mr. Cranston, invincible at home and dangerous everywhere, was, we thought, very strong; but he says that the season being so late he is not even yet ready. Mr. Cant richly deserves his honours. Mr. Baker, of Heavitree, brought a Rose show by himself, and won the challenge cup given by Mr. Cranston with forty-eight blooms, grand and superbly staged. This cup was awarded to Mr. Jowitt last year, and will become the property of whichever of these two wins it in 1878, unless a third candidate steps in, like the umpire in the tale of the oyster, and swallows it for at least one more year. But the best Devon and the best Hereford are hard to beat in Roses, as at the Royal Agricultural Society of England. But we must not omit to mention a magnificent box of twenty-four François Michelon, ably backed by Marie Baumann and La France. "François" is undoubtedly the Rose which is best shown to-day, no good collection being without him in undeniable form. Mr. Jowitt's box of twelve of the same Rose was splendid, eclipsed only by Mr. Arkwright's Maréchal Niels, which were even grander and more level than he had them at the National.

Amateurs in the classes limited to the county have made marvellous advance, and are constantly, as their progress becomes sufficiently marked, promoting themselves into the realms above of the open classes.

It is high time that the practice which obtains still in some quarters of tying up additional foliage should once for all be abandoned. It is against the rules, and is, though perhaps (as Martin Tupper would say) conventional, still a deceit. Moreover, though points are not actually given for foliage, yet, between two very even exhibits, the best foliage and staging would as certainly win the fight as the discovery of any addition to the "truss" would lose it. Such an addition may escape the judge's eye in his tour of inspection, the more so that now-a-days he is not on the look-out for it: the possibility ought not to exist.

But most of all have the "cottagers" distinguished themselves, and I should like to see their Roses staged among the others, instead of being consigned to a side room insufficiently advertised by the customary dexter digit, for they will stand comparison. The knowledge of how to grow, and how not to grow a Rose, must apply to other produce of the garden (universal in this county, but ill-managed and neglected), and ought to be encouraged to spread as fast as Twitch-grass. Now to the floral decorations. It must be a pleasant task for the judge (and I think Mr. Boscawen seemed to like it) to linger alone in a cool atmosphere of grace and poetry for a space of at least an hour, a pleasure enhanced by the hope that presently he will be introduced to the owners of those fair fingers whose delicate tracery he has been ruthlessly criticising. For I note that the moment the door is open he is blockaded by the fair decorators, who want to know why this was wrong, why that was right, and to cull hints for future campaigns. Faces are tell-tales. I saw the triumphant "I told you so!" the remorseful "Oh, why did I leave that so?" and the flash of "Never say beaten. Wait till 1878 and see." The usual weaknesses are still to be found among the contributions—the too evident want of eye for colour arrangement by contrast—pink, orange, red, recklessly crowded together without any neutral gradient to carry the eye from one to the other—the severe ring, as if Roses had been applied with the mathematical precision of the caliper compass—the covering of a surface as if decoration was a performance instead of a graceful adjunct—and the carelessness in finish.

Decorators must not forget that Nature never puts dissonant colours side by side, unrelieved—as in a landscape painting, a colour once introduced must be repeated—Flora does not possess a box of trigonometrical instruments. Finish is a *sine quâ non*—a vase must bear inspection all round—and, as a "pp" in music, so simplicity in the art of decoration must never approach insignificance. Finally, neither Mr. Boscawen, nor any other judge must be treated as infallible in any crotchet! "*medio tutissima ibis*" and "*mens conscia recti*" will win the day. May I ask whether, in Herefordshire, the drawing-room tables are always covered with a white cloth? I should have thought that a maroon or olive-green covering would have given a kinder relief to the eyes of the ladies while at work, and am sure that it would have pleased the audience afterwards. One novelty is worth a record. There appeared in the centre of a dinner-table a gigantic obelisk of ice; it was suggestive, for one could not help peering into its crystal recesses, if perhaps a fish or newt or any other aquatic reptile might be immured therein, like the spider in a block of pure amber. (Happy thought for next year, catch a fish.) The hostess must weigh well whether it would be expedient to establish such a coldness between at least four of her party of twelve guests, for radiating from a central position it might be infectious. Perhaps it was a memorial of the Arctic Expedition!

I do not hesitate to say that much of what I saw was in extremely good taste, and that the honest rivalry of eight years, even if it has not improved the best of the artificers, has still imparted an influence to hundreds of others which must be rewarded, and has benefited public taste by raising the acknowledged standard of contributors. There is no sign of decay in this now ancient Society of the Hereford and West of England Rose Show. Planted by the best growers, nurserymen, and amateurs, and petted by such talent and beauty as flitted in the corridors of the Shire Hall to-day, I prophesy that new fibre is striking out in every direction. (*From a Correspondent.*)

Rochester and Chatham Horticultural: *June* 26.—This is a new Society, formed for the purpose of uniting the practical horticulturists of the three towns which are set down on the banks of the Medway—Rochester, Chatham, and Strood—and for holding an annual exhibition of horticultural produce. The county of Kent has some remarkably good exhibitions, such as Tunbridge Wells, Maidstone, Chislehurst, Sevenoaks, Westerham, Tonbridge, &c., and it is to all appearance so favourably endowed by Nature for the purpose of growing fruits, flowers, and vegetables, that good produce might be looked for in any part of it. Rochester and its suburbs is scarcely a plant-growing district, but it is hoped by the establishment of this annual exhibition that inducements will be held out to persons to grow plants for the exhibition table. The Society has been duly organised, and a good subscription list obtained. The exhibition took place in what is known as The Vines, a part of the green near the Cathedral precincts, and supposed to have been at one time the site of a vineyard.

The leading point of interest was the competition for the handsome silver cup given by the members of Parliament for the city, for the best groups of plants. The possession of this trophy was eagerly sought for by several citizens, but it eventually fell to the lot of Mr. H. G. Regnart, Grouville Cottage, Birstal Road, Rochester, who had large examples of Pleroma elegans, extra fine, Rondeletia speciosa major, Plumbago capensis, Trachelospermum jasminoides, Allamanda Schottii, Croton pictus, Cyathea excelsa, Echites rubro-venosa, Fuchsias, &c. From Mr. W. Dewsbury, gr. to the Earl of Darnley, Cobham Hall, Gravesend, came well-grown plants, made up mainly of Crotons and Caladiums, a fine Maranta zebrina, Anthurium Scherzerianum, Alocasia Jenningsii, &c. After these fine plants there was a considerable falling off, the chief honours resting with Mr. Phillips, gr. to Captain Jackson, Meopham, who had capital Achimenes, really first-rate variegated Zonal Pelargoniums, gold and bronze, and double and single varieties of the Zonal section. Of the double varieties Alice Crousse, Asa Gray, Crown Prince, Aline Sisley, and Jewel were particularly noticeable. In addition to the exhibitions already named the leading ones were Mr. Harper, gr. to W. Lee, Esq., Holburgh; Mr. Daniels, gr. to C. Dickens, Esq., Gad's Hill; R. L. Cobb, Esq., Mockbeggar; and of nurserymen, Messrs. Regnart and Laurence.

The best table decoration came from Mr. Charles Dickens, and some remarkably good cut Roses came from Mr. Harden, gr. to J. Wakeley, Esq., and the same exhibitor was 1st with six blooms also.

In the fruit classes a remarkably good collection of eight dishes was staged by Mr. Dewhurst, which included Black Hamburgh and Foster's Seedling Grapes, Royal George Peaches, Violette Hâtive Nectarines, Sir C. Napier Strawberries, and Read's scarlet-flesh Melon. In the classes for black and white Grapes, Mr. Dewhurst was 1st with capital Black Hamburgh and Foster's Seedling, Mr. Phillips being 2d with Black Hamburgh, and R. L. Cobb, Esq., with Buckland Sweetwater.

In the classes for vegetables, an admirable collection of eight varieties, to which the 1st prize was awarded, came from Mr. Phillips, consisting of Defiance and Green Gage Tomatos, Tender and True Cucumber, Myatt's Kidney Potatos, Ringleader Peas, and Short-horn Carrot; Mr. Dewsbury came in 2d. The best brace of Cucumbers, Tender and True, came from Mr. Phillips, and Mr. Dewsbury was only just below him with Cox's Volunteer. In the vegetable classes all the products were of a meritorious character.

There were some classes for cottagers, but few were found competing. Probably the show was to many of them quite a novelty; and by next year, if another exhibition is held, they will become more familiar with the idea, and a larger quantity of their productions will be forthcoming. (*From a Correspondent.*)

Brighton and Sussex Horticultural: *June* 27 *and* 28.—This Society held its annual summer show on the above days, as usual, in the Pavilion and adjacent grounds. Plants as a rule are seldom seen to such advantage in rooms as under canvas on green turf, but so far as a building is capable the Pavilion possesses many advantages, not the least of which is the pleasant grounds attached, which, although limited in extent, afford an agreeable promenade for visitors, neither is the heat so oppressive as it often is in tents during summer. The opening day was fine, the company numerous and fashionable. The principal collections of flowering plants were arranged in a roomy tent on the lawn; the Ferns, fine-foliage plants, cut flowers, and fruit occupied the spacious rooms overlooking it. In some of the leading classes the exhibitors were not very numerous, but to compensate for this there was all but a total absence of inferior productions. For the Ashbury Cup, offered for twelve stove and greenhouse plants, there were two entries. Balchin & Nell were easily 1st, with a remarkably fine group, in which Erica Paxtoni, E. ampullacea Barnesii, Bougainvillea glabra, Ixora amboinensis, Clerodendron fallax, Allamanda Hendersoni, Stephanotis floribunda, Statice imbricata, and Kalosanthesminiata were both large and well flowered. Mr. E. Meachin, gr. to C. Armstrong, Esq., Withdeane, was 2d, his collection containing a very good plant of Aerides Fieldingii bearing four good spikes, A. odoratum, Erica jasminiflora, Allamanda Hendersoni and Clerodendron Balfourianum, fresh, clean, and finely bloomed.

Four stove and greenhouse plants.—1st, Mr. Verrall, gr. to F. Shenstone, Esq., Barecombe.

Eight Orchids.—1st Mr. Rutland, gr. to the Duke of Richmond, Goodwood, who was the only exhibitor, showing an effective collection in which Aerides crispum, A. Lobbii, Odontoglossum Alexandræ, and Cypripedium barbatum, were well bloomed.

Four Orchids.—Here again Mr. Rutland was 1st. In his exhibit Vanda suavis and V. tricolor were not only excellently flowered, but furnished with good healthy foliage down to the bottom—a condition these plants are not always seen in. Mr. C. Driver, gr. to Miss Brodie, Eastbourne, was 2d, showing amongst others a beautifully-bloomed Lælia purpurata.

Ten fine-foliage plants.—Messrs. Balchin & Nell were well to the fore, staging an exceptionally good lot, noticeable amongst which were Croton majesticus, large, profusely furnished, and finely-coloured; the old but still beautiful C. angustifolius in splendid garb; Stevensonia grandifolia, Pandanus Veitchii, Areca sapida, and Cycas revoluta, were likewise large and well grown. Mr. W. Miles, Cliftonville, was 2d, showing smaller but very nicely-grown examples, including a good specimen of Areca Verschaffeltii, Cycas revoluta and Theophrasta imperialis. Mr. Driver was a close 3d. In this group was an unusually fine Alocasia gigantea and Anthurium crystallinum.

Four fine-foliage plants.—Mr. Meachin 1st, with nice but not over-large plants; Mr. Driver 2d. In his lot Acalypha tricolor was very well coloured.

Ferns were also a remarkable feature in the show. Messrs. Balchin & Nell were here again 1st with plants both large and in faultless condition; of Tree Ferns they had Cibotium regale, Cyathea medullaris and Alsophila excelsa on short stems, but with fine spreading heads; Davallia Mooreana, Gymnogramma chrysophylla, and Adiantum concinnum latum, were equally well done. 2d, Mr. Driver; 3d, Mr. Ley, Royal Nurseries, Croydon.

Single stove plant.—1st, Messrs. Balchin & Nell, with an Anthurium Scherzerianum, bearing some fifty flowers, but only a moderate variety, the blooms being inferior in size to many of the fine forms of this deservedly popular subject. 2d, Mr. Rutland, with a smaller plant, producing larger flowers; 3d, Mr. Driver, also exhibiting an Anthurium.

Eight Pelargoniums.—Mr. Meachin 1st, with a finely flowered group; he likewise took 1st honours for four fancies.

Six Fancy Pelargoniums. — Messrs. Balchin & Nell again occupied the 1st place, as also for six Zonals; Mr. W. Miles, West Brighton Nursery, 2d; Mr. Meachin, 3d. The plants collectively in this class were nicely flowered, but moderate in size.

Cut flowers.—Roses, for the season, were well represented. Messrs. Mitchell & Son, Piltdown Nursery, Uckfield, took 1st in the open class of forty-eight (trebles), with a really good lot of flowers, conspicuous amongst which were Baron Haussman, Marguérite de St. Amand, Adam, Edward Morren, Perfection de Lyon, and Baroness Rothschild. Mrs. Woollard, The Nursery, Crooksbridge, 2d. Twenty-four (trebles): Mr. J. W. Piper, nurseryman, Uckfield, 1st; the Rev. R. C. Halls 2d. Twelve (trebles): 1st, Mr. J. Ridout, gr. to T. B. Heywood, Reigate, staging a good stand, the best of which were Marie Baumann, Edward Morren, La France, and Abel Grand, large and fine; Mr. W. Martin, Blackstone, Woodmancote, 2d; the Rev. R. C. Halls, 3d. Twelve single blooms: 1st, Mr. H. Davis, Horsham, with a

dozen very fine flowers. In the amateur's class for twenty-four Mr. W. Martin was placed 1st, with a good even stand; Mr. T. Gravely 2d; Mr. Davis, Horsham, 3d. Twelve (amateurs): Mr. Rutland 1st. His Maréchal Niel and Marie Van Houtte were grand flowers. 2d, Mr. Martin; 3d, the Rev. R. C. Halls.

Twelve Teas or Noisettes.—1st, Messrs. Mitchell; here Madame Willermoz and Devoniensis were in unusually fine condition. 2d, Mrs. Woollard.

Twenty-four varieties of cut flowers.—Messrs. Balchin & Nell had a fine group, which was deservedly awarded the 1st prize; they were very tastefully arranged, the bunches not too closely packed, so as to give them the dumpy appearance cut flowers too often have when shown in this way. 2d, Mr. Morse, The Nurseries, Epsom.

Fruit was forthcoming in moderate quantities, and generally good.

One Pine.—1st, Mr. Rutland; 2d, Mr. Barnes, gr. to Sir S. M. Wilson, Uckfield. Three bunches black Grapes.—Mr. Vickering, gr. to W. Lee Ewart, Esq., Chichester, 1st, showing good bunches with large hammered berries a little short in colour; Mr. Warren, gr. to J. A. Hankey, Esq., Balcombe Place, 2d. Three bunches white Grapes.—Mr. Warren 1st, with very fine examples of Chasselas Musqué, good in berry and bunch for the kind, and quite free from cracking; 2d, Mr. Aptin, Broadwater, showing Duke of Buccleuch. Eight Peaches.—1st, Mr. Holman, gr. to A. Wright, Esq., St. John's Common, having a really fine dish of Grosse Migoonne; Mr. Rutland 2d, with Violette Hâtive. Eight Nectarines.—1st, Messrs. Balchin & Nell, showing a beautifully coloured dish of Elruge; Mr. Rutland 2d. Mr. Rutland was 1st with James Veitch Strawberries, large and finely coloured. In the competition restricted to the county of Sussex Mr. Vickering was 1st for two bunches of black Grapes. Two bunches of white Grapes: 1st, Mr. Aptin. Mr. Rutland was 1st in the classes for one Pine, six Peaches, six Nectarines, four dishes of Strawberries, and a single dish.

The arrangements of the show were, as they have long been, carried out by the veteran Mr. Spary, whose taste and abilities in these matters are such as to enable him to put everything in the right place to produce the best results. (*From a Correspondent.*)

Brentwood Horticultural: *June* 28. — This Society held its summer show in the grounds of W. A. Ogg, Esq., Warley, and it proved to be exceedingly effective and well arranged, and, as far as the products went, was a good one in all respects, excepting in vegetables. These latter, as indeed seems to be too generally the case this season, were very limited in quantity and wanting in quality. In the first class, for specimen stove and greenhouse plants in bloom, Messrs. Bones and Lane competed well, the silver cup offered being awarded to D. McIntosh, Esq., Havering Park (Mr. Bones, gr.), who had in his collection splendid specimens of Anthurium Scherzerianum, Erica obbata, and E. Paxtoni, the latter being a very meritorious specimen. For four similar plants O. E. Coope, Esq. (Mr. Bradley, gr.), received the higher award. Ferns (stove) were well shown, C. P. Matthews, Esq. (Mr. Woodhams, gr.), being 1st, with well grown dissimilar varieties—W. A. Ogg, Esq. (Mr. Wise, gr.), having received a well merited equal 1st prize for six splendid plants of Todea superba. Pelargoniums were very plentifully shown—the six show varieties staged by Major-General Fitche (Mr. Lane, gr.), were awarded 1st prize, being very robust and well grown; amongst this generally good lot Excellent and Diana were especially so. In the class for six Fancy Pelargoniums D. McIntosh was 1st with well-sustained masses of bloom, Liberty and Princess Teck being perhaps the best. The Gloxinias shown in competition by W. A. Ogg, Esq., and which deservedly received the premier prize, were immense, both as regards size of the blooms and foliage. Roses in the cut bloom division formed along with herbaceous plants no mean display. Mr. Cant, Colchester, was 1st with seventy-two varieties; Mr. Meadmore, Romford, being a neat 2d. Perhaps the most perfect blooms staged were Beauty of Waltham, Comtesse d'Oxford, and Marie Finger. For forty-eight Roses, the Rev. Canon Farver (J. Edwards, gr.), Stisted Rectory, was a good 1st. With herbaceous cut blooms Messrs. Saltmarsh carried away the higher award. Dinner-table decorations, &c., were less numerous than has been customary. In the class for lady amateurs, Miss F. Pemberton, Round House, Havering, had a very chaste display, rightly receiving 1st prize; Mr. Burley, Brentwood, sustaining his old fame well in the kindred class, also claimed 1st prize.

Fruits were fairly well shown—the best collection coming from the Right Hon. Lord Petre (Mr. Gadd, gr.), and the best black Grapes from Mr. Farrance, Chadwell Heath — Mr. Woodhams staging splendid bunches somewhat deficient in colour. Mr. Wm. Paul sent a splendid collection of cut Roses, not for competition; and a grand Nepenthes, growing in a square latticed wooden basket, which was labelled Nepenthes Rafflesiana — but which, if our memory is to be relied on, must be a more recent and better variety. Too much cannot be said in favour of the arrangements generally existing at these shows, so thoroughly do all interest themselves in working out the details. The tents were pitched in a continuous semicircle upon the higher ground, others with implements, &c., were placed so as to complete an ellipse, within which area the excellent band was platformed. The liberal owner of the grounds had brought, we believe from Erin, three bagpipe players, which proved a singular additional attraction to the large company assembled. *W. E.*

Richmond Horticultural: *June* 28.—The annual exhibition was held as heretofore in the Old Deer Park, Richmond. The Society has only been established some three years, yet its displays as regards both the quantity and quality of the various productions are quite equal to any that are to be seen within a similar distance of London. The site where the show is held is most beautiful, and contributes not a little in bringing visitors from the surrounding districts. The principal attractions of the show here are always the groups of plants either in or out of flower, arranged for effect in a space not exceeding 100 square feet. In this there was a numerous and keen competition, the first and second prize lots being both interesting and effectively arranged; Mr. W. Bowell, gr. to Sir H. W. Parker, Richmond, took 1st: Mr. F. R. Kinghorn, Richmond, 2d. The position of these competitors would have been reversed had not the second group been a little wanting in tall foliage, to set off the flowering plants to better advantage. Messrs. Jackson & Son, Kingston, 3d; Messrs. Hooper & Co., Twickenham, 4th.

Nine fine-foliage plants.—Mr. Kinghorn 1st; Mr. Bates, gr. to W. H. Punchard, Esq., Twickenham, 2d—both lots consisting of well-grown plants.

Nine stove and greenhouse plants, in flower.—Messrs. Jackson & Son 1st.

Eight Orchids.—Here the competition was very close, Mr. Bates taking 1st honours with smaller but more evenly flowered plants than his opponents; 2d, Messrs. Jackson. In the first collection was a beautiful example of Aerides Dayanum, with a couple of beautiful spikes; and A. Lobbii. 3d, Mr. A. Williams, gr. to J. Bridgeman, Esq., Twickenham.

Eight exotic Ferns.—Mr. D. East, gr. to F. Wigan, Esq., East Sheen, 1st; all his plants were well grown and very fresh. 2d, Mr. J. Cornhill, gr. to J. S. Virtue, Esq., Weybridge.

Six stove and greenhouse plants, in flower.—1st, Mr. Crafter, gr. to the Rev. W. Finch, Kingston Hill; 2d, Mr. Attrill, gr. to C. J. Freake, Esq., Kingston.

Six fine-foliage plants.—Mr. Crafter was also 1st here, and Mr. Attrill 2d.

Six exotic Ferns.—Mr. W. Smith, gr. to A. Cooper, Esq., Twickenham, 1st; Mr. Morell, gr. to J. S. Rutter, Esq., 2d. Twelve hardy Ferns.—Mr. James, gr. to W. Farnell Watson, Esq., Isleworth, 1st; Mr. Crafter 2d.

Pelargoniums were nicely flowered for so late in the season, but the specimens somewhat small. Mr. James took 1st and Messrs. Dobson & Sons 2d in the class for six large-flowered kinds, and also for six fancies.

Table decorations: three stands or vases (open).—1st, Mr. W. Brown, St. Mary's Grove Nursery, Richmond; 2d, Mr. Kinghorn; 3d, Messrs. Dobson & Sons. Three stands or vases (lady amateurs only).—1st, Mrs. A. Chancellor, Richmond; 2d, Mrs. G. Moran; 3d, Miss Augusta M. Warde, Richmond. A single vase (lady amateurs only).—Miss Isabella Warde, Richmond, 1st; Mrs. A. Chancellor, 2d. Hand bouquet (open).—1st, Mr. W. Brown; 2d, Messrs. Dobson & Sons.

Thirty-six Roses, three trusses of each (nurserymen).—1st, Messrs. Paul & Son, the Old Nurseries, Cheshunt; 2d, Mr. C. Turner, the Royal Nurseries, Slough; 3d, Messrs. Dobson & Sons. Twenty-four Roses (nurserymen).—1st, Messrs. Paul & Son; 2d, Mr. C. Turner; 3d, Mr. G. Masters, Weybridge. Twenty-four Roses (amateurs).—1st, Mr. W. Mace, gr. to Captain Eastwick, Teddington; 2d, Mr. Moorman, gr. to the Misses Christy, Kingston.

Fruit was remarkably good, and shown in considerable quantities. For six dishes Mr. Fry, gr. to L. Baker, Esq., Eastcott, was 1st, with a collection, all good; 2d, Mr. G. Cornhill.

Three bunches of black Grapes (open).—1st, Mr. D. East, with moderate sized bunches, the berries large, even, and jet-black; Mr. Bates, who was 2d, had also good bunches, but a little looser. Three bunches of white Grapes (open).—Here Mr. Bates stood 1st, with Foster's Seedling, well coloured; 2d, Mr. Edwards, gr. to Mrs. Tristram, Liphook.

Three bunches of black Grapes (competition limited to the Society's district).—1st, Mr. Bates; 2d, Mr. East. Three bunches white Grapes (Society's district).—1st, Mr. Bates; 2d, Mr. H. Child, gr. to H. G. Smith, Esq.

Special prizes, given by Lady John Chichester for a model garden.—1st, Mr. J. Wells; 2d, Mr. A. J. Ellis, gr. to A. Heenan, Esq. Given by Lady Alice Peel for six Dracænas.—1st, Mr. Crafter; 2d, Mr. W. Bowell. Given by Sir Trevor Lawrence for six exotic Ferns.—1st, Mr. Smith; 2d, Mr. Bowell. Given by C. T. White, Esq., for twelve Palms.—1st, Mr. Kinghorn; 2d, Mr. Cornhill. Given by W. H. Punchard, Esq., for six Orchids.—1st, Mr. Bates; 2d, Mr. East. Given by A. Cooper, Esq., for the best Adiantum farleyense.—1st, Mr. Bates; 2d, Mr. Smith. Given by John Hales, Esq., for six table plants.—1st, Mr. Bates; 2d, Mr. James. Given by Mr. James Wigan for six Adiantums.—1st, Mr. Crafter; 2d, Mr. Smith. Given by S. Walker, Esq., for a plant-case furnished.—1st, Miss Augusta M. Warde. Given by the Hon. J. C. W. Vivian for four Lycopodiums.—1st, Mr. James; 2d, Mr. Bowell. —Given by H. G. Bohn, Esq., for twenty-four Roses. —1st, Mr. G. Marlow; 2d, Mr. James.

Silver cup given by Messrs. James Carter & Co. for twelve dishes of vegetables.—1st, Mr. Crafter, who showed a very fine collection. Prize given by H.S.H. the Duke of Teck, for a set of five window plants, grown by cottagers, artisans, railway servants and labourers in the Society's district.—Mr. J. Saunders and Mr. J. Goodwin were 1st and 2d. Given by Sir Arthur Rugge-Price for a collection of vegetables (cottager's).—Mr. J. Goodwin 1st, Mr. T. B. Giles 2d. Given by Lieutenant-Colonel Burdett for six kinds of vegetables.—1st, Mr. J. Tigwell.

Prizes were awarded to the following nurserymen. —Messrs. Veitch and Sons, Chelsea, who exhibited a very fine group of plants, consisting of Nepenthes, Palms, Sarracenias, Ferns, fine-foliage and new plants, interspersed with about thirty Orchids in flower, and the handsome Hydrangea Thomas Hogg; they had also several boxes of Roses; to Messrs. Osborn & Sons, Fulham, who had a very good bank of fine-leaved and variegated plants; to Messrs. Rollisson & Sons, Tooting, for an excellent and beautiful group of flowering and ornamental plants, including the singular Brassavola Digbyana in bloom, as also several examples of rare Odontoglots; to Mr. Dean, for a large and very effective lot of bedding and herbaceous plants; to Mr. Herbst, for collection of Palms, &c.; to Mr. Laing, for cut Roses, &c.; to Mr. Turner for Pinks. (*From a Correspondent.*)

Bitterne and West End Horticultural: *July* 4. —This is a somewhat small show, but a very interesting one to the neighbourhood, always looked forward to and thoroughly enjoyed as a district holiday. Bitterne is a very pleasant suburb of Southampton, with many high-class residences about it, and the gentry take turns in giving the show accommodation in their grounds. On this occasion it was held in the grounds of Moorlands, the residence of Captain H. Sholto Douglas.

The leading exhibitor is Mr. Hazelfoot, of Moor Hill (Mr. N. Blandford, gr.). His leading collection of nine plants comprised Latania borbonica, some good Caladiums, Ferns, &c., all clean and well grown. Mr. Blandford also had the best six stove and greenhouse plants, comprising Clerodendron Balfourianum, Dendrobium nobile, Bougainvillea glabra, Statice profusa, &c. Captain Andrew, R.N., had the second best miscellaneous group of plants, comprising Adiantum farleyense, Croton variegatus, the variegated Pine-apple, &c. Additional groups of plants came from Mr. Hazelfoot and W. S. Gillett, Esq. (Mr. T. Grant, gr.), which greatly helped the display. The plants were generally of good size, well and cleanly grown, as if the exhibitor took pride in displaying them at the local show to the best advantage.

Variegated Pelargoniums were so well done as to be a striking feature. They were sadly wanted at the recent exhibition of the Pelargonium Society in London. The six plants displayed by Mrs. J. J. P. Hoare were perfect specimens, and consisted of Mrs. Turner, very fine; Mrs. John Clutton, Beauty, Prince Silverwings, Italia Unita, and Meteor. The best nine, from Mr. Blandford, were only just inferior, and included Lady Cullum, Lass o' Gowrie, Princess of Wales, Impératrice Eugénie, Mrs. Turner, and Fascination, in fine condition. Mr. Blandford had by far the best six Fuchsias, Roderick Dhu and Rose of Castile being very fine.

In the way of fruit, Mr. T. Grant had the best four dishes, comprising Peaches, Nectarines, Cherries, and Strawberries. He also staged some excellent Black Hamburgh and Muscat of Alexandria Grapes, and a dish of Peaches in a miscellaneous group. Some Sir J. Paxton Strawberries contributed by Capt. Andrew, R.N., were particularly fine. Outdoor fruits on the whole illustrated the backwardness of the season.

Good cut Roses were shown by Messrs. A. Jackson and W. S. Gillett, and in the class for twelve cut flowers Captain Andrew and Mr. Wilson were placed equal 1st. Vegetables were, on the whole, well shown by gardeners, amateurs, and cottagers; and in the nurserymen's class Mr. J. Kingsbury, Southampton, was the only exhibitor. Some very fine Sweet Williams were shown by Mr. Wilson and Mr. Kingsbury, and were Highly Commended.

Stevenage Horticultural: *July* 5.—Like many other societies, the Stevenage Society seeks in the first instance to encourage cottage gardening in its district, and supplements the work by giving prizes for amateurs and gentlemen's gardeners. The cottagers' produce relatively is generally far ahead of that found in the other divisions, but then it must be said the prizes are small, and scarcely fitted to bring forward good exhibits.

In the cottagers' plant classes prizes are offered for Fuchsias, Pelargoniums, and Calceolarias, and for plants other than those named. The best Calceolaria was one of the herbaceous varieties, of *bonâ fide* window growth, well-bloomed, and very clean and healthy. Begonias, Cacti, Hydrangeas, &c., were all creditably grown. There was a falling off in the usual quality of fruit and vegetables, consequent upon the lateness of the season.

In the open classes the leading exhibitors of table decorations and cut flowers were Mrs. Geo. Salmon and Captain Fellowes, of cut Roses the Rev. T. H. Gill and Rev. F. G. Jenings; and of vegetables the Rev. J. O. Seager and Captain Fellowes. Collections of wild flowers by cottagers were remarkably good. Among plants were Fuchsias, Palms, Balsams, Coleus, Caladiums, &c. Fruits and vegetables were generally well shown. The exhibition was greatly helped by some boxes of fine cut Roses from Messrs. E. P. Francis & Co., nurserymen, Hertford.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JULY 11, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat.=100.	Wind. Average Direction.	Rainfall.
July	In.	In.	°	°	°	°	°				In.
5	29.74	−0.07	70.5	48.7	21.8	57.7	− 3.8	48.7	71	WNW; W.; S.W.	0.18
6	29.75	−0.06	66.5	45.9	20.6	54.8	− 6.8	44.6	68	W.; WNW	0.06
7	29.96	+0.15	65.4	44.2	22.2	52.9	− 8.9	45.1	75	WNW	0.09
8	30.07	+0.26	60.5	45.2	15.3	51.9	−10.1	46.1	81	N.W.; W.	0.06
9	30.10	+0.29	68.3	48.1	20.2	57.2	− 4.9	49.1	74	W.; WSW	0.00
10	29.99	+0.17	77.4	53.1	24.3	63.8	+ 1.6	52.6	67	WSW; WNW	0.00
11	29.89	+0.07	72.9	54.0	18.9	61.8	− 0.5	54.8	78	S.W.	0.00
Mean	29.93	+0.12	68.9	48.4	20.5	57.2	− 4.8	48.7	73	W.	sum 0.39

July 5.—A very fine day. Cool. Heavy clouds, thunderstorm, and heavy rain at 8.30 P.M.
— 6.—Fine day, very cloudy at times. Showery in the afternoon, and frequent thunder heard. Cool.
— 7.—A fine day. Cold. Very dull and showery at times. Thunder and lightning in evening.
— 8.—A dull, cold day: fine at intervals. Slight showers at times.
— 9.—A very cloudy dull day. Few drops of rain at times. Cool.
— 10.—A very fine clear warm day. Strong breeze.
— 11.—A fine cloudy day. Cool breeze. Clear at night.

LONDON: *Barometer.*—During the week ending Saturday, July 7, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 30.13 inches at the beginning of the week to 29.98 inches by the afternoon of the 2d, increased to 30.03 inches by the morning of the 3d, decreased to 29.88 inches by noon on the 6th, and increased to 30.19 inches by the end of the week. The mean reading for the week at sea level was 30 inches, being 0.17 inch below that of the preceding week, and the same as the average value.

Temperature.—The highest temperatures of the air observed by day ranged between 71½° on the 4th and 63° on the 1st; the mean value for the week was 68½°. The lowest temperatures of the air observed by night varied from 44¼° on the 7th to 55° on the 1st; the mean value for the week was 49¼°. The mean daily range of temperature in the week was 19¼°, the greatest range in the day was 23° on the 3d, and the least 8° on the 1st.

The mean daily temperatures of the air were as follows:—1st, 57°.5; 2d, 59°.3; 3d, 58°.1; 4th, 60°.2; 5th, 57°.7; 6th, 54°.8; 7th, 52°.9; and the departures in defect of their respective averages were:—3°.7, 1°.8, 3°.1, 1°.1, 3°.8, 6°.8, and 8°.9. The mean temperature of the air for the week was 57¼°, being 4°.2 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 150¾° on the 5th, 144½° on the 4th, and 140° on the 3d; on the 1st the reading did not rise above 83°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 36¼° on the 7th, and 39½° on the 6th; the mean for the seven low readings was 42°.

Wind.—The direction of the wind was W. and S.W., and its strength moderate. The weather during the week was generally fine, but cool and showery, and the sky cloudy. Slight *thunderstorms* occurred on the 3d, 4th, 5th, 6th, and 7th.

Rain fell on five days during the week; the amount collected was 0.64 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 80° at Manchester, and 75¾° at Nottingham; at Liverpool 64° was the highest temperature in the week. The mean value from all stations was 71½°. The lowest temperatures of the air observed by night were 42° at Sheffield, 42¼° at Bristol, Nottingham, and Eccles; at Sunderland 49° was the lowest temperature in the week: the general mean from all stations was 44½°. The range of temperature in the week was the greatest at Manchester, 35°, and the least at Liverpool, 20¼°. The mean range from all stations was 27°.

The mean of the seven high day temperatures was the highest at Manchester, 73°, and the lowest at Liverpool, 61¼°; the mean value from all stations was 67¼°. The mean of the seven low night temperatures was the lowest at Eccles, 45¼°, and the highest at Portsmouth, 52¾°; the mean from all stations was 49¼°. The mean daily range of temperature in the week was the least at Liverpool, 12°, and the greatest at Manchester, 25¼°; the mean daily range of temperature from all stations was 18.

The mean temperature of the air for the week from all stations was 56¼°, being 6½° lower than the value for the corresponding week in 1876. The highest was 58¼°, at Brighton and Plymouth, and the lowest 52¾°, at Eccles.

Rain fell on four or five days in the week at most stations. The amounts varied from 1¾ inch at Liverpool, and 1¼ inch at Norwich, to one-tenth of an inch at Brighton and Truro. The average fall over the country was half an inch.

The weather during the week was showery, cool, and the sky generally cloudy. Thunderstorms were general during the week at most places.

SCOTLAND: *Temperature.*—The highest temperatures of the air ranged from 69¼° at Aberdeen to 63° at Paisley; the mean value from all stations was 66°. The lowest temperatures of the air varied from 43° at Paisley to 47° at Leith; the general mean from all stations was 44¾°. The mean range of temperature in the week from all stations was 21¼°.

The mean temperature of the air for the week from all stations was 54¾°, being 3° lower than the value for the corresponding week in 1876. The highest was at Dundee, 55¾, and the lowest at Paisley, 53¾°.

Rain.—The falls of rain at the various stations ranged from 1 inch at Edinburgh to four-tenths of an inch at Dundee and Paisley; the average fall over the country was six-tenths of an inch.

DUBLIN.—The highest temperature of the air was 69½°, the lowest 40½°, the range 29°, the mean 55¼°, and the fall of rain 0.55 inch.

Meteorological Observations made at Blackheath during the Month of June, 1877.—The mean reading of the barometer for the month was 29.846 inches, being 0.033 inch above the average of the preceding thirty-six years. The highest temperature of the air was 84°.7, on the 19th; the lowest temperature 43°.3, on the 17th. The mean high day temperature of the air was 74°.4; the mean low-night temperature was 51°.5; the mean temperature of the air was 61°.4; the mean temperature of the dew-point was 49°.2. The mean of all the highest readings in sun's rays was 132°.8, and the mean amount of cloud was 42.

Rain fell on seven days, the amount collected was 0.64 inch, being 1.30 inch below the average of the preceding sixty-two years. Thunderstorms occurred on the 11th and 12th.

Summary of the wind for the month:—N., four days; E., nine days; S., seven days; and W., ten days.

JAMES GLAISHER.

Variorum.

THE ARCTIC WOODLAND.—Popular impressions are often far from the truth, and in regard to the Arctic regions they are undoubtedly so. A treeless land would be, in the opinion of most people, the idea which would suggest itself in regard to the regions in question. Yet this, though true, is not all the truth. Within the Arctic circle are found trees often forming considerable though stunted forests. In Eastern Siberia Pines and other trees come down almost to the water's edge: while over all Western Siberia, Arctic Russia, and Lapland, the tree limit runs within the Arctic circle; trees extend even to the North Cape. In Greenland we find, even in the most southerly parts of it, no herbage more worthy of the name of tree than the stunted Birch, which in the more sheltered valleys of that country—equally inappropriately named with Iceland—attain the proportion of little shrubs; and it is not until we come to the milder latitudes of the Pacific that the tree-line, which had described a southerly curve in the cold regions of central North America, again rises to the north, and until we reach the shores of Behring Strait we find nothing which we can dignify by the name of trees. . . . The wooded banks of the Yuken touch the Arctic circle, and forests of white Spruce are found on the Noatak, a river which falls into Eschscholtz Bay, which infringes on the Arctic circle. In Lapland the Spruce ceases at about the sixty-eighth parallel, and the Scotch Fir at the sixty-ninth; but in Norway, owing probably to the presence of the warm Gulf Stream, which sweeps along the coast and into the Arctic Sea—at last as far east as Novai Zemlai—we find forests of Scotch Firs 60 feet in height as far north as Altenfjord, and Birches about 45 feet high in an equally northern latitude. In latitude 70° 28′ the hardy Scotch Fir still maintains its ground, though the Spruce fails a degree or so further south. In the vicinity of Hammerfest, a well-known Lapland town, in latitude 70¾° N., there are dwarf Alders and Aspens, Bird Cherries, Rasps, and Currants. In the Scandinavian Peninsula, probably also owing to the warmth which a sea, unencumbered, and in addition laved by a current of a higher temperature, affords, Barley is cultivated as far north as the seventieth parallel, the latitude of Disco Island, on the Greenland coast, and Oats up to the sixty-fifth, "in sheltered valleys, where rocks and cliffs reflect the sun's rays with much power." *The Countries of the World.*

WHY THE BAROMETER RISES AND FALLS.—First of all, what is a barometer? It is a tube or pipe, closed at one end and open at the other, and made of some transparent material, such as glass, so that it may be seen through. This tube is filled with the melted metal called mercury, and when quite full the thumb is placed over the open end (so as to keep the mercury from falling out), and the tube is turned upside down. So the closed end is at the top, the open end at the bottom, and if the thumb were removed the mercury would, of course, run out. But now suppose you wished not to waste any, and so put the open end of the tube into a basin with some more mercury in it, and then removed your thumb, what would happen? "Why, the mercury would all run out into the basin," some one will say. But this is a mistake, as the Italian philosopher Torricelli found out; and whatever size or length of tube be taken, the whole of the mercury will not run out, but a length of about 30 inches of the tube will remain full of mercury, and you cannot make it run out into the basin unless you either pull the open end of the tube out of the mercury or make a hole in the closed end of the tube. This puzzled Torricelli for a long time, until at last the thought struck him that the only thing which was on the mercury in the basin was the air, and that it was probably the weight of the air pressing on the metal which prevented its running out into the basin. "If so," thought Torricelli, "then if I take my tube and basin of mercury up a mountain, less and less of the tube will remain full, for there is evidently less air above the basin at the top of the mountain than at the bottom." You may be sure he didn't wait very long before he made the experiment; and to his great delight, he found the mercury getting lower and lower in the tube, thus proving that it really was the weight of the air that kept it in the tube at all; and so the instrument was called a barometer, which is derived from the Greek, and means in plain English, a "weight measurer." But if the barometer is watched it will be found to contain different quantities of mercury on different days. On a fine day the mercury will, as a rule, stand higher in the tube than on a wet day or just before rain; and now for the reason of this. Why does the barometer rise (or, rather, the mercury in it) in fine weather, and fall when it is going to be wet? . . . . Now dry air is much heavier than wet air, or air containing steam. The consequence is, that when the air gets moist it becomes lighter, and presses less on the mercury of the barometer, so more mercury flows out into the basin, and, consequently, less remains in the tube, or, as we usually express it, the barometer falls. Now, when the air is very wet, there is, of course, more chance of rain than when it is dry, for rain is formed by the cooling of the steam contained in moist air.—*From "Little Folks" for July.*

Answers to Correspondents.

ALLSPICE: *A.* The true Allspice is certainly not a pot herb, but the berry-like fruits of Eugenia Pimenta, a bushy tree in the West Indies.

BEGONIA AND VIOLA: *G. Nixon.* There are many finer Begonias than the one you send. The Viola is a very pure white, and if vigorous, and a free successive bloomer, would be a valuable bedding plant.

CABBAGE: *C. Barnes.* Early Barnes would be the same as Early Rainham, but Barnes' Early is a small growing Cabbage which the late William Barnes, of Camberwell, we think, used to catalogue. It very much resembles the small Nonpareil. The two Cabbages are as far apart as well may be. We cannot say where you can get seeds.

CHRYSANTHEMUMS: *J. P. A.* We cannot say.

COLORADO BEETLE: *Inquirer.* Read our last two numbers.

BRANCH-TUBERS OF POTATO.—A correspondent furnishes us with a fine specimen of this peculiarity. The haulm had been broken nearly in two, and the top had lain on the surface of the ground. A check to the descending sap then was associated with the production of the tubers, and may prove a useful hint.

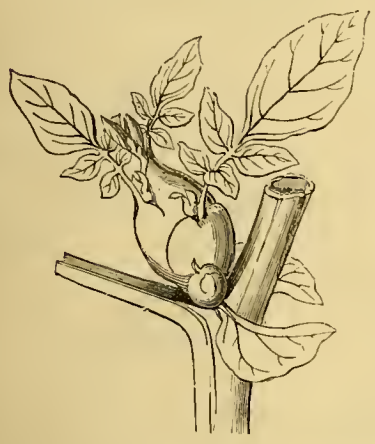

FIG. 9.—AXILLARY TUBER, POTATO.

Morphologically the case is interesting, as showing that the Potato tuber is merely a thickened shoot.

FUNGUS: *A Sufferer.* The fungus is the common dry-rot, Merulius lachrymans, and the cause of its appearance is probably the want of ventilation underneath the floor. The only safe remedy is to take up the boards and relay with new ones, taking care to insert an air-brick, or ventilator, in the exterior wall below the level of the flooring.—*C. H., Chester.* The minute fungus, which causes such destruction amongst your cuttings, is seen very clearly under the microscope. It belongs to the genus Acremonium, the different members of which group often, when once established, run on and cause great mischief.

INSECTS ON POTATOS: *R. L.* The common Aphis

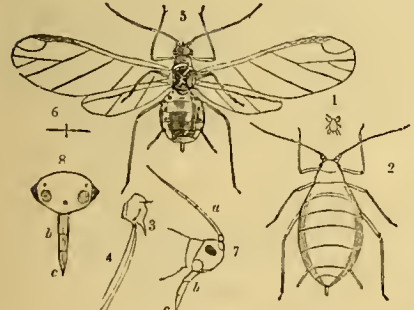

FIG. 10.—APHIS VASTATOR.

rapæ of Curtis, Aphis vastator of the late Alfred Smee.

INSECTS: *T. T.* The leaf received is badly infested with the common black fly. Boil 4 oz. of Quassia chips for ten minutes in a gallon of soft water; strain off the chips, and add 4 oz. of soft soap, which should be dissolved in it while cooling. Use when cold. No Aphis can stand a dose of this mixture; but you must test the strength on one or two leaves of such tender things as Cucumbers before you apply it to all.

NAMES OF PLANTS: *P. P.* Cyrtomium falcatum.—*W. K.* Reseda luteola (Dyer's-weed.)—*T. Wilkinson.* Please send fresh specimens in a little damp moss. Those we have are too much withered for identification.—*A. B.* The small yellow Foxglove, Digitalis lutea.—*H. T. D., Cheltenham.* Agrostis nebulosa.—*C. E. F.* Ranunculus arvensis.—*R. B.* 1, Silene Armeria; 2, Cotoneaster frigida.—*C. Osman.* Allium neapolitanum.

SHALLOT: *Nomenclature.* Allium ascalonicum.

THRIPS ON VINES: *A Young Gardener.* If taken in time thrips may be removed from Vines by carefully sponging the leaves with a solution of soft soap and tobacco-water, but when a house in which the Grapes are ripe becomes infested the best remedy is persistent fumigation with good tobacco-paper. Three smokings at intervals of three or four days, will prevent further mischief until your correspondent has cleared off his crop, when the house may again be well smoked and washed with the garden engine to cleanse and preserve the old foliage as long as possible. The taste of tobacco of which he complains, of two evils the least, may be removed in a few hours by abundant ventilation, and frequent damping of paths and floors with cold water. As an additional precaution he might cut a sufficient quantity of Grapes to last a fortnight before he fumigates, and preserve them in a cool room in bottles of water. When the Vines are pruned they should be denuded of all loose bark, well scrubbed with soap and water, and painted with Gishurst Compound—8 oz. to the gallon. The woodwork and walls should also be washed and painted. *W. Coleman.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED.—Messrs. J. B. Brown & Co. (90, Cannon Street, London), Illustrated Price List of Iron Fencing, Wire Netting, &c.—George Prince (14, Market Street, Oxford), Descriptive Catalogue of Roses.—J. B. A. Delenil (Rue Paradis, traverse du Fada, Marseilles), Catalogue of Amaryllis, Begonias, Echeverias, Yuccas, &c.—Messrs. Giles & Son (Grove Hill Nursery, Magill, Adelaide, South Australia), General Catalogue of Trees, Plants, Shrubs, &c.—Messrs. Barr & Sugden (12, King Street, Covent Garden, London), Select List of New Double-flowered Pyrethrums.

COMMUNICATIONS RECEIVED:—J. L. B. (you have not authenticated the statement with your name and address).—F. H.—N. G.—C. R.—Agricola.—C. Y. M.—G. P.—G. N.—A. O.—J. F.—A. F.—J. W.

Markets.

COVENT GARDEN, July 12.

Next week will see all the soft fruit fairly in, but generally speaking it is of indifferent quality. We have seen the bulk of the Middlesex Strawberries, and the Kent fruit is now beginning to arrive in considerable quantities. Raspberries are a decided improvement, after the rain of last week, and are making high prices. Currants are making a bad sale. Cherries have experienced a decided fall. Trade quiet. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apricots, per box	2 0– 3 0	Peaches, per doz.	6 0–24 0
Cherries, p. ½-sieve	6 0– 8 0	Pears, per doz.	.. ..
Grapes, per lb.	1 6– 8 0	Pine-apples, per lb.	2 0– 6 0
Lemons, per 100	8 0–12 0	Strawberries, p. lb.	0 4– 1 6
Melons, each	4 0–10 0	Figs, green, each	0 4– 1 0
Oranges, per 100	12 0–20 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Leeks, per bunch	0 2– 0 4
Aubergines, p. doz.	6 0– ..	Lettuces, per score	2 0– ..
Beans, French (new), per 100	1 3– 2 6	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Cabbages, per doz.	1 0– 2 0	Onions, 12 bunches	9 0– ..
Carrots, per bunch	0 7– 0 10	— young, per bun.	0 6– ..
— New French, per bunch	1 6– ..	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	4 0– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	3 0– ..
		Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	3 0– 6 0

Potatos (new):—Jersey Kidneys, 14s. to 20s. cwt.; Rounds, 12s. to 16s. cwt.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	1 0– 2 0	— zonal, 12 sprays	0 3– 1 0
Carnations, per dozen	0 6– 2 0	Pinks (white and coloured), 12 bun.	3 0– 6 0
— 12 bunches	3 0– 9 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Rocket, 12 bunches	3 0– 6 0
Eschscholtzia, dozen bunches	2 6– 6 0	Roses (outdr.), 12 bun.	2 6– 9 0
Eucharis, per doz.	4 0–12 0	— (indoor), per doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	— moss, 12 bunches	6 0–12 0
Heartsease, 12 bun.	1 6– 6 0	Spiræa, 12 sprays	1 6– 4 0
Heliotropes, 12 spr.	0 6– 1 0	Stephanotis, 12 spr.	2 0– 9 0
Iris, 12 bunches	6 0–12 0	Stocks, 12 bunches	4 0– 8 0
Lilies (in variety), 12 sprays	1 0– 2 0	Sweet Peas, 12 bun.	3 0– 9 0
Mignonette, 12 bun.	4 0– 9 0	Sweet Sultan, 12 bun.	4 0–12 0
Myosotis, 12 bunch.	3 0–12 0	Tropæolum, 12 bun.	1 0– 4 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	4 0–12 0	Heliotrope, per doz.	6 0–18 0
Bedding-out plants, per doz.	1 6– 3 0	Hydrangea, per doz.	12 0–30 0
— in boxes, each	1 6– 2 6	Liliums in var., each	1 6– 6 0
Begonias, per doz.	6 0–12 0	Mignonette, per doz.	3 0– 9 0
Bouvardias, do.	12 0–24 0	Myosotis, per dozen	4 0–12 0
Calceolaria	6 0–18 0	Myrtles, do.	3 0– 9 0
Clematis	9 0–24 0	Palms in variety, each	3 6–21 0
Cockscombs, per doz.	4 0–12 0	Pelargoniums, p. doz.	9 0–36 0
Coleus, per dozen	3 0– 9 0	— scarlet, per doz.	2 6– 9 0
Cyperus, do.	6 0–12 0	Petunias, per doz.	6 0–18 0
Dracæna terminalis	30 0–60 0	Rhodanthe, per doz.	6 0–12 0
— viridis, per doz.	18 0–24 0	Richardia æthiopica, per doz.	9 0–18 0
Ferns, in var., p. doz.	6 0–30 0	Roses, per dozen	18 0–60 0
Ficus elastica, each	2 6–15 0	— fairy, per dozen	9 0–18 0
Fuchsias, per dozen	4 0–18 0	Spiræa, per doz.	12 0–30 0
Heaths, variety, doz.	12 0–60 0	Valotta purpur., doz.	12 0–18 0

SEEDS.

LONDON: *July* 11.—The usual summer quietude continues to characterise the trade for farm seeds, and values consequently show no alteration. Perhaps the most noticeable feature of the week has been a speculative inquiry for Trefoil, and also for white Clover seeds; both descriptions promise very badly for next harvest—Trefoil, especially, being thinner than it has been for many years. In red Clover seed no transactions whatever are just now taking place. Trifolium will in all probability be very abundant, and with favourable weather for securing the same, prices will, it is expected, rule low. Winter Tares are reported to look well, but no sales for future delivery have yet taken place. There is a quiet demand for sowing Mustard and Rape seed. The Canary seed trade is without animation. Blue Peas and Haricot Beans find buyers on former terms. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday English Wheat made an advance of 1s. per quarter as compared with a week back, while foreign was certainly the turn in favour of the seller. Barley met with a quiet sale, at fully recent prices. Malt was very dull, and Oats were not quite so dear. Maize was a shade firmer, while Beans, Peas, and flour were slow, at about late rates. Flour had perhaps a tendency towards further reduction.—On Wednesday the supplies of English Wheat were short, but foreign Wheat was plentiful, and except perhaps as regards Barley and Maize, the arrivals of other kinds of produce was fairly large. No change can be noted in prices from Monday, indisposition to sell at less money constituting the firmness of the market.—Average prices of corn for the week ending July 7:—Wheat, 61s. 5d.; Barley, 35s.; Oats, 27s. 10d. For the corresponding week last year:—Wheat, 48s. 6d.; Barley, 34s. 9d.; Oats, 30s. 3d.

CATTLE.

At Copenhagen Fields on Monday there was a fair demand for beasts, and prices advanced. There were about 300 American in good condition. For sheep the demand was active, and scarcely any alteration in quotations. Choice lambs and calves were in request at fully late rates. Quotations:—Beasts, 4s. 6d., to 5s. 2d., and 5s. 8d. to 6s. 2d.; calves, 5s. to 6s. 4d.; sheep, 5s. 4d. to 5s. 6d., and 5s. 10d. to 6s. 8d.; lambs, 7s. to 8s.—On Thursday beasts were in moderate supply, and sold slowly, but the tendency was in favour of buyers. So also as regards sheep; the best breeds fairly maintained late rates, but inferior qualities were lower to sell. Lambs were in good supply, and drooping in value. Calves were lower to sell.

HAY.

At Whitchapel on Tuesday fodder was in steady demand at full prices. The supply was moderate. Prime Clover, 100s. to 140s.; inferior ditto, 85s. to 95s.; prime meadow hay, 90s. to 124s.; inferior ditto, 70s. to 85s.; and straw, 44s. to 57s. per load.—On Thursday the supply on offer was moderate. For good old stuff a fair demand prevailed, but new and inferior qualities were dull. Prices ruled firm. Quotations:—Clover, best, 100s. to 140s.; inferior, 85s. to 90s.; hay, best, 90s. to 124s.; interior, 70s. to 85s.; and straw, 44s. to 57s. per load.—Cumberland Market quotations:—Superior old meadow hay, 120s. to 132s.; inferior, 100s. to 110s.; new hay, 84s. to 110s.; superior old Clover, 132s. to 140s.; inferior, 110s. to 118s.; new Clover, 90s. to 110s.; and straw, 57s. to 63s. per load.

POTATOS.

At the Borough and Spitalfields Markets the supplies of Potatos continue on a moderate scale, and trade remains steady. New Jersey kidneys, 220s. to 260s.; Cherbourg ditto, 200s. to 230s.; Jersey rounds, 190s. to 220s.; Cherbourg round, 200s. to 220s. per ton. Old Potatos realise from 5s. to 6s. 6d. per cwt.—The imports into London last week comprised 18,464 baskets from Rotterdam, 575 boxes 637 cases and 45 tons from Barfleur, 870 cases 727 boxes from Cherbourg, 1096 packages 77 casks and 48 cases from Malta, 169 cases from Palermo, 64 barrels from Hamburg, 33 packages 34 barrels from Boulogne, and 11 barrels from Dunkirk.

COALS.

There was no change in quotations at market either on Monday or Wednesday, but business was steady.—Seaham West Hartley, 15s. 3d.; Walls End—Bishops Close, 15s. 9d.; Hetton, 18s.; Hetton Lyons, 15s. 9d.; Hawthorns, 15s. 9d.; Lambton, 17s. 6d.; South Hetton, 18s.; Vanes, 15s. 9d.; Chilton, 17s.; East Hartlepool 17s. 9d.; Tees, 17s. 9d.

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EACH READER of this Paper will be entitled to receive from the NATIONAL FINE ART UNION, 35, Great James Street, London, W.C., a copy (23 in. by 17 in.) of the beautiful Steel-Plate Engraving entitled

THE DAUGHTER OF THE REGIMENT.

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This splendid work of art is, without doubt, one of the best JOHN ABSOLON ever painted, and it is engraved, in the finest possible style, upon steel, by that celebrated artist, HENRY LEMON, Esq.

The scene is that of the British Army, encamped before the walls of Sebastopol. Stretching away to the right are the white canvas tents, surmounted by the English Flag, floating proudly in the breeze, while, standing in the foreground, and surrounded by luxuriant foliage, is THE DAUGHTER OF THE REGIMENT. With one arm uplifted, and holding in her hand a glass of spirit, just drawn from the flask at her side, her splendid form is thrown into an attitude of most perfect grace, and she stands, amid the din of battle, the embodiment of all that is noble in human nature. The mixed expression of dashing bravery and tender sympathy so plainly marked upon her countenance proclaims her one of that band of heroes who, throwing on one side the claims of home and kindred, casting to the winds the peaceful happiness of a luxurious life, followed our gallant troops into the field, and encountering every hardship, proved in the midst of the roar of cannon, the tramp of cavalry, and the groans of the wounded, that patience, sympathy, and duty are the qualities of our brave countrywomen. There is no telling how soon our troops may be called upon to engage in a deadly strife, but one thing can be said, that should such a time come, THE DAUGHTER OF THE REGIMENT will be in her place to urge them on to victory, and to succour and help the sick and the wounded. As an historical memento of the CRIMEAN WAR, and as an artistic production, this grand picture stands unrivalled, while its intrinsic worth may be gathered from the following:—

"DEAR SIR,— "*June* 8, 1877.
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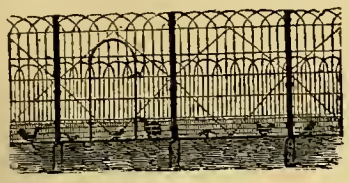

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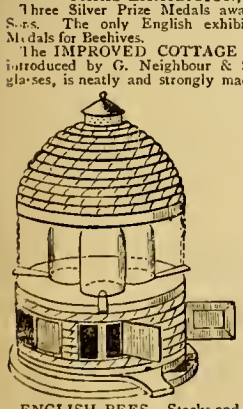

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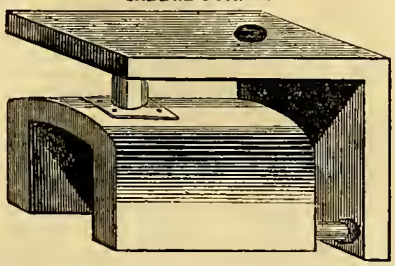

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20 "	18 "	30 "	500	9	0	0
24 "	24 "	24 "	700	12	0	0
24 "	24 "	32 "	850	14	0	0
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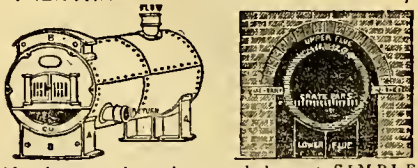

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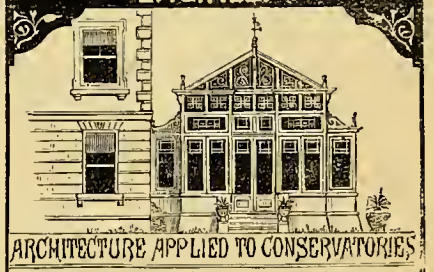

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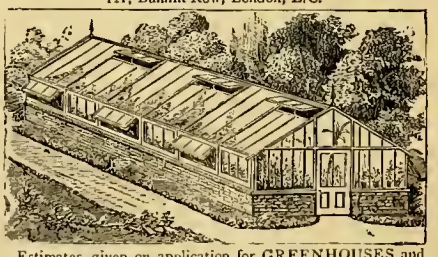

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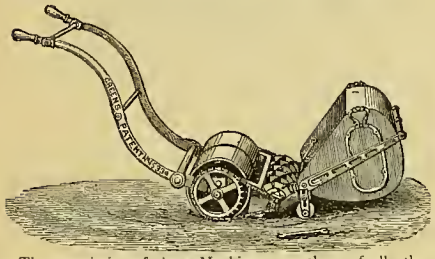

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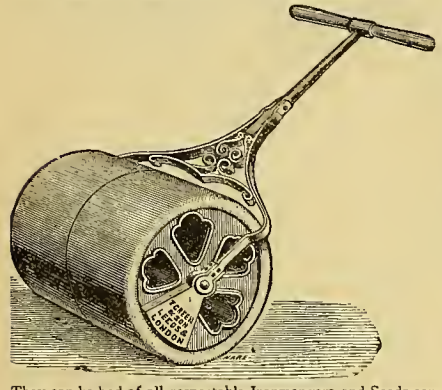

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From "THE GARDEN," *June* 2, 1877.

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From "THE GARDENERS' CHRONICLE," *June* 2, 1877.

"*A remarkable collection of Calceolarias is now in bloom at Messrs. Sutton & Sons'* Nursery, Reading. The house, which is of good size, is ever crowded with specimen plants, but it serves to show off their *great beauty and attractiveness en masse.* Each plant is densely laden with large flowers, and the colours are very varied, *from creamy white handsomely spotted on the body to rich dark maroon.*"

From MR. B. BARHAM, *Gr. to the* Right Hon. the Earl of Sefton.

"It affords me great pleasure to be able to inform you that your Calceolaria seed has given extreme satisfaction. *I have just now in flower one of the finest lots of hybrid Calceolarias it has ever been my lot to look upon.* They are excellent in variety, form, and size of flower. Many have seen them and are highly gratified."

From "THE GARDENERS' MAGAZINE," *June* 2, 1877.

"*The strain of Calceolarias distributed by Messrs. Sutton has flower-heads of immense size and perfect in contour. The flowers, which are borne in huge clusters, are of immense size and of the finest possible shape, and embrace every colour.* The yellow ground flowers are as a matter of course the most strongly represented, and with their splendid crimson markings are wonderfully effective, and of those of a straw-coloured ground and spotted and marked with purple, these are sufficient to make a most pleasing variety. The rose and purple self-flowers, some of which are quite new in colour, are also numerous, and present a striking contrast to those spotted with crimson, purple, and rose respectively. *Sutton's strain of Calceolarias may certainly be said to combine all the good qualities yet found in these attractive flowers.*"

From A. E. RUSSELL, ESQ., *Dalnabreck.*

"My Calceolaria plants from seed purchased of you last year are *particularly fine*, of very compact habit, and beautiful in colour."

From MR. W. GEARLE, *Gr. to* R. M. JAQUES, ESQ., *Easby Abbey.*

"I have some very fine Calceolarias from seed supplied by you; they are the *admiration of all who see them.*"

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JAMES' INTERNATIONAL PRIZE CALCEOLARIA	2 6	SUTTON'S PRIZE CYCLAMEN	2 6
SUTTON'S SUPERB CINERARIA	2 6	SUTTON'S PRIZE PRIMULA	2 6

THE QUEEN'S SEEDSMEN, READING, BERKS. { Sutton & Sons } THE QUEEN'S SEEDSMEN, READING, BERKS.

CLIVEDEN.

THE "GARDENERS' CHRONICLE" *for Saturday,* JULY 21*st, will contain an account of the* GARDENS *and* PLEASURE GROUNDS *of* His Grace the DUKE OF WESTMINSTER, *at Cliveden, together with several beautiful Woodcuts, taken from Photographs expressly executed for this Journal by* MR. ARTHUR SMITH.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

T. H. P. DENNIS & COMPANY.

Motto, "Art with Economy" as applied to Conservatories.

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, July 14, 1877.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SOUTHAMPTON HORTICULTURAL SOCIETY.
The SIXTEENTH ANNUAL GRAND SHOW, on SATURDAY and MONDAY, August 4 and 6. TWO HUNDRED POUNDS in Prizes. Schedules on application to
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On view the day prior and mornings of Sale, and Catalogues had at the Nursery, and of Mr. J. C. STEVENS, Auctioneer, 38, King Street, Covent Garden, W.C.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, July 26, at half-past 12 o'Clock precisely, an importation of fine Plants of IONOPSIS PANICULATA, COLAX JUGOSUS, BURLINGTONIA FRAGRANS, ONCIDIUM FORBESII, O. CRISPUM, O. SARCODES, O. DIVARICATUM, SOPHRONITES VIOLACEA, ZYGOPETALUM CRINITUM, &c.; some Established ORCHIDS, and some Plants of ODONTOGLOSSUM CRISPUM, CŒLOGYNE CORRUGATA, C. GLANDULOSA, C. BARBATA, LÆLIA ANCEPS, L. ALBIDA, L. AUTUMNALIS, ONCIDIUM MARSHALLIANUM, &c.

On view the morning of Sale, and Catalogues had.

Houghton Estate.

ANNUAL TIMBER SALE.—Twelve miles from Lynn, ten from Fakenham, and seven from Snettisham Railway Stations.

WILLIAM C. HOPKING is favoured with instructions from the Most Noble the Marquis of Cholmondeley, to SELL by AUCTION, on WEDNESDAY, July 25, 200 splendid OAK TIMBERS, many of which are om 30 to 40 feet in length, of great girth and very clean. 130 ASH TIMBERS, and 14 ELM TIMBERS, some of which are 40 feet in length. A large quantity of OAK WRONGS, about 20,000 HARDWOOD FAGGOTS, and two large STACKS of BARK, the produce of the entire fell for this season of 282 Oak Timbers. The Bark is secured in very good order, and is of the best quality.

The Auctioneer has particular pleasure in calling the attention of Timber Merchants and the purchasers of Bark to the above-described Sale, it being the finest fell of timber offered for Public Competition on the Estate for many years.

Sale to commence at 10.30 punctually, in the Park, close by the road leading from Bircham to Rudham.

A Conveyance will leave the Globe Hotel, King's Lynn, and Fakenham Station at 8.30 o'Clock for the convenience of Purchasers.

Catalogues may be had a fortnight previous to the Sale on application to W. FREUER, Esq., Estate Agent, West Rudham, Brandon; or to the Auctioneer, Great Bircham, Lynn, Norfolk.

Lowdham, near Nottingham.

MR. J. H. BRADWELL will SELL by AUCTION, at the Black Boy Hotel, Long Row, Nottingham, on WEDNESDAY, August 8, at 3 for 4 o'Clock in the afternoon, subject to such conditions of sale as will then be declared, the following valuable FREEHOLD PROPERTY. All that Dwelling-house and Shop situate at Lowdham, Notts, with the Bakehouse, Stable, Cartshed, Cowhovel, and other outbuildings thereto belonging; also the large and productive Gardens, adjoining the aforesaid premises, with two Vineries, Cucumber Pit, &c., all late in the occupation of Mr. John Dabell, deceased; also all those three Cottages or tenements and Gardens adjoining. The above premises contain, including the site of the buildings, 2 a. 2 r. or thereabouts, are situate in the centre of the thriving village of Lowdham, and is well worth the attention of Nurserymen and Market Gardeners, the gardens having been largely stocked by the late owner with choice and well selected Fruit Trees of every description, and being within a short distance of the Midland Railway station, and easy reach of the town of Nottingham.

Further particulars of the AUCTIONEER, Nottingham and Southwell; or, Mr. STENTON, Solicitor, Southwell.

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Schedules may be had post-free, on application to the Acting Secretary, Mr. John Mounsey, Victoria Buildings, Carlisle.

ENTRIES CLOSE on AUGUST 30, 1877.

President.

The Rt. Hon. Lord MUNCASTER, Lord-Lieut. of Cumberland.

Vice-Presidents and Patrons.

Sir R. C. MUSGRAVE, Bart., Lord-Lieutenant of Westmorland.
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His Grace the Duke of Buccleuch and Queensberry
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The Right Hon. the Earl of Durham
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(Incorporated by Special Act of Parliament)

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1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

Cabbage Plants!—Cabbage Plants!!

W. VIRGO AND SON can now supply, in any quantity, as under:—
ROBINSON'S DRUMHEADS.
OXHEART CABBAGE.
DRUMHEAD SAVOY.
EARLY ENFIELD MARKET.

All strong, good, healthy plants, 3s. 6d. for cash per 1000. Delivered on rail free.

Wonersh Nursery.

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Joseph Smith, deceased.

Pursuant to the Act of Parliament of the 22d and 23d Vic., cap. 35, intituled "An Act to Further Amend the Law of Property, and to Relieve Trustees,"

NOTICE IS HEREBY GIVEN, that all Creditors and other Persons having any CLAIMS or DEMANDS upon or against the Estate of JOSEPH SMITH, late of Tansley, near Matlock, in the county of Derby, Nurseryman, deceased, who died on the 1st day of June, 1876, and whose Will was proved on the 11th day of July, 1876, in the District Registry at Derby attached to the Probate Division of Her Majesty's High Court of Justice, by Samuel Smith and James Smith, both of Tansley aforesaid, Nurserymen, the Executors named in the said Will, are hereby required to send particulars of their CLAIMS or DEMANDS to the said EXECUTORS on or before the 1st day of AUGUST next; and Notice is Hereby also Given that after that day the said Executors will proceed to distribute the assets of the said Joseph Smith, deceased, among the parties entitled thereto, having regard only to the claims of which the said Executors shall then have had notice, and that they will not be liable for the assets, or any part thereof, so distributed to any person of whose claim or demand they shall not then have had notice—Dated this 19th day of June, 1877.

ARTHUR HARWARD, Wirksworth,
Solicitor to the said Executors.

TESTIMONIAL to Mr. F. W. WILSON

(*Late of the Crystal Palace*).

"DURING the past quarter of a century Mr. Wilson, by his genial disposition, obliging manners, and thoroughly zealous efforts to promote and successfully carry out the various interesting natural history and other shows held at the Crystal Palace, has earned the respect alike of his colleagues and a wide circle of friends amongst the general public."

The following is a List of Subscriptions up to present date received and promised:—

	£	s.	d.
Harrison Weir, Esq.	5	5	0
I. Jenner Weir, Esq.	5	5	0
John Douglas, Esq...	5	5	0
— Reilly, Esq. ..	5	5	0
Shirley Hibberd, Esq.	5	0	0
Dr. Hogg	5	0	0
A few friends, members of N.P. Society, per Mr. C. Merck..	6	10	0
J. W. Myers, Esq. ..	2	10	0
J. Groom, Esq. ..	2	2	0
R. Thornton, Esq. ..	2	2	0
Matthew Hedley, Esq.	2	2	0
E. Wilson, Esq. ..	2	2	0
B. S. Williams, Esq. .	2	2	0
Messrs. W. Cutbush & Sons	2	2	0
John Wills, Esq. ..	2	2	0
Isaac Wilkinson, Esq.	2	2	0
Messrs. Paul & Sons, Cheshunt	2	2	0
C. Jamrack, Esq. ..	2	2	0
Maurice Young, Esq.	2	2	0
A. Wiener, Esq. ..	2	2	0
A. Sillem, Esq. ..	2	2	0
T. Wright, Esq., Aeronaut	2	2	0
Charles Wyndham, Esq.	2	2	0
C. Turner, Esq. ..	2	2	0
W. L. Darke, Esq. ..	2	0	0
S. Holmes Pegler, Esq...	1	1	0
G. Thomson, Esq., Crystal Palace ..	1	1	0
Sir E. Lee, Kt. ..	1	1	0
A. F. Barron, Esq. ..	1	1	0
J. Laing, Esq. ..	1	1	0
E. H. Birchall, Esq.	1	1	0
Lionel Brough, Esq..	1	1	0
R. W. A. Abbott, Esq.	1	1	0
— Springett, Esq. ..	1	1	0
— Thompson, Esq., Gravesend	1	1	0
— Renton, Esq. ..	1	1	0
Superintendent A. Gernon	1	1	0
W. Bray, Esq. ..	1	1	0
Messrs. Negretti & Zambra	1	1	0
G. J. Barnesby, Esq.	1	1	0
— Wieland, Esq. ..	1	1	0
F. Sawyer, Esq. ..	1	1	0
Francis Sawyer, Esq.	1	1	0
Mr. J. Farley ..	1	1	0
W. Richards, Esq. ..	1	1	0
J. C. Fox, Esq. ..	1	1	0
P. McKinlay, Esq. ..	1	1	0
J. Doel, Esq... ..	1	1	0
— Norris, Esq ..	1	1	0
G. Billett, Esq. ..	1	1	0
Henry Lee, Esq. ..	1	1	0
F. E. Hunt, Esq., M.D.	1	1	0
W. Lang, Esq. ..	1	1	0
C. T. Brock, Esq. ..	1	1	0
Lewis Wright, Esq...	1	1	0
B. Standing, Esq. ..	1	1	0
W. R. Wilcox, Esq..	1	1	0
Arthur Wilmore, Esq.	1	1	0
Lady Dorothy Neville	1	1	0
J. Gilbert-Weir, Esq.	1	1	0
Messrs. W. Paul & Sons, Waltham Cross ..	1	1	0
Charles Wall, Esq. ..	1	1	0
R. Moffatt, Esq. ..	1	1	0
John Bertram, Esq...	1	1	0
W. Bertram, Esq. ..	1	1	0
W. H. Jones, Esq. ..	1	1	0
C. E. Elliott, Secretary to Fund ..	1	1	0
W. T. Carr, Esq. ..	1	1	0
W. Grist, Esq. ..	1	1	0
E. Sandall, Esq. ..	1	1	0
C. J. Salt, Esq. ..	1	1	0
G. Trist, Esq. ..	1	1	0
M. J. Wellard, Esq..	1	1	0
W. A. Lloyd	1	1	0
T. Moore, Esq. ..	1	0	0
R. J Troake, Esq ..	0	10	6
Messrs. Raven & Co.	0	10	6
E. S. Dodwell, Esq..	0	10	0
E. Brown, Esq. ..	0	10	6
Mr. George Baker ..	0	10	6
Mr. T. Page	0	10	6
Mr. J. Pringle ..	0	10	6
Mr. H. F. Moore ..	0	10	6
Mr. B. W. Wynne ..	0	10	6
F. J. Sawyer, Esq. ..	0	10	6
Mons. Dubrucq ..	0	10	6
G. E. Webster, Esq...	0	10	6
Mr. D. Dickie ..	0	10	6
Mr. E. Bool	0	10	6
J. T. Carrington, Esq.	0	10	6
E. Durrans, Esq. ..	0	10	6
Mr. Hopekirk ..	0	10	6
H. F.	0	10	0
Mr. A. Ratty.. ..	0	10	0
Mr. D. Springett ..	0	10	0
Mr. E. Austin ..	0	10	0
W. Brew, Esq. ..	0	10	0
Rev. H. H. D'Ombrain	0	10	0
E. Gordon, Esq. ..	0	10	0
T. L. Southgate, Esq.	0	10	0
Mr. J. W. Lyon, Forest Hill	0	10	0
Mr. J. W. Lyon, Hounslow	0	10	0
Mrs. Lyon	0	5	0
Mr. J. S. Tyler ..	0	5	0
Mr. Casbourne ..	0	5	0
Mrs. Graves	0	5	0
Mr. Taylor	0	5	0
Mr. Griffiths	0	5	0
Mr. Holroyd Price ..	0	5	0
J. Calvert, Esq., York	0	5	0
Mr. Hepburn.. .	0	5	0
Mr. H. F. Harding ..	0	5	0
Mr. Brooker	0	5	0
Mr. Moore	0	2	6
Mr. Ascott	0	2	6
Mr. Court	0	2	6
Mr. Doughty.. ..	0	2	6
Mr. W. Hayhoe ..	0	2	6
Miss R Lyon	0	2	6
Miss P. Lyon.. ..	0	2	6
	£145	11	6

The SUBSCRIPTION LIST will CLOSE on the 25th inst., by order of the Committee.

The DINNER will take place on SATURDAY EVENING, AUGUST 4, at the Crystal Palace. HARRISON WEIR, Esq., in the Chair. Tickets, 7s. 6d., exclusive of wine.

Any of the Committee, having received subscriptions, will greatly oblige by forwarding particulars of the same to me, as under. Intending subscribers, and those gentlemen who have promised to subscribe, but have not yet forwarded their subscriptions, will also confer a favour by kindly forwarding the same at their earliest convenience.

CHARLES EDWARD ELLIOTT,
Honorary Treasurer and Secretary,
Money Order Office, Ceramic Court, Crystal Palace.

Pine-apple Nursery, Maida Vale, London, W.

E. G. HENDERSON AND SON can supply Seed of the following; quality of strains are the best that can be grown :—

PRIMULA SINENSIS FIMBRIATA, mixed colours or separate, 2*s.* 6*d.* per packet.

PRIMULA SINENSIS FIMBRIATA, double-flowered, mixed, 2*s.* 6*d.* and 5*s.* per packet.

PRIMULA SINENSIS FIMBRIATA, Maiden's Blush, new double, 2*s.* 6*d.* and 5*s.* per packet.

CINERARIA and CALCEOLARIA, 2*s.* 6*d.* each packet.

CYCLAMEN PERSICUM GRANDIFLORUM, 1*s.* and 2*s.* 6*d.* per packet.

PANSIES, best English, and blotched flowers, 1*s.* 6*d.* each pkt.

CARNATION and PICOTEE, 2*s.* 6*d.* each packet.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO.,
KING'S ACRE, near HEREFORD.

CABBAGE SEED FOR PRESENT SOWING.

CATTELL'S RELIANCE CABBAGE

Is the best sort to grow for spring cutting. Numerous Testimonials and my own trials prove it to be the earliest and best in cultivation. J. C. tried it this season with several sorts highly recommended by other Growers, and cut good Cabbage from his Reliance a month before the others were ready.

Free by Post, 1s. per Packet.

JOHN CATTELL,
NURSERY AND SEED ESTABLISHMENT, WESTERHAM, KENT.

THE THAMES BANK IRON COMPANY,

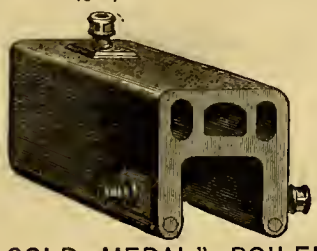
OLD BARGE WHARF,

UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



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"GOLD MEDAL" BOILER.

This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.

THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.

CRUCIFORM SADDLE BOILER.

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*

"GOLD MEDAL" BOILER (Birmingham, 1872).

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PATENT "EXCELSIOR" BOILER (1871).

"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.

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"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

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NEW ROSES, IN POTS.

TEA and NOISETTE ROSES, IN POTS.

CLEMATISES, IN POTS, of best New and Old Sorts.

ORCHARD-HOUSE TREES, IN POTS.

VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.

CHOICE FLOWER SEEDS

For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, Post-free on receipt of P.O.O. or Stamps.

	Per packet—*s.*	*d.*
AURICULA, choicest mixed, alpine .. .. 6*d.* and	1	0
CALCEOLARIA HYBRIDA, very choice, mixed 1*s.* ,,	2	6
CINERARIA HYBRIDA, from named flowers.. 1*s.* ,,	2	6
CARNATION and PICOTEE, from stage flowers 1*s.* ,,	2	6
HOLLYHOCK, Prize English .. .. .. 6*d.* ,,	1	0
INDIAN PINK, splendid double, mixed	0	4
MIMULUS, Clapham's superb, very fine..	1	0
MYOSOTIS DISSITIFLORA—Forget-me-not ..	0	6
PANSY, choicest mixed English .. .. .. 6*d.* and	1	0
PRIMULA SINENSIS, choicest mixed.. .. 1*s.* ,,	2	6
POLYANTHUS, finest gold-laced, choice	1	0
STOCK, Brompton, scarlet Giant	0	6
,, East Lothian, splendid	0	6
SWEET WILLIAM, very choice, mixed..	0	6
WALLFLOWERS, splendid double, mixed .. 6*d.* and	1	0
GREENHOUSE PERENNIALS, 12 fine varieties ..	6	0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4	6

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.

THE NEW SEEDLING ROSE,

"QUEEN of BEDDERS"

(NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.

A constant supply of buds was obtained from early June to November of that year—over five months.

Good Plants are now being sent out in strict rotation at **10s. 6d. each.**

Coloured Plates 1*s.* each.

CHARLES NOBLE, BAGSHOT.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15*s.* to 18*s.* per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24*s.* per dozen.

,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30*s.* to 36*s.* per dozen.

,, Half Specimens, 5*s.* to 7*s.* 6*d.* each.

NEW FRENCH ROSES of 1877, 30*s.* per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36*s.* to 42*s.* per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—CRANSTON & CO.

B. S. WILLIAMS'

NEW AND CHOICE

FLOWER SEEDS FOR 1877.

Per packet—*s. d.*

CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

From Capt. COSENS, *Aberystwith, May* 13, 1877.

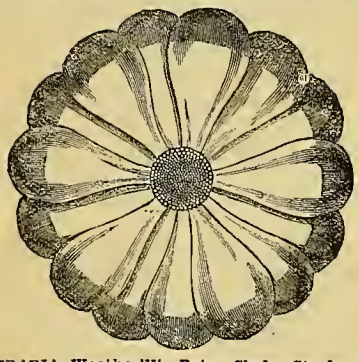
"The Calceolarias, from the seed Capt. Cosens had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."

PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5s., 3s. 6d., 2s. 6d., and 1 6

PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

From Mr. F. DENNING, *Gardener to* J. Fenton, Esq., *Yardsley, February* 26, 1877.

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."



CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

From Mr. J. WEST, *Gardener, Cheadon Park, May* 21, 1877.

"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

CYCLAMEN PERSICUM GIGANTEUM (new) .. .. 2s. 6d. and 5 0

Do., do., do., Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and 1 6

VICTORIA and PARADISE NURSERIES, Upper Holloway, London, N.

M. LOUIS VAN HOUTTE,

ROYAL NURSERY, GHENT, BELGIUM,

BEGS TO ANNOUNCE THAT HIS

BULB CATALOGUE, NO. 173 T.T., FOR THIS SEASON,

Is now ready, and will be dispatched to his numerous Customers.

Those not receiving the same may apply either to him or his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C., when a copy will be sent immediately, post-paid.

The CATALOGUE contains, as usual, an immense assortment of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other FLOWER-ROOTS, as also a Selection of Miscellaneous HARDY, TUBEROUS, and BULBOUS-ROOTED PLANTS, and a Supplement of STOVE and GREENHOUSE PLANTS, &c. Our this season's Bulbs are, especially the Hyacinths (contrary to the general expectation), exceptionally fine, healthy, and sound, and cannot be surpassed, if equalled.

The CATALOGUE, No. 174 U.U., is in the Printer's hands, and will appear next month. It will contain a great variety of INDIAN AZALEAS and CAMELLIAS, to which several new ones, of great merit, have been added. Also HARDY GHENT and MOLLIS AZALEAS, HARDY and GREENHOUSE RHODODENDRONS, and a Descriptive LIST of large SPECIMEN CAMELLIAS, &c.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON,

THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10s. 6d. *each.*

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine.*

Good Flowering Plants, in Pots 7s. 6d. *each.*

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.

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Branded on every Casting.

Macfarlane's Castings,

Architectural, Artistic, and Sanitary,

Conservatories; Winter Gardens; Arbours; Pavilions; Garden Screens; Garden Entrances; Bandstands; Verandahs; Covered Ways; Boathouses; Railings; Balconies; &c. Plain and Ornamental Castings of every description for Parks, Gardens, Pleasure Grounds, Esplanades, &c.

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WALTER MACFARLANE & CO., GLASGOW.

SUTTON'S

SUPERB STRAINS OF

FLORISTS' FLOWERS,

POST FREE.

THE FINEST STRAIN OF CINERARIA.

SUTTON'S SUPERB CINERARIA.

This will be found unequalled by any in cultivation, the seed having been saved from the finest named varieties only.

Price 2*s.* 6*d.* per packet, post-free.

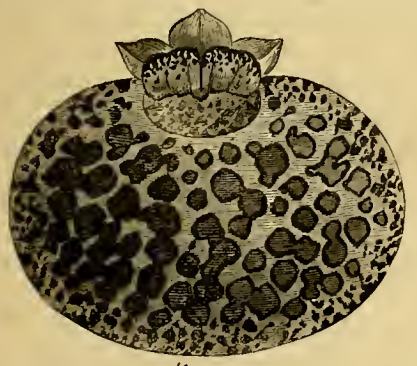
THE FINEST STRAIN OF PRIMULA.

SUTTON'S SUPERB PRIMULA.

This choice stock has been carefully selected from the largest fringed flowers of good colour. Habit robust, with bloom thrown well above the foliage.

Red, white, or mixed, 2*s.* 6*d.* per packet, post-free.

THE FINEST STRAIN of CALCEOLARIA



SUTTON'S "PERFECTION."

After many years' careful selection we have succeeded in producing a strain of Calceolarias which for beauty and form of flower, richness of colour, and habit of plant, is acknowledged to be far superior to any yet in cultivation. Our houses have been visited during the blooming season by some of the most eminent authorities of the day, all of whom agree in pronouncing our Improved Strain to be of unusual excellence.

Price 3*s.* 6*d.* per packet, post-free.

SUTTON'S SUPERB CALCEOLARIA } 2*s.* 6*d.* per packet,
JAMES'S INTERNATIONAL PRIZE } post-free.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING,

SATURDAY, JULY 21, 1877.

CLIVEDEN.

IF we were asked to select an estate which should combine every requisite that might fairly be expected in a nobleman's residence, where every comfort and every convenience should be allied to beauty and variety of scenery, delightful gardens, leafy woods, bold cliffs and flowing water, we should not have to hesitate a moment. Cliveden (or Cliefden, as it was formerly written), the Buckinghamshire seat of His Grace the Duke of Westminster, combines all these, and is, moreover, within an hour or so of London. Larger domains there may be—this feature may be more imposing in one place, that in another—but take it for all in all Cliveden stands out a veritable gem. Its situation and surroundings account for this in a large measure, but they have been so skilfully and tastefully turned to account that one finds it difficult which the most to admire—the entrancing scenery of Nature or the admirable art, which, never obtruding itself, has set forth Nature's beauties to the greater advantage. The Cliveden estate occupies an elevated plateau on the chalk some 300 acres in extent. It lies a few miles distant from Taplow and Maidenhead, and is bounded by the Taplow Court, Dropmore, and Hedsor estates, and for a great part of its extent by the River Thames. On the one side is a steep cliff overhanging the river, richly draped with Clematis, and where the sinuous roots of aged Yews hang on for very life, like so many pythons. On the other sides are woods, rich, deep, glorious, pierced with openings to let in the distant views, and traversed by green paths and noble avenues. Between the two are spacious lawns surrounding the mansion, with its terraces, greenhouses, fruit-houses, and other offices.

Cliefden was built by George Villiers, the profligate Duke of Buckingham, the friend of Charles II., a man whose character has been sketched by many, from Dryden to Macaulay, but never in clearer outline than by the first-named, who speaks of Buckingham as—

> "A man so various that he seemed to be
> Not one, but all mankind's epitome:
> Stiff in opinion, always in the wrong,
> Was everything by fits and nothing long;
> But in the course of one revolving moon
> Was chemist, statesman, fiddler and buffoon;
> Then all for women, painting, rhyming, drinking,
> Besides a thousand freaks that died in thinking."

Pope refers to the same versatile profligate in some lines commemorative of one of the many incidents of his career, and wherein mention is specially made of

> "Cliefden's proud alcove,
> The abode of wanton Shrewsbury and of love,"

in allusion to the intrigue of the Duke and the Countess of Shrewsbury. The Countess was as unprincipled as the Duke himself, if not worse, for it is recorded of her that in the guise of a page she held the Duke's horse while he killed her husband in a duel—a story we should be glad, for the credit of human nature, if some historian of the future would kindly prove to be untrue.

Poetical justice, however, has befallen Buckingham in more senses than one, as witness the following lines relating to him:—

> 'Mark where in ruins lies the last retreat of motley Villiers.
> * * * * *
> Here sunk in sorrow and deprived of all
> They saw him greatly live and meanly fall."
> * * * * *
> "In the worst inn's worst room, with mat half hung,
> The floors of plaster, and the walls of dung,
> On once a flock bed, but repaired with straw,
> With tape-tyed curtains never meant to draw,
> The George and Garter dangling from that bed,
> Where tawdry yellow strove with dirty red,
> Great Villiers lies."

The poets have, we suspect, secured a longer, or at least a more widely spread, remembrance to this unprincipled man (who died in 1688) than the historians could have done.

The mansion was added to by the first Earl of Orkney, who occupied it until 1735. Frederick, Prince of Wales, occupied it until 1756, and it was during his tenancy that a poet and a musician contributed to encourage and stimulate the patriotic feelings of Britons as much—nay, much more—than the treacheries and faithlessness of Buckingham served to humiliate and depress them, for it was in a chambered vault underneath the dining-room at Cliveden that it was first authoritatively pronounced (in 1740) that "Britannia rules the waves," and that "Britons never will be slaves"—the occasion being the performance for the first time of the *Masque of Liberty*, written by James Thomson, and containing the now well-known song, set to music by Dr. Arne.

Villiers' house was burnt in 1795, owing to the carelessness of a maid-servant addicted to the practice of novel reading in bed. The estate was purchased by Sir George Warrender in 1822 or 1823, and the mansion was rebuilt by him in 1830. In 1849 it was purchased by the late Duke of Sutherland, and shared the fate of its predecessor in November of the same year. The present mansion was completed in 1851, in the Italian style. It was designed by Sir Charles Barry for the late Duke of Sutherland, to whom, as to the fine taste of the late Duchess, much of the beauty of Cliveden is due. The property was purchased by the Duke of Westminster in 1869, and since his occupation many improvements have been carried out. The terrace front, shown in our illustration (fig. 14, p. 76), is nearly 400 feet in length and 26 feet in width, and overlooks a noble sward bedecked with flower beds, and which is reached by a handsome flight of steps, gracefully and naturally draped with climbers. The entrance front of the mansion on the opposite side is recessed, somewhat after the fashion of Versailles. On one side is an elegant campanile, and near it, but screened from view, are the various offices and the forcing houses and vineries, &c. On the opposite side of the mansion are the conservatories and glazed corridors, the former not in keeping with the rest of the building, and destined probably to be replaced by a structure more in consonance with the fine proportions and elegant design of the mansion, and with the requirements of its inmates.

THE FLOWER GARDEN.

We have already alluded to this as situated in front of the terrace walk. From this walk a noble view is obtained not only of the flower-garden but of the distant country beyond. The flower garden occupies a nearly level space or plateau of 5 acres. It was first laid out in 1852-53 by Mr. Fleming, the present garden superintendent, after a variety of designs by various landscape gardeners had been considered and rejected as unsuitable. The general design may be seen from our illustration (fig. 15, p. 77), and was suggested by the flower gardens at Versailles. The large space, and simplicity of the design, produce a very imposing effect, and carry the eye on to the lovely English scenery in the distance. Spring bedding, as it is termed, received its first great impulse, about twenty years ago, from the

way in which it was and is still carried out here, with yearly increasing efficiency. Many of our gardening readers must be familiar with the masses of softened colour, harmonising one with another and set off so exquisitely by the broad sweeps of grass. The refined taste of the late Duchess of Sutherland found ample scope here, indeed throughout the grounds evidences of her taste are apparent.

Opposite the north side of the mansion runs a noble avenue more than 460 yards in length, and fittingly terminated by a statue of the late Duke of Sutherland. This fine avenue is 50 yards in width, of which the central gravelled roadway occupies 13 yards.

The river boundary of the estate, formed by the cliff we have already spoken of, is of singular and varied beauty. Our illustrations may serve to give some idea of the loveliness of the scenery in this portion of the grounds. Wordy descriptions always fail in their object, and convey no adequate idea to the mind of the reader. Suffice it to say, that our illustration (fig. 13, p. 73) is taken from the top of the cliff in an opening looking towards Cookham, and made through the dense wood, 100 feet or so above the water, which here makes a sinuous bend in front of the observer. Another view (fig. 16, p. 81), from the top of the Yew-beclutched, Clematis-bedecked bank, looks towards Maidenhead. At the top of the cliff here is a long cloistered walk with Yew o'erhung, stretching nearly 300 yards, and at the base by the river are winding walks o'ertopped by noble trees, brakes and thickets full of wild flowers, and a crystal spring whose virtues are known to the many visitors whom the Duke's generous good feeling permits to visit this delicious nook. Hard by is a rustic *châlet* fitted with all the requirements necessary for *al fresco* entertainments, and which is also put at the service of the visitors on certain occasions. "The Springs" have for many years been a very favourite resort for pic-nic parties, as the following impromptu verses written on the spot, about the beginning of the present century, by the author of *Ireland's Thames*, amply testifies—

"Secure from summer's sultry ray,
Haste hither swains and with you bring
Your ladies *debonnaire* and gay,
To taste of Cliefden's cooling spring.

Here bow'ring shades to love invite,
And realise the poet's dream;
Here Thames allures the ravish'd sight,
While murmuring glides cool Cliefden's spring.

Gay Ovid of his nymphs may write,
With quill fresh pluck'd from Fancy's wing,
Yet here from Nature I'll indite
The charms of Cliefden's cooling spring.

Let Horace too his nectar boast,
And be the juicy Grape his theme,
Yet here in bev'rage cool I'll toast
The nymph of Cliefden's cooling stream.

Nor will I scorn young Bacchus' aid,
While she is here for whom I sing:
He shall beneath this fragrant shade
Infuse his Grape in Cliefden's spring.

If here the sigh of love prevails,
The dart of envy finds no sting;
Old Thames will smile and tell no tales
Of what is done at Cliefden's spring."

The illustration, fig. 18, p. 84, is taken from quite another part of the ground, and shows a beautiful grass slope of large extent looking towards Ascot, and backed with woods on either hand, and with a few masses of Rhododendrons and flowering shrubs in the foreground. The extent of this long stretch of grass gives it a peculiarly impressive appearance. With excellent taste the woodland walks, and here and there the grass slopes, are left almost entirely to Nature, and are studded with wild flowers in rich profusion; which, seen thus in their natural setting, lose nothing in comparison with their more fashionably attired sisters in the dressed garden. Each in its own place is appropriate, and each viewed from its own surroundings, delights and satisfies the spectator.

Since Cliveden became the property of the Duke of Westminster, the glass department, which is very extensive, as needs must be to meet the large demands made upon it for fruits and flowers, has been entirely re-modelled and re-built, and now forms one of the most compact and complete departments of its kind to be found in the three kingdoms. To Mr. Fleming the credit of the design is due, and a word of praise must also be given to Mr. Gray, of Chelsea, for the substantial manner in which it was carried out by him.

A reference to the ground-plan (fig. 11) on p. 71, which we have given to scale, together with a section of each house and frame, will show at a glance the completeness of the place. The situation is due south, and beginning in the southern left-hand corner we have, 1, the large bothy dining-room; and, 2, the bothy kitchen, above which are the young men's sleeping quarters—altogether one of the very best and most comfortable bothies it has been our good fortune to see in any garden. No. 4 contains the boilers—two of Stevens' Improved Cornish—which heat the whole of the houses, and, as Mr. Fleming testifies, in a most satisfactory manner. Next comes an exotic fernery, No. 5, containing a capital assortment of the most useful subjects for cutting and general decorative purposes rather than a representative collection of species. This house is reached from No. 6, a long corridor, entered from the lawn, and from which access is gained to all the houses. Fruit and flowers here grow side by side, the former predominating, and providing a capital lot of fruits, such as Grapes, Figs, and Cherries, while at the same time affording an agreeable amount of shade. Nos. 7 and 8 are frames used for every conceivable purpose to which such handy structures can be applied. No. 9 is a late Peach-house, in which the trees are trained in the usual manner under the glass, the sorts planted being Grosse Mignonne, Walburton Admirable, and Royal George, the last-named being planted in the centre, and intended eventually to fill the house. The trees are in fine health, and carrying a nice crop of fruit, which will shortly be ripe. No. 10 is a very useful span-roofed pit, and 11 is the Muscat-house, in which, with the exception of single rods of Napoléon and Buckland Sweetwater, Muscat of Alexandria only is grown. The Vines are planted inside, but the roots have ready access to an outside border. Though planted but a few years ago the house is well filled with good bearing wood, and the crop which the Vines are now carrying is the best that we have seen this year, and an uncommonly good one. 12 is a late vinery, in which are canes of Gros Colman, Black Alicante, and Lady Downe's—old Vines that were removed hence from another house, but which, not having thriven since so well as could be desired, are to make way for young ones. No. 13 is an early vinery, from which the crop had been removed. The number of canes is about a dozen, and all but one are Black Hamburghs, the exception being Royal Ascot. The next house, No. 14, is the second vinery, in which the young canes are making a good growth, and the sorts planted are Black Hamburgh and Foster's Seedling. No. 15 is an Apricot-house, the only sort grown being Moor Park. No. 16 is a long vinery, which comes in third in succession, and contains only Black Hamburghs—young canes just filling the house, and carrying a capital crop of good useful fruit. The next compartment in this range, 17, is the Fig-house, in which are grown such varieties as Brown Turkey, White Marseilles, and the fine Negro Largo, raised here by Mr. Fleming. The plants are all planted out, some in front and trained under the roof, the others in square brick divisions, and grown in the bush form along the back—all being in rare health and most productive of good fruit. Next comes a handy structure, No. 18, in which Tea Roses are planted against the back wall, and trained up under the roof, the house also being used in a general-utility sort of manner for the culture of various decorative plants. No. 19 shows a Melon range in four divisions. The first and third compartments from the Rose-house end are occupied with Melons at the present time. Those in the first division are rapidly developing to the ripening stage, and the crop is certainly a very heavy one. The plants are planted out in a bed, as is also the case in the second compartment; only green and white-fleshed Melons are grown at Cliveden, and the sorts in cultivation now are Golden Perfection, Cox's Golden Gem, Victory of Bath, and a useful sort distinguished as a cross with the last-named. In the other compartments are a group of Egg-plants grown solely for decorative purposes, a useful collection of Epiphyllums and other free-flowering sorts of Cactuses, and some young Vines for future planting out elsewhere.

In No. 20 we have a plant stove, span-roofed, and sunk a few feet below the level of the others. A brick pit runs down the centre, and shelves all round the sides. Here are to be seen the usual order of flowering and fine-foliaged subjects, all, with few exceptions, being grown specially on account of their usefulness either for table decoration in their entirety, or for furnishing cut flowers. There is also a small collection of Orchids, and at the present time the greatest amount of flowers are found on Allamandas, Achimenes, and Gloxinias. No. 21 is a span-roofed pit used in spring in the raising of early vegetables, and at other times for general plant culture; 22 is Mr. Fleming's office, 23 is a packing-shed, and 25 a potting-shed, the compartment between them, 24, having a glass roof and front facing north, and being filled with a collection of good-sized specimen Azaleas. No. 26 is the earliest house of Peaches and Nectarines, planted with Downton and Violette Hâtive Nectarines, and Noblesse, Royal George, and Early Beatrice Peaches—the last named being the earliest of all by quite a fortnight. No. 27 is the second Peach-house, containing such varieties as Têton de Venus and Belle Bauce; and 28 and 29 are employed mainly in the culture of Pelargoniums and Carnations, the latter being especially well done, and affording great quantities of fragrant blooms. No. 30 is devoted exclusively to Gardenias and Stephanotis, the former planted out in a bed, and the latter trained thinly up the roof. No. 39 is a Cucumber-house, containing at present robust and thriving plants of Monro's Duke of Edinburgh, and the old Kirklees Hall Defiance; and 32 is an intermediate house, turned to useful account in a variety of ways.

There is no regular kitchen garden at Cliveden, and all, or nearly all, the vegetables, for which at certain seasons the demand is very large, are grown under field culture on the home farm, which also includes a circular piece of about 2 acres devoted almost exclusively to Strawberries.

The high standing of Mr. Fleming in the gardening profession, and his courteous attention to visitors, are so well known that it seems almost needless to refer to such matters; nevertheless it is but common justice to him to say that the skill of a master hand is apparent in every department of the garden.

Illustrations of different views at Cliveden, prepared from photographs specially taken by Mr. Arthur E. Smith, will be found on pp. 73, 76, 77, 81, and 84.

New Garden Plants.

Calochortus venustus vars. lilacinus and purpureus, *Baker*.

These are two very fine varieties of C. venustus, which certainly for horticultural purposes deserve a name, which have been sent to me along with a fine series of the typical white-flowered form, as figured by Bentham in the first volume of the new series of the *Horticultural Transactions*, tab. 15, fig. 3, and of C. splendens and C. luteus, by Messrs. E. H. Krelage & Son, of Haarlem. Lilacinus has a distinct red-brown blotch bordered with yellow, and deep purple markings on a pale lilac ground on the face of the sepals, and deltoid petals 2 inches long and broad, plain lilac in the upper half, with a round, red-brown blotch in the centre a third of an inch across, bordered with a bright yellow, and stained with light brown at

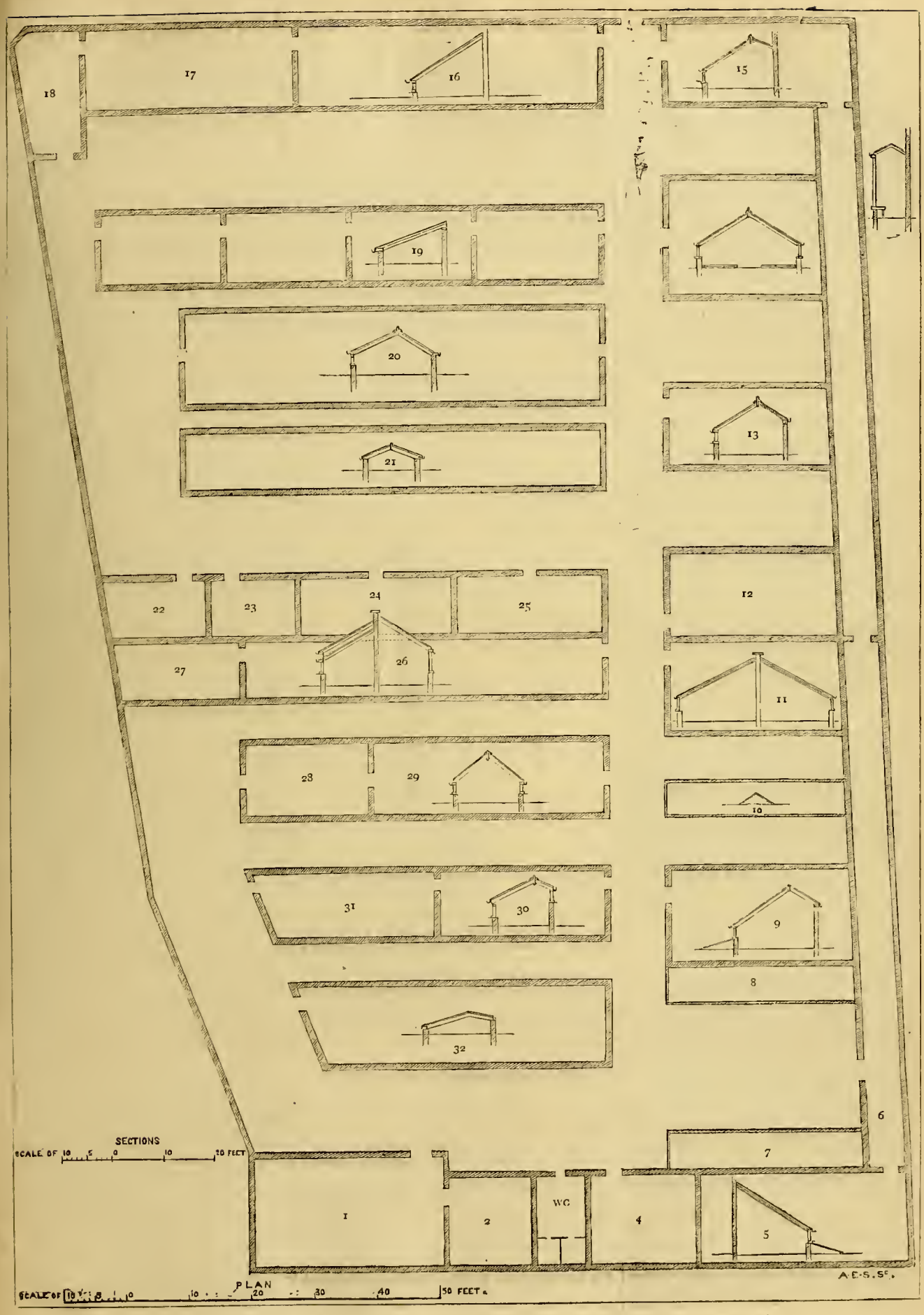


FIG. 11.—PLAN OF THE GLASS DEPARTMENT AT CLIVEDEN. (FOR REFERENCES SEE P. 70, OPPOSITE.)

the top, and the lower half of the petal grained with claret-brown, with a crescent-shaped cushion of red-brown hairs above the naked claw, and outside of this scattered longer, deflexed, more bristly hairs of the same kind. In purpureus the colouring of the naked upper half of the petal is a most brilliant purple-lilac, the central yellow-bordered blotch being not round, but considerably broader than deep, and the graining of the lower half of petal still purple, but less bright.

In C. splendens, which must not be confused with venustus var. lilacinus, there is no central yellow-bordered blotch to the petal, and not a crescent-shaped cluster of hairs, but a small dense pad of short lilac hairs at the very base of the claw, and larger, deflexed, more bristly hairs scattered over the lower half of the petal, the colouring of which is a bright uniform lilac. The motive of these deflexed bristly hairs on the face of the petals of these plants is evidently to facilitate fertilisation by insects. The flower in this Mariposa section of Calochortus is erect, and the top of the anthers only just reaches to the stigmas, so that without insects fertilisation could hardly take place. The flowers when expanded are bell-shaped in the lower half. Before the pollen is ready the anthers, which, like the filaments, are just like those of a Tulip, stand erect in close proximity to the clavate ovary, but when the pollen is ready they divaricate back against the petals, so that if a bee enters the flower these bristly hairs inevitably cause it to shake the anther considerably, and carry away some of the pollen dusted over its body. *J. G. Baker.*

Cattleya Wilsoniana, *n. sp.* (*n. hybr.?*)*

This elegant Cattleya has flowered twice in the garden of Mr. John H. Wilson, Liverpool. It has been discovered by Mr. E. Dukinfield Jones, who gathered it in company with the old C. bicolor, Lindl. There is not much doubt left that it ought to be regarded as a natural hybrid between this and perhaps C. intermedia, Grab., since neither the colour nor the asperities of the lip remind me of C. guttata, Lindl., whose growth it nearly has. The best shoot is more than 1 foot high, according to a sketch sent by its discoverer. No doubt there was a spathe, but I did not obtain one. The flower is equal to that of a well developed C. bicolor. The sepals and petals are of a beautiful deep purple; the lip white, with a yellow blotch at the base, a violet disk in front, and violet angular side laciniæ. The anterior lamina, excepting its white claw, is of a very rich beautiful purplish hue. The column is a light whitish purple. It is named in memory of Mr. John H. Wilson at the wish of the discoverer, Mr. Dukinfield Jones. *H. G. Rchb. f.*

EXPERIMENTS ON THE FLOW OF THE SAP.†

Before entering on the subject of this paper, it may be useful to mention—not for this committee, but for the benefit of the outside world, who may read it elsewhere—that they will find an admirable account of the present state of opinion of the scientific world on the various questions connected with the sap, which I am about to discuss, in a series of papers that were published by Dr. Masters in the columns of the *Gardeners' Chronicle* in 1874. On some he expresses himself with hesitation, on others with more confidence, on none with dogmatism, but on all he gives the full gist of the opinions generally received at the date of his writing.

At the beginning of this session I drew the attention of this committee to the course of the sap, being of opinion that recent researches rendered some modification in our views necessary on that subject.

The proposition that I submitted to the committee was, pure and simple, that there was no such thing as descent of the sap at all, but that its course was always upwards. I found the committee quite in accord with me, so far as regarded anything like circulation. I think most of them, if not all, repudiated any belief in the old theory of the ascent of the sap by the fibro-vascular bundles of the wood and its descent by the cellular layers of the inner bark; but I found the majority still imbued by the theories of Sachs, and holding with him, and on his grounds, that descent by some means was absolutely necessary, in respect that assimilation could only take place in the light, and consequently that the whole of that function must be performed in the leaf, whence the assimilated matter there produced must be transported in some way or other to the other parts of the plant in which it is found; and as these are lower down, and some of them even underground, as in the case of tubers, it followed that there must be a descent in some way or other, and the prevailing opinion seemed to be, as was I think first suggested by Mr. Herbert Spencer, that this took place by a slow swaying, or wandering motion, by means of endosmose and exosmose, through the walls of the cells, which imperceptibly and independent of the current of the sap mixed the whole up together, or carried the different ingredients to where they were wanted.

Since I last spoke on the subject I have endeavoured to see if actual experiment would throw any light upon it, and as a contribution to its elucidation I have now the honour to submit to the committee the particulars of one or two experiments that I have made.

I made experiments with the Vine, the Fig, the Horse Chestnut, and the Hyacinth, but as they all, so far as they went, tended in the same direction, I shall speak principally from the Vine, which was much more manageable, and more readily took up my infusions than any of the others. Thanks to the experiments of Professors M'Nab and Church, I knew of the virtues of lithia as an easily absorbed agent, whose presence could be detected anywhere by the spectroscope in however small a quantity it might be present, and I had the advantage of Professor Church's own kind assistance in determining for me whether it was present or not. As lithia, however, is colourless, I added to my infusions enough of litmus to colour them deeply, and I am bound to record as the result of my own experience that the lithia told me nothing that the litmus did not equally well. The combination of both, no doubt, adds to the confidence with which I can trust to my experiments, but the litmus had one great advantage over the lithia—that it might be easily handled, and dropped or spilt, without interfering with the experiment; whereas with lithia we have constantly to be on our guard against any careless dispersal of it—as, for instance, by allowing a drop to spill on the bark, or by using a knife that has been employed in cutting a portion of a branch that has been lithiated to cut one that has not. The form and proportion in which I used the lithia were 5 grains of citrate of lithia to each fluid ounce. To this I added a little glycerine, with the view of equalising the specific gravity of the mixture with that of the sap, and then as much as I found necessary of small lumps of litmus. I need not say that I did not evolve these chemical details out of my own inner consciousness. I got them from my friend Professor Church, of Cirencester, who is my tower of strength in any chemical difficulty.

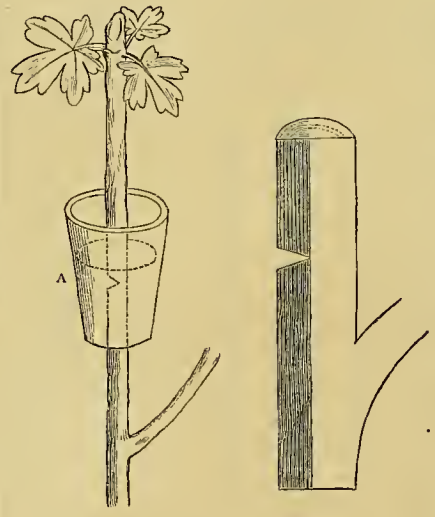


Fig. 12.

I may add, for the benefit of any outsider who wishes to repeat my experiments or make similar ones, that I got the citrate of lithia from Messrs. Hopkin & Williams, wholesale chemists, Cross Street, Hatton Garden; that its price is 1*s.* 6*d.* an ounce (480 grs.), and that litmus is 3*d.* per ounce. I note this because I rather object to the kind of grandiose way we have got into of treating cost as too inferior a matter to be worthy of note, whereas, when we have put off our public robes, no one can dispute that cost is a vital consideration with us all. Whether a man has the income of an emperor or of a beggar he has still to ask himself whether he can afford what he is about to do.

I then passed gutta-percha funnels (see fig. 12) over the shoots to be experimented on, and secured them as cups, with the shoots growing up the middle, by means of cork and tallow. I tried waterproof cloth, but it did not hold in, but the gutta-percha funnels did perfectly. My experiments were made in April and May, when the leaves were beginning to open. I put one cup on the stem of the Vine. It held perfectly, and no escape of the liquid took place. After the cup was properly luted to the stem with tallow I cut a nick in the bark a little above the fitting (fig. 12, A), and then filled the cup with the lithiated litmus-mixture, so as to cover the nick. I then allowed it to remain on for six weeks, constantly renewing the mixture in the cup as it disappeared.

After the expiration of six weeks I took up the plant and examined it: and here let me see that the committee and I are in accord as to what I should have found had Sachs' theory been well founded. I imagine that upon every principle I should, on the ordinary principles of gravitation, have found the severed vessels below the nick, and on the same side as it, filled with the infusion in consequence of its descent. So far as regarded that part of the plant it was no longer a closed tube, and there could be no ascent, but being, as it were, merely an open tube, whatever was poured into it should simply find its way to the bottom. And so in fact it did—the infusion below the nick descended to the very fibrils of the roots. In like manner, the part above the nick being a closed tube—closed by the cup at the bottom and by the leaves acting as a sucker at the top—we should expect that the infusion would ascend; and so it did, nearly as completely as it descended below the nick. But how as regards the parts that were on the opposite side from the nick. According to Sachs' theory, whether you call it the result of metastasis or of endosmose and exosmose, the infusion should have been found extravasated and infiltered through that side, both above the nick and below the nick and up the ascending branches, and in fact everywhere a little; but in point of fact there was not the slightest extravasation nor a solitary particle of lithia or litmus in any of these places. The depth of the nick was the measure of the extent of the penetration of the infusion, and it was as sharply defined as a line could be; and this is just what I said should be the case.

I said that the rapidity of the current would prevent any intermingling of ingredients by endosmose or exosmose, just as a small boat finds a difficulty in getting into the current of a heady river, even with the external aid of oars, or a small stream pouring with the force of gravitation into a more powerful one is shoved aside and driven down the banks. The sap has neither oars nor gravity by which to force its way from one part of the ascending current to another, and it must be content to go with the flow of that part of which it is a component particle. At night there can be no ascending current, for the force that produces it, the sun, is withdrawn, but the tube is full and in equilibrium.

To keep strictly within my experiences, I must explain that this is the result of all my experiments as regards litmus, and of all but that on the Vine as regards lithia. The experiment as to lithia in the uncut side of the Vine could not be tested, because I sent Professor Church the portions of the plant to be tested, all cut up transverely, asking him to cut certain specified ones longitudinally, and then test them separately; but he explained that that would be a delusive test after the portions had travelled from London to Cirencester, for the lithia would have had time to pass by endosmose and exosmose from one side to the other, after the plant was cut in pieces—which of course it would, for there was no longer any current to prevent its infiltration; but the distribution of the litmus when the plant was newly cut showed clearly enough what the result of a search for lithia would have been at that time.

To my mind this is conclusive on the question. Sachs must be wrong; and we must now re-examine his arguments, and see where the flaw lies. If the committee will allow me a few minutes, I do not think we shall have very far to seek. His position is thus stated in his *Physiologie Vegetale.*

* *Cattleya Wilsoniana.*—Caule gracillimo elato; foliis oblongo-ligulatis acutis geminis; spatha —; pedunculo unifloro (plurifloro?); sepalis oblongis acutis; tepalis multo latioribus cuneato-oblongis acutis; labello trifido, laciniis lateralibus triangulis, lacinia media cuneata obovata.—Epidendrum Wilsonianum. *H. G. Rchb. f.*

† Read at a meeting of the Scientific Committee on Tuesday last.

FIG. 13.—VIEW FROM THE CLIFF AT CLIVEDEN, LOOKING TOWARDS COOKHAM. (SEE P. 69.)

"The absolute necessity (says he) of the intervention of light for assimilation in plants with chlorophyll is proved directly by their mode of development in darkness. When we cause seeds to germinate in such conditions, roots, internodes and leaves are developed generally in proportion to the mass of the seed. When all the provision of elaborated principles contained in it are exhausted the development ceases. If up to that period the seed is allowed to germinate in the light, and it is then removed into darkness, the result is the same—the young leaves, although green, assimilate nothing; but if they are allowed to remain long enough in the light to have assimilated a little, there will be developed in darkness leaves and internodes until that new provision be exhausted also."

But there is one important fact that Sachs omits to keep in view here. If the plant in darkness assimilates nothing, neither does it take any food to assimilate. It is well known that plants do not feed in the dark, and nothing is easier than to prove it by experiment. Let any one with a Hyacinth growing in water in a glass, mark by a thread or narrow strip of paper glued to the glass the height at which the water stands at night, he will find it at the same height to-morrow morning, but very different to-morrow night. But the fact is not disputed.

Now on what ground are we to hold that the reason why the plant does not assimilate is the absence of light in preference to the absence of food? Either will account for it, and one will suit Sachs' theory, but the other not. No doubt the food is not taken up because of the absence of light, but it may very well be that if the plant were placed in light so that it could take food generally, and some portions of it were secluded in darkness, we should find that assimilation went on as well in those in the dark as in those exposed to light; and this, in fact, is just what Nature does with tubers. They are in darkness while the plant is in light, and they contain assimilated matter in as great abundance as any Apple in the blaze of sunshine. Now I object to a question of that kind, or, indeed, any other kind, being answered by giving the thing to be proved as part of the proof; but this is what Sachs does. He has to prove that assimilation cannot take place except in light. I offer an instance of its apparently taking place in darkness, and the reply is that that cannot be, because assimilation cannot take place in darkness. It is not that the fire will not burn because it is dark, but that it stops burning when the coals are consumed, because no more are supplied to it. During the day the light and heat of the sun draw up the sap to all the terminal parts of the plants, such as the axial extremities of the branches, the buds, the leaves, the tubers (which are only subterranean buds), where it is partly evaporated and partly assimilated—and as it is used up the roots absorb a corresponding flow to supply the consumption; but at night, when the motive power is withdrawn, the upward flow of sap ceases, the roots become inactive, and cease to feed; at the same time there is nothing to hinder growth going on—it may pile cell upon cell, whether the machine is working or not, and it does so, but assimilation ceases. Sachs has confounded an accessory with a principle, and mistaken an effect for a cause.

Allow me, however, further to cite a well known fact in favour of my views, which it reflects no credit upon us not to have sooner so interpreted. Here am I narrating, and you listening to my clumsy experiments, and yet we have all had always before our eyes—and our ancestors for ages have had them before theirs too—a constant series of beautiful and conclusive experiments, proving much more clearly than I have done what I have attempted to show. I allude to what we see in the case of grafts. We know that the stock has certain properties differing from those of the scion. We all know that the properties of the stock affect the scion. They are carried up into its system, but those of the scion are not carried down into the stock. If the theory of descent and wandering and mixing of the sap were true the qualities of the scion ought to descend just as much as those of the stock ascend, but they do not. But some one may say, "Oh, but you are wrong; there are cases in which the influence of the scion has made itself felt on the stock." How many? I ask. Out of the myriads of millions of grafts that are made every year we hear perhaps once in a decade of some single plant where there is a doubtful appearance of a scion having had some influence on a stock, or, rather, on a shoot from one. Now, if I disputed the fact altogether of such an influence ever having been truly seen, I think I should have plenty of supporters, and I am not sure that I should not be in the right, but I am not careful to do this thing. I am willing to take it as possible that such a thing may have, and that such a thing has occurred, but I add that it is still capable of explanation in accordance with my interpretation of the flow of the sap. It will be observed that such cases have never been recorded until after the lapse of a winter after the grafting, and, in fact, it is nearly impossible that they could. Now although I maintain that there is no descent of the sap, I never did (and could not) deny that there is a period (winter) when it no longer flows at all. The liquid part of the sap is evaporated, the more solid part is dried up, deposited or crystallised, or what is called "stored up" for next year. I imagine that this takes place pretty much simultaneously all through the plant, so that there is little sinking of the column of sap in the vessels. But it is possible that under conditions when there is an unusually large supply of sap in the vessels at the approach of winter, or in plants whose vessels are favourably constructed for it, there may be something like a disturbance of equilibrium, which will allow a portion of the sap belonging to the scion to ebb, as it were, below the graft, and, being there stored up and redissolved, and carried up next year, may give rise to the doubtful phenomenon of which I speak; but I take my stand, not upon exceptions, but on the broad basis of an all but universal experience throughout the whole world.

I meant to have stopped here, but I am in the position of a man, who, having begun to take a rotten beam out of an old house, finds a whole superstructure of dependencies, offsets, and rookeries tumbling about his ears. The system of vegetable physiology now in credence was built upon the faith of the existence of a circulation of the sap, and everything has by degrees been arranged to fit neatly into it. That rotten beam was removed and its place supplied by Sachs' theory; that, I think, I have shown to be rotten too, and in removing it, without having any other props to put in its place, down must come the hypothesis that the plant derives all its carbon from carbonic acid in the atmosphere or its nitrogen from free uncombined nitrogen, through the leaves, and, of course, all power of taking anything into the system through the leaves, and all hypotheses of feeding, whether vegetarian or carnivorous, through these organs. These theories of circulation by imbibition, diastasis, endosmose, and exosmose, to me are already defunct. Six weeks' unavailing effort to get the slightest indication of any of these phenomena in the living plant seem enough for me. The current is steadily upward, and not only permits nothing to come down against it, but is too powerful to permit anything to deviate from its own place, and force its way into another, even by uniting with it on the way upwards. My position is, that for a plant to absorb carbonic acid, whether free or combined, through the leaves for the purpose of supplying it with that important element involves a physical impossibility, and yet this is one of the best received vegeto-physiological hypotheses. It has the advantage of giving a glimmer of an explanation how plants may have first originated. They consist of carbon, nitrogen, and mineral ingredients, besides oxygen, which may be derived from the latter. It is open then to say that plants derive their mineral constituents from the degradation of rocks, and their carbon and nitrogen from the atmosphere—and some plants (as lichens) may. But when we come to test the hypotheses by common sense and common experience they tell us all that you may try to grow a plant in mineral ingredients and leave it to get its carbon from the atmosphere as much as you like but it won't grow. As far as common people can see it will only thrive in humus, in other words where its roots can draw carbon from the organic matters already elaborated in the soil by the long-continued accumulation of past ages. But Sachs states it very broadly. "The fact is unquestionable," says he, "partly established by direct researches on vegetation, partly inferred from the circumstances under which many plants live in a natural condition, that most plants which contain chlorophyll (*e.g.*, our cereal crops, Beans, Tobacco, Sunflower, many saxicolous lichens, Algæ, and other water plants obtain" (through the leaves—he does not say so here—but it is implied, and is of the essence of his theory) "the entire quantity of their carbon by the decomposition of atmospheric carbon dioxide, and require for their nutrition no other compound of carbon from without." (Sachs' *Text Book* (Bennett's Trans.), p. 620)

Now in the first place one of the principal of the circumstances to which he certainly above alludes must be the influence of light on assimilation, his interpretation of which I have endeavoured to refute. Next I may mention another phenomenon which seems to me equally adverse to his views, viz., that the plants of which we are speaking exhale oxygen during the day and carbon during the night. If carbon in whatever form passes up from the root to the leaves during the day, and a chemical decomposition takes place whereby it or other ingredients are altered in their way oxygen must be liberated, and after being carried on with the stream of sap will be set free when it reaches the leaves, while the carbon will be used up in the plant; and this is just what takes places by day. But at night, when no feeding or assimilation is going on, no chemical action takes place either, but the carbonic acid with which the sap is charged escapes through the thin cuticle of the leaf as from a vessel left uncovered without any interchange of oxygen at all.

As to the experiments referred to by Professor Sachs, I believe the principal one was made by De Saussure about the beginning of this century (1805), but unhappily I have been unable to see the paper containing it. I know no recent experiments with carbon. As recorded, Saussure's experiment proved that plants in sunlight increase in their amounts of carbon, hydrogen, and oxygen at the expense of carbonic acid and water. But there is no indication whether he attempted to determine whether the carbon was taken up by the leaves or the roots; and as that was not what he was trying to find out, I am disposed to infer that no precautions were taken to decide that point. He seems to have been very careful in measuring the contents and constituents of the air, the plant, and the earth; but as it is plain from that very fact that they were all three subjected to the same experiment at the same time, I do not imagine that the experiment could touch our point.

It must not be inferred that I dispute altogether the possibility of the air supplying a portion of its carbon to the plant. Carbonic acid may be carried down into the earth by showers, and there put in a fit condition for the plant which may then take it up by the roots. All that I say is, that it does not enter free into the plant through the leaves, and that the idea of its descending from them, and supplying the plant with carbon for its structure, is an absolute impossibility.

With a glance at one other class of experiments which bear on this point I have done. I do not know that Sachs has relied on it, but other physiologists have. It has been maintained that not only carbonic acid, but nitrogen free and uncombined, is taken up by the plant through its leaves, and it is plain that if the one can be so taken up there seems no very good reason why the other should not also—possibly not so readily, but still taken up. Both are constituent gaseous elements found in the plant, and if it could obtain one of them through the leaves, it should follow that it might equally have obtained the other also. Now with nitrogen the question has been fairly tried by many first-rate chemists and physiologists, and a great multitude of experiments have been made, and although discrepancies have occurred on points which do not concern this question, I think I may say that, with one exception (De Villa), the conclusion has been unanimous in the negative. It would be tedious to mention all the experimenters, but when I name Boussingault as commencing the inquiry and Lawes and Gilbert terminating it, no question as to the efficiency of the inquiry can arise. Mr. Lawes' concluding words were: "In view of the evidence afforded of the non-assimilation of free nitrogen by plants under the wide range of circumstances provided in the experiments, it is desirable that the several actual or possible sources of combined nitrogen to plants should be more fully investigated both quantitively and qualitatively."

In conclusion, I trust that others will repeat my experiments and weigh my arguments. It is a very self-confident thing for a man to set himself up in opposition to views entertained by all the *heroes scientiæ* of his own time, and although I own that I am not generally much troubled by reverence for authority, I still feel that I shall not be sure whether I have been wise or impudent in writing this paper until I have my experiments repeated and confirmed by independent workers. *Andrew Murray.*

GLEANINGS FROM THE ROSE SHOWS.

Rose shows may be looked at from different points of view, but for the amateur they ought to be something more than mere attractive spectacles. They ought to afford him—as they do if properly studied—valuable lessons in the knowledge of his favourite pursuit, the more so as every exhibition has its distinct features, some of which the writer will endeavour to extract from the great shows that have recently taken place.

After the indifferent display at the Crystal Palace, and the discomfort of crowding and defective light at St. James' Hall, it is refreshing to call to mind the Rose show at the Alexandra Palace—unquestionably *the* Rose show of the metropolitan season. At this charming place of resort the arrangements and the space are such that, notwithstanding crowds of spectators, every one has ample opportunity for criticising the boxes in detail without a compulsory circulation being enforced by attendant police.

Considering the drawbacks of an unusually trying season, it is surprising in what good order Roses have been presented for public approbation at the great shows that have to this time been held, and the number of amateur exhibitors that have come forward.

The new Roses, particularly English seedlings, have been shown in unusual abundance, and of a quality that promises to render us shortly independent of foreign raisers altogether, except in the case of some extraordinary novelty. This view is strengthened by the general lack of quality in the new French for the current season—partly to be accounted for, perhaps, from the fact that neither Lacharme nor Guillot fils have contributed to the batch. Madame Sophie Fropot, Mdlle. Emma All, Marie Louise Peralt (seedling from Baroness Rothschild), Mons. Gabriel Fournier—prize Roses in their own country—are the best we have seen. Turning to the past season's Roses, Duchesse de Vallombrosa, a fine light-coloured flower, somewhat like Bennett's Duchess of Edinburgh or Madame H. Jamain, and La Rosière, a rich dark rose, in the line of Prince C. de Rohan or Mons. Boncenne—both of which, by the way, were finely shown—provided this should ultimately turn out vigorous and hardy it will prove a real acquisition; at present its appearance is in its favour. Baron Bonstettin, another of the dark line, has been generally exhibited in fine condition, so also has Baron Bonstettin; Firebrand, in a different style, and Lord Macaulay, have sustained their repute. The latter is a good companion to Madame Victor Verdier, one of the best Roses for general work we have. Monsieur Alexis Lepère, Comtesse Vally de Serenye, Avocat Duvivier, Madame Ferdinand Jamin, Madame Prosper Langier, Marguérite Brassac, and Monseigneur Fournier, were sufficiently well shown to deserve consideration as highly-promising novelties. Alluding more particularly to English-raised Roses which have filled prominent positions at the shows, and which can be recommended as thrifty kinds for the use of amateurs, the following stand out as the pick of the "tables":—Star of Waltham, Princess Beatrice, and Magna Charta (William Paul & Son); Miss Hassard, Oxonian, and Mrs. Baker (Mr. C. Turner). We may note in this place, that from the mode of introducing seedlings practised here it is much longer before they pass out of the category of new Roses. They are shown at societies, often receiving certificates, but it is seldom that they reach the general Rose-growing public till two or three seasons have passed by. Cranston's Sir Garnet Wolseley has been well certificated, and may prove to be a Rose for everybody; this is a matter for time to decide. Sports seldom are worth much; for example, Bessie Johnson is not equal to Abel Grand, and Letty Coles, in our estimation at least, seems but a dull and dirty paraphrase, with nothing particular to recommend it, of Madame Willermoz.

It is always pleasant to meet old friends and favourites, even in Rose-boxes, especially when they appear in such excellent form as "Jules;" Général Jacqueminot, Madame Vidot, better as shown than most new tinted whites; Chabrilland, which, in spite of its exquisite symmetry, appears to be yielding from want of size to such ragged Pæony-like flowers as Paul Néron, the ragged-edged Captain Christy, and the like; Malmaison, unique in its beauty as ever, for it has never given a seedling to continue its strain; and Gloire de Dijon, the amateur's Rose, good for all purposes. To this last must now be added La France, equally versatile and equally desirable; indeed, with the Gloire la France, the old General, and Malmaison, even the suburbanite may enjoy a feast of Roses of the highest quality, provided they are dwarfs (not on the Brier), and receive the necessary care and proper soil. Both of these remarkable Roses are hybrids of uncertain parentage, forming distinct points of departure for new lines of seedlings. The Gloire has already proved very prolific in this direction. Whether La France will be equally so remains to be seen.

Marie Cointet (might this not be described as an improved Anna de Diesbach?) did not come up to the form Mr. Bennett showed it in at the Crystal Palace three or four years ago. That gentleman has been kind enough—led by my remarks in the Rose number of the *Gardeners' Chronicle*, I suppose—to forward me four blooms, on stout foot-stalks, better than any I noted at the shows. My opinion, nevertheless, still is that it is not an exhibitor's Rose.

Flat Roses of the Baronne Prevost type do not appear to find equal favour in the eyes of modern rosarians with the deeper petalled yet less double varieties. There are a good many fine flowers too of the style—for instance, Triomphe de France, as shown, and with somewhat larger petals, and fewer of them; also Madame Charles Wood. I do not know whether it has been generally noticed by the bulk of rosarians, but with Victor Verdier came in a new and distinct style of wood—smooth, firm, and almost without spines, the foliage being large, leathery, and of great substance. Very many of the highest class modern Roses partake more or less of these characteristics.

The singular and often erroneous nomenclature on the tallies is an ordinary feature at most Rose shows, and suggests the importance of some alteration. Written tallies ought not to be allowed in competition boxes at all. Nothing, except displaying the names of the exhibitor openly, would be a greater guide to partial decisions were the judges disposed to unfair practices. Besides, the tallies ought always to be printed, if only for legibility. Another point not sufficiently attended to is correctness in the tallies. At the Crystal Palace show last year the writer noticed in a prize seventy-two Madame H. Jamain put to Hippolyte Jamain, and *vice versâ*. To say the least this denoted carelessness, if not ignorance, on the part of both judges and exhibitors. The stand ought to have been put down.

The fact must have struck close observers, that we have far too many Roses virtually alike—as far as the flowers are concerned; indeed, the lists want weeding out. Some twenty representative Roses might well be taken as types. Some three or four of the best in each might be selected and the remainder left to drop out. Roseries would be the better for such excision, nurserymen would be saved much trouble and sometimes undeserved odium, and we should have a means of forming a tolerable idea of novelties by referring them to types. The writer hopes to be able to present an instalment towards the task before the season has gone by. Space requires further "gleanings" to be deferred to a future date. *W. D. Prior.*

THE COLORADO SPRUCES.

The three Spruces of the Rocky Mountains, Douglas', Menzies', and Engelmann's, botanically known as Abies Douglasii, A. Menziesii, and A. Engelmanni, seem destined to take such an important position as ornamental trees in the Northern portions of the United States and Europe, that some account of them at the present time will be interesting, and will, I hope, help to make them better known to nurserymen and planters generally. Abies Douglasii and A. Menziesii have been in cultivation for half a century, having been introduced into England from seed collected in California and Oregon, by David Douglas, a celebrated Scotch botanical traveller, whose labours and untimely death in the pursuit of his profession, the Douglas Spruce will always recall to botanists and lovers of coniferous trees. Although these two trees grew well, and soon became popular in England, all efforts to introduce them into our extreme Northern States failed, or practically failed, as after a few years, more or less, some unusually severe winter had killed all that had been planted, and it seemed settled that our plantations must be made without reference to these really fine trees. But in 1862 Dr. C. C. Parry, to whose indefatigable journeyings and researches are due the solution of so many of the botanical problems of the Western Territories, visited the Rocky Mountains of Colorado, and sent from there seeds of these two trees to the Botanic Garden of Harvard University. From this seed a large number of plants were raised, which, with a view of testing their hardiness, have been widely distributed through several of the Northern States, where they have stood the trial of the last dozen years, and many of them, too, very trying years to plant-life, without, so far as I have heard, a single one, whether planted on the most exposed situations of the New England coast, or in heavy clay soils in Pennsylvania, having been injured in the slightest degree. As a plant is generally more susceptible to injury from cold or drouth during the early years of its life, and as our plants have passed through these first years so successfully, their perfect hardiness and adaptability to the soil and climate of the Eastern States must, I think, now be conceded.

But why, it will be asked, are these Colorado trees hardy, when the same species had, up to a dozen years ago, proved so unsuited to our climate? The reason for this apparent anomaly is obvious, if we take into consideration the fact that individuals of the same species vary to a remarkable degree in their power to adapt themselves to various conditions of temperature, and that the power of an individual to withstand cold increases in proportion to the distance at which its seed-bearing parent is situated, either from the equator, or above the sea level. Or, in other words, our two Spruces are perfectly hardy in New England, the seeds from which they were raised having been collected at an elevation of some 8000 feet, while plants of the same species, raised from seed collected at comparatively low elevations near the Pacific coast, have almost without exception proved too tender for this climate. The Douglas Spruce, which botanically is closely allied to the Hemlock of the Eastern States, and which, though coarser and less graceful, it somewhat resembles, extends through California and Oregon, as far north as Sitka, and in the Rocky Mountains from New Mexico northward, growing to an enormous size on the Pacific coast, where, in favourable situations, it often attains a height of from 200 to 300 feet, with a diameter of trunk of from 10 to 15 feet. In the Rocky Mountains, however, its average height is hardly above 80 feet, and its growth there is slower and less productive of valuable timber. But it is as an ornamental, and not as a timber tree, that we are now considering this species. As such, few coniferous trees surpass or even equal it, for it has thus far retained in cultivation (and some of the first trees planted in England are now over 100 feet high) its lower branches, and close, dense pyramidal habit; and in this it contrasts most favourably with such trees as the Norway Spruce and many of the Spruces and Silver Firs of the Old and New World, which, however beautiful and thrifty in their young state, become either naked and unsightly skeletons, or destitute of lower branches, long before they have reached half their full development. For this reason the Douglas Spruce should be selected in preference to any other of which, in cultivation, I have any adequate knowledge, where it is desirable to plant a tree of pyramida habit, which not only is beautiful in its young state, but which will improve for generations.

The second of our species, Abies Menziesii, in favourable situations attains a height of 100 feet, and has nearly the same geographical range in North America as Abies Douglasii. It also, under various names, extends through Kamtschatka and the Amoor country to Japan. In the Rocky mountains this tree is found at an elevation of from 6000 to 9000 feet, and never forming extensive forests, as do many coniferous teees, but scattered widely here and there, and always in low, wet situations, generally along streams at the water's edge, where its roots are constantly kept cool and moist by the mountain torrents. This natural selection of a cool, moist soil, indicates under what conditions this tree can be most successfully cultivated. According to Dr. Parry, Abies Menziesii is, in the Rocky Mountains, a tree of rather an oval outline, pointing upwards with a rapidly tapering trunk. It has a thick grey rough bark, and its leaves are remarkably broad, stout, and very sharp pointed; indeed, so harsh are they that it is painful to grasp one of the

branchlets with the naked hand, and by this peculiarity the species can be most readily distinguished, while young, from several other Spruces, which, in their early years, have certain points of resemblance.

The young plants, although of rapid growth, are remarkably compact and beautiful, especially those of them (about 20 per cent. in our seedlings) which are of a bright bluish grey tint. In fact, these young "Blue Spruces," as cultivators are beginning to call them, are the most beautiful and valuable hardy Conifers for this climate I know. Still, it is only in its young state, probably, that this species will make a desirable ornamental tree, as it has been observed that, when growing naturally, the bluish tint disappears from trees over 30 feet high, while, long before its full development is reached, loose, unsightly branches, nearly destitute of foliage, take the place of its early compact habit. This comparatively early fading of beauty is less objectionable, perhaps, in an ornamental tree in this country, than in almost any other, and is quite compensated for, in this case, by the superlative beauty which graces its early years. As a hedge plant for this climate Abies Menziesii presents qualities possessed by no other plant, and when it becomes, as it should before long, as common and cheap in our nurseries as the Norway Spruce, it will be used for this purpose in preference to that, or any other evergreen.

Abies Engelmanni, the third of the Colorado Spruces, is the most alpine in character, forming in the southern Rocky Mountains vast forests above 8000, and reaching even 11,500 feet above the sea level. This tree forms a shapely, tapering spire, from 60 to 80 feet high, with a trunk slender for its height, and which is covered with a thin, scaly, reddish-grey bark. In general appearance A. Engelmanni resembles the Black Spruce of Eastern America, for which it was mistaken by all botanical travellers in the Rocky Mountains, until Dr. Parry detected its specific distinctions, and dedicated it to the distinguished botanist whose name it bears. Of its merits as an ornamental tree I cannot as yet speak with so much confidence as of the two trees already mentioned, as material for a satisfactory trial has not been available. But, probably, its resemblance to one of the common trees of the East will work against its general popularity, while its alpine character, and consequent habit of starting to grow in very early spring, will render it unfit for cultivation, save in the extreme Northern States. In St. Petersburg, as I am informed on the best authority, Abies Engelmanni succeeds perfectly, in spite of the extreme cold of the Russian winters, and, as heretofore, the only Conifers available for planting in northern Russia have been the Scotch Pine and the Siberian Spruce, its general introduction there is considered of the greatest value and importance. By far the most valuable of the Colorado Spruces, as a timber tree, and the equal in this respect to the Black Spruce, it is not improbable that Engelmann's Spruce will some day form an important element in the formation of artificial forests in Northern Europe. *C. S. Sargent, in the "American Agriculturist."*

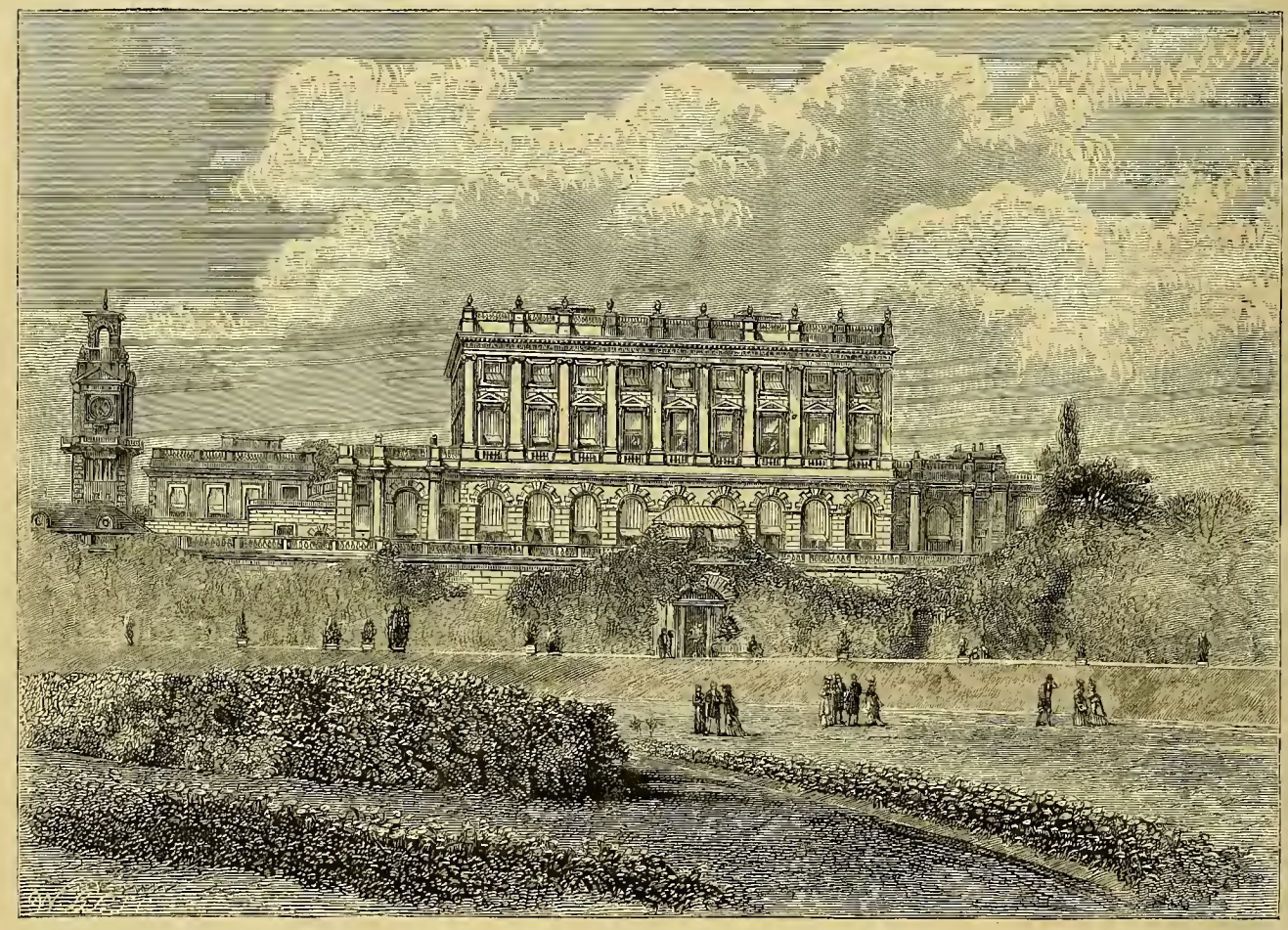


FIG 14.—CLIVEDEN, THE RESIDENCE OF HIS GRACE THE DUKE OF WESTMINSTER. (SEE P. 69.)

THE ROYAL GARDENS, KEW.

(*Continued from p. 44.*)

INDIARUBBER.—On June 14 of last year Mr. H. A. Wickham, a resident on the Amazons, who had been commissioned by the India Office to collect seeds of the Hevea brasiliensis, arrived in England with 70,000, obtained on the Rio Tapajos. In consequence of their retaining vitality for but a very short period, they were all sown the day after arrival, and, though not contained in pans, covered a space of over 300 square feet, closely packed together. About 3¾ per cent. germinated, some as early as the fourth day after sowing, and many in a few days reached a height of 18 inches.

Upwards of 1900 plants were transmitted, August 12, in thirty-eight Wardian cases made specially to accommodate the rapid growth of the seedlings, to Ceylon, under charge of a gardener. Of the whole consignment 90 per cent. of the plants reached Dr. Thwaites in excellent condition, and they will remain in Ceylon for the present under an arrangement which I suggested between the Indian and Colonial offices—that the young plants which could not thrive in the climate of Calcutta or any of the more accessible gardens of continental India, should be nursed and established in Ceylon for subsequent transmission through the Indian gardens to Assam, Burmah, and other hot, damp provinces of India proper. I am happy to say that the plants are thriving under the management of Dr. Thwaites, who has obtained the authority of his Government to establish a supplementary tropical garden at a lower elevation than Peradeniya (1700 feet) for the more rapid multiplication of the Hevea, Castilloa, Chocolate, and other plants that require a maximum of heat and moisture.

In addition to the principal consignment to Ceylon small parcels of Hevea plants were sent to the following places:—Africa (West Coast), Burmah, Dominica, Jamaica, Java, Queensland, Singapore, and Trinidad. In the case of Singapore the result was unfortunate. Owing to the delay on the part of the India Office in paying the freight, the cases did not come into the hands of the Superintendent of the Botanic Gardens,

to whom they should have been consigned, till the plants were nearly all dead.

A plant in cultivation in the Botanic Gardens of Regent's Park, London, of Buitenzorg (Java) and Mauritius, under the name of Hevea guyanensis, proves from specimens transmitted to Kew by Mr. Horne to be entirely different, and is a species of Manihot, apparently M. Glaziovii, Muell. Arg., which is said to come from Rio Janeiro.

On November 21 Mr. Robert Cross, who, in addition to the commission given to Mr. Wickham, had been sent to South America to bring home live plants in the event of its proving impossible to transmit alive to this country the very perishable seeds, reached Kew with about one thousand living young Hevea plants. The most promising of these have been retained at Kew during the winter, and a portion will be sent to India as soon as the state of the weather permits.

The stock of Castilloa elastica, brought last year to Kew by Mr. Cross, has been propagated as rapidly as possible, and plants have already been distributed to Africa (West Coast), Ceylon, and Java. Dr. Thwaites reports that of thirty-one plants transmitted to him twenty-eight have arrived in perfect health, and have thriven vigorously.

A plant to which I alluded in my last report, and which is to be found in some Continental and English gardens under the name of Castilloa elastica, proves under cultivation at Kew (although possibly a species of Castilloa) to be certainly distinct from that plant both in the form of the leaves and in the habit.

Along with the Heveas Mr. Cross brought seeds and plants of an undescribed Rubber tree, which furnishes the "Ceará scrap" of the English market. The export of this has been reckoned at one thousand one hundred tons annually. The botanical nature of the plant is at present uncertain, but it may possibly prove identical with Manihot Glaziovii already mentioned. It is at any rate perfectly different from Hevea and Castilloa in character, habit, and habitat. It grows in a climate with a marked dry season, amongst a scrubby vegetation, and has stout short branches and deciduous leaves. Forty-one of the imported stems have grown, and as many young plants have been obtained from these by cuttings. The seeds were raised with difficulty during the winter, owing to the seedlings damping off soon after germination — a characteristic of plants of similar habit from similar climates; fourteen plants, however, are growing from this source.

(*To be continued.*)

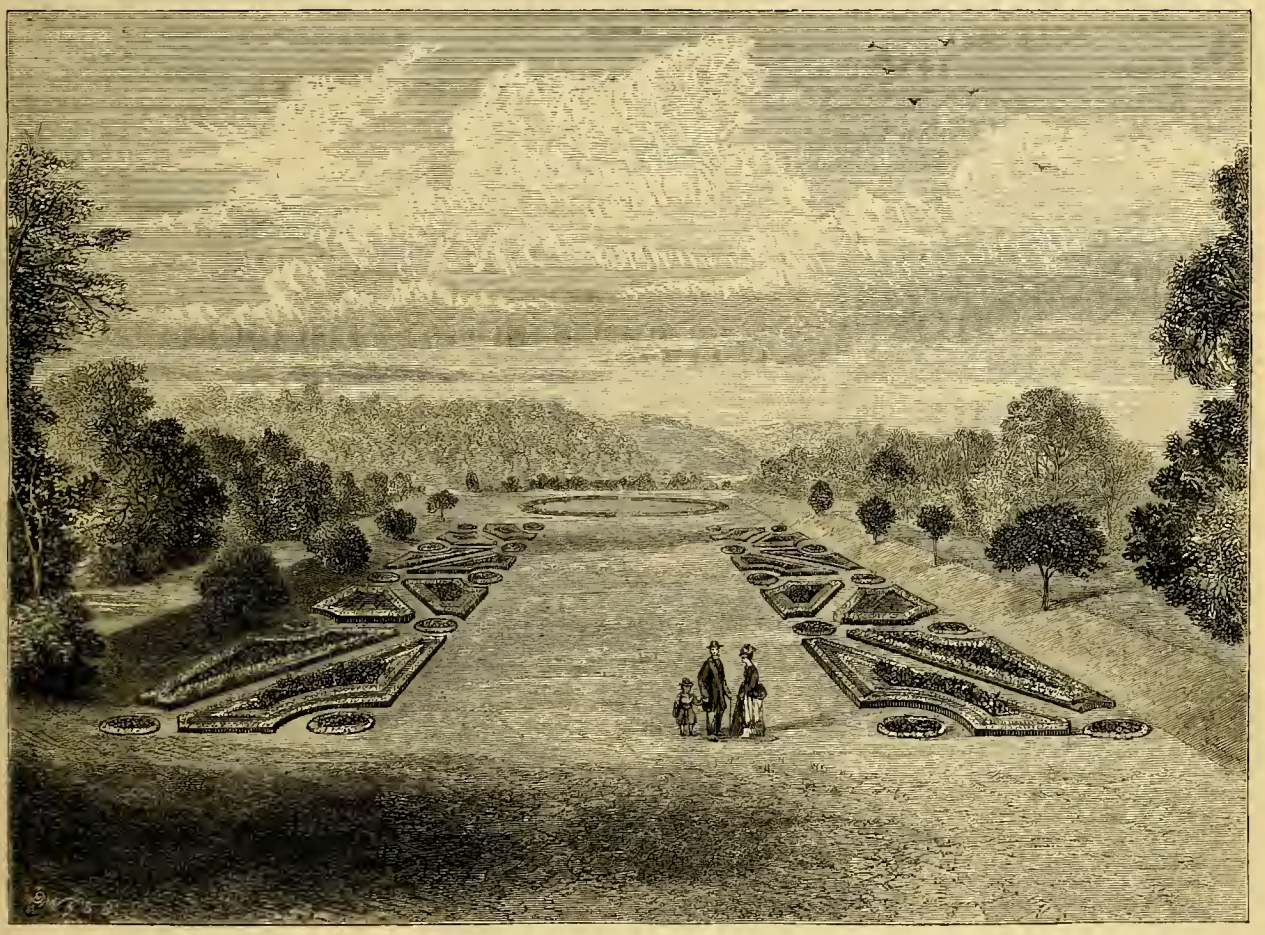


FIG. 15.—THE FLOWER GARDEN AT CLIVEDEN, AS SEEN FROM THE TERRACE FRONT. (SEE P. 69.)

Forestry.

THE distribution and appropriation of trees to their right and proper locality is a subject of forestry well worthy of more attention than it has hitherto received. The natural pleasure and delight which trees afford to all who have any measure of capacity for enjoying them is so great, that criticism is seldom indulged in regarding their inappropriateness and unsuitability for any situation, however ineligible. The Willow tree on the smooth carpet-like lawn, the Birch in cultivated fields, the Scots Pine in the rich Clover park, or black Italian Poplar on a dry arid peak, are all, to adopt the common phrase, "the right trees in the wrong places." A stately or graceful tree is of itself an object so attractive and charming that the situation on which it stands, its own special characteristics and surrounding associations are all lost sight of, at least when considered in connection with the established fact that, whether rightly or wrongly situated, there it must remain since it cannot be removed. Where existing evils cannot be cured, the next best thing to do is to prevent others from occurring, and this, as applicable to the subject in hand, can only be done by attention, care, and vigilance on the part of the planter in all future operations. The style and selection of the mansion, formation of the ground, exposure, quality, and condition of soil, and many other things have to be duly considered in selecting and disposing of trees for ornamental and pleasing effect. The following are a few of the many points for consideration which the planter may do well to consider in laying off the woodlands of an extensive and splendid domain.

Now is the time when the effects of trees on the landscape should be considered, for I see no good reason why the uncertain flicker of an autumn day should be so highly esteemed above that of several weeks of steady glowing beauty. A few degrees of frost, a shower of rain, a gale of wind, or humid atmosphere for a few days, are each a common but sufficient influence to blast and dissipate all our prospects, joys, and pleasures of the autumn landscape. Not that we should delight and enjoy autumn less, but that we should enjoy summer more, is the sentiment I would like to express regarding them.

1. Such trees only should be planted in proximity to the mansion as are well known to survive to a great age, and maintain during their existence health, vigour, magnificence, and splendour in the highest possible degree. Foremost of those trees combining such qualities are the Oak, Spanish Chestnut, Sycamore, Lime, Horse Chestnut, Elm, Beech, and Ash. These are for the lowly foreground, but only for situations where the soil is good and other influences favourable.

2. For an extreme upland district, where the soil is inferior and exposure severe, the landscape trees may consist of the common Scots Pine, Birch, and wild or Aspen Poplar, together with the Gean tree and Mountain Ash, distributed or combined, to suit the general surroundings of the locality and conformation of the ground.

A very pleasing and impressive effect is produced on entering the pleasure grounds of a noble mansion by passing through the following groups or masses of woodland in the form of belts or zones intersecting the drive. At the entrance gate, which may be of Swiss style, is a large mass of Scots Pine, unbroken or interspersed with any other species of tree. The darker and more cloudy the aspect so much the better, which a single tree of lighter and lovelier hue would entirely destroy. The next zone may be Birch, mixed with the Scots Pine at its margin, but all Birch in the centre.

A zone of Aspen Poplar may next be reached first mixed with Birch at its margin, as the Birch with the Scots Pine, and gradually forming into one entire mass of itself in the centre, and again mixing on the opposite margin with the succeeding mass. A group of Larch on an elevation or sloping bank of good dry soil will also be found pleasing and delightful. A group of Norway Spruce on a level piece of soft or even drained boggy ground will also please the sight.

An eminence may be crowned with the hardy Silver Fir, but the further into the distance the better, as the outline is hard and irregular, partaking more of the picturesque than the beautiful.

Emerging from the denser and larger masses of forest the eye should next fall upon groups of Laburnum, Lime tree, Hawthorn, varieties of the Maple, various weeping subjects, and groups of shrubs and small trees. *C. Y. Michie, Cullen House, Cullen.*

THE COMING BEETLE.

A CROWDED meeting of members of the Entomological Department of the Irish Animal Kingdom was held last night at the "Hole in the Wall," Dublin, to consider the expected arrival from the United States and Canada of the Colorado beetle (Doryphora decemlineata). The assembly chiefly consisted of the Coleoptera, but representatives of the Aphaniptera, Hemiptera, Diptera, Homoptera, and Orthoptera were also present. The chair was taken by—

The Stag Beetle (Lucanus cervus), who, in a few words, stated that the advent to this down-trodden island of the Colorado or Potato beetle, already found on the Continent of Europe, was now merely a matter of time. He should, for his own part, receive him as a brother—with open horns.

The Rosechafer (Cetonia aurata) was of opinion that they should prepare to give the distinguished immigrant a warm reception.

The Bleeding-nose Beetle (Timarcha lævigata) said that had been done by the people at Cologne, where they had covered a field in which their American cousin had been detected with sawdust and petroleum, and set it on fire. ("Shame!") But, for all that, the Colorado beetle "had been seen on the wing," and, plase the Potatos or not, would soon be among them. ("Hear!")

The Cockchafer (Melolontha vulgaris) was a beetle to whom nothing came amiss. In his larva state he, like the Doryphora decemlineata and the Irish population, rejoiced in Potatos. But the world was quite wide enough for both him and the Potato beetle. They had both the same interests, and the same enemies. Man would be down on the Potato beetle's larvæ with poison. Boy would be down upon him, too, with foot and finger. He would probably have to beware of the Goatsucker, or Nightjar (Caprimulgus europæus), and also of the Kestrel (Falco tinnunculus); but the former was only a bird of passage, and gamekeepers were fast exterminating the latter, which fed chiefly on mice and insects, by shooting it down. ("Hear! hear!") It was a particular foe of his kind, and he hated it, as he did the whole brood of Saxon destroyers, of which this was one of the worst. (Cheers.)

The Devil's Coach-horse (Staphylinus (Ocypus) olens) supposed that himself and the Potato beetle would perhaps be considered to belong to the same stud. But he, the D. C., was a carnivorous beetle, and feared he hardly deserved his name; for, whatever he looked like, as he consumed carrion and ate destructive insects, he did mankind service, though he cocked his tail at them, but at none so high as the base, bloody, and stupid Saxon.

The Shard-born Beetle (Geotrupes stercorarius) made an observation inaudible on account of his drowsy hum.

The Turnip Flea (Haltica nemorum) hoped their Colorado friend would do for Potatos as he, the Turnip Flea, did for Turnips and Swedes, but that care would be taken that the value of the crops destroyed should be deducted from the rint, so that the loss might fall on the landlords.

The Domestic Flea (Pulex irritans) would hail the arrival of another annoyance to the human race—he meant, of course, the Saxon oppressor.

The Norfolk Howard (Cimex lectularius) cordially cried "ditto" to the last speaker.

The Plant Fly (Aphis vastator) could, as his technical name might seem to imply, help to devastate 'taters, but he could not destroy everything off the face of the earth, even with the aid of the most patriotic motives. He expected to find the Colorado beetle an efficient ally.

The Meat Fly (Musca vomitoria) had to do chiefly with meat. He should be glad to see a new-comer attack Potatos; and as for gardeners and farmers or St. Patrick himself trying to stamp him out in this favoured island—they be blowed!

The Praying Mantis (Mantis religiosa) was not himself a vegetable feeder. Yet he sympathised with their Potato brother. He did not look upon him in the light of an enemy to man. No; he regarded him rather as a beneficent dispensation—a bountiful provision for the limitation, if not the extirpation, of a tuber possibly working, unsuspected, evil amongst men. Who knew? The Potato beetle might have been sent to supplement the Potato famine, and still further reduce the population of this beautiful but mis-ruled island. If so, he would still prove a friend to the national cause, as the Potato famine had done, for he saw in that the great spring of migration to the United States, and the taproot of Fenianism. To all the words of welcome with which the aproaching advent of the Doryphora decemlineata had been hailed by preceding speakers he devoutly responded "Amen!"

Great excitement was here produced in the meeting by the announcement, on the best authority, that a large specimen of the Potato beetle had just been caught climbing up a rope to Dublin quay.

The Domestic Flea—who was proud to avow himself a Home-Ruler—begged to move three cheers for the invader. Any invader of his unhappy country was welcome, and the worse the better.

Three cheers for the Potato beetle were then proposed from the chair, and given with tremendous buzzing.

The cheers had hardly subsided when a pair of devil's coach-horses was rapidly driven up, bearing the following telegram:—

"House of Commons, Thursday, Midnight.

"Hicks Beach says it isn't a Colorado beetle that's in it, but a stone beetle, twice as big and not a bit like the raal ould Colorado boy. Don't believe it. The Saxons want to stand between Ould Ireland and precedency in possession of the genuine Potato bug. I'm houlding up for the raal ould Colorado. Hurroo!"

The reading of this telegram was the signal for a scene of unprecedented excitement, amidst which our reporter, being recognised, was expelled with circumstances of the utmost ignominy. *Punch.*

Apiary.

STRAW HIVES.—So far this season my bees have not been as successful as in previous years. Good swarms have been far from plentiful, although, judging from my own apiary, they have gleaned a fair harvest of honey. I thought I would make a few notes, as well as general observations, during the present season as to which were the most profitable taken from a cottagers' standpoint, the common hive or the Woodbury hive being the two chiefly observed. We have now in use in our farm apiaries many of the very large straw hives, which hold about as much as three of the ordinary hives. I need scarcely say they are found to be a complete failure. A practical bee-keeper told me only very recently that one of these monster skeps on his stand had not swarmed for three years. "Well," I replied, "you have probably taken from it several large supers." "Nay," said he, "it has stood as now—untouched."

The reason of their not swarming is easily explained. The bees constantly dying off during the working season leave the population at a standstill. Thus the hives are never crowded, and the bees are not, under these easy circumstances, compelled to seek a new home; neither would it be wise to super such a hive. Hives about 12 inches square are the most profitable, especially for cottagers. I do not recommend bell-shaped hives, except to those bee-keepers who are always averse to meddling with them and never interfere with their stocks from the day in which they are hived to the time when they are cruelly slaughtered over brimstone fumes; to these people, who can never believe in anything except what their forefathers used two centuries since, I say anything will do, and by all means adhere to the common bell-shaped hive, which is sold by every ironmonger. On the contrary, to the cottager who takes a deep interest in the welfare of his colonies, I always advise the use of the flat-top hives, generally called Payne's hive.

We first noticed two common hives placed on the same stand with two excellent Woodbury hives. At the beginning of the season the latter were considerably stronger, and appeared to promise the best results; the straw hives were not interfered with. Mark the results in this single apiary: up to July 10 we have had six swarms from the straw hives, with every prospect as well of a fair yield of honey from the old stocks and first swarms, but the Woodburys have neither swarmed nor gathered any extra store in the supers; they appear to be stationery.

In a neighbour's garden we find nearly the same results. To test whether a straw or wood hive (as near the same internal measurement as it was possible to make them) was the most useful—we observe the wood hive sent out a small swarm, scarcely worth the trouble of hiving, whilst the straw skep sent out two swarms, one so early in May that it has swarmed again—thus two swarms and a virgin swarm, so that we have four stocks inclusive of the parent stock.

We have observed for many years that a poor woman whose chief talk is, whenever we get upon the bee topic, that she never received one penny from the parish, but she evidently obtains a better living from her bee garden, for the last year she had, we believe, an average the season through of forty-three stocks. We have often tried to persuade our friend to use wooden boxes instead of her favourite straw skeps, but in vain, on the plea that they would be more durable, she will not use them. Our friend's hives are often exposed fully to the weather, yet they always appear to do well, and when every one complains of the bad honey harvest she can secure a fair yield, for last year she obtained from honey and wax alone £39, besides the few extra pounds secured by the sale of new swarms. Old Betty attributes all her success to the old-fashioned hive, for she knows nothing of supering, though we have now taught her how to drive her stocks—instead of destroying them, and afterwards placing two condemned stocks in each empty skep, to feed them up liberally: these often make good stocks. We hope again shortly to return to this subject. *R.*

Florists' Flowers.

DOUBLE PYRETHRUMS.—The progress being made with the double Pyrethrum is seen in some splendid flowers sent by Messrs. Kelway & Son, nurserymen, Langport, for inspection. They are remarkable for their great size, fulness, symmetry, and fine and striking hues of colour. The Pyrethrums, both single and double, are most effective border flowers, and while it is not always a gain in point of beauty or attractiveness to change the single character of the flowers to be double, it yet seems to be a decided advance in the case of the Pyrethrum. The habit of growth of the double varieties is also of a more compact character generally than that of the single varieties, which is a gain.

Of the varieties raised by Messrs Kelway & Son the following are well worthy notice:—Amethyst, pink fleshed with violet blue, large, full, very fine and striking in appearance; Achille, rosy pink, large, full and very fine; Captain Boynton, cherry-red, a fine dash of colour, large and full; Captain Nares, soft magenta, fine shape, and remarkably full; Ceres, bright pink, deepening to rose on the ray petals, large and very fine; Cleopatra, pure white, large and

full; Duchess of Edinburgh, pale pink, tinted violet, and surfaced with silver, very pretty and attractive; Galopin, deep magenta shaded with maroon, very fine in colour, large and full; Kreimhilda, pale pink, a pretty hue of colour, large and full; and Queen Mary, blush flushed with pink, fine and full.

The exhibition of the Royal Horticultural Society on June 19 included among many things of peculiar interest some remarkably fine blooms of double Pyrethrum shown Mr. H. Hooper, Widcombe Hill Nursery, Bath. They were so attractive, and of such rare excellence, that they asserted their claim to be included in the schedules of prizes of horticultural societies. They nearly rival the quilled Asters, the only exception being that they do not exhibit the shades of purple, blue and violet found in the latter; but these will come in course of time. As a decorative hardy border flower at this season of the year, the Pyrethrum claims, and should receive, the fullest public attention. *R. D.*

Garden Operations.

PLANT HOUSES.

Greenhouse Hard-wooded Plants.—All specimen and half specimen greenhouse hard-wooded plants that it is necessary to expose for a time in the open air with a view to thereby ripen their wood, so as to insure their flowering freely and to harden up the foliage sufficiently to enable it to resist the attacks of mildew through the damp autumn months, should now be stood out. It is not advisable to expose them to the full influence of the mid-day sun for a few days at first, as the change from even the best constructed light houses to the unobstructed force of the sun's rays is very great, and will sometimes not only disfigure the leaves, but permanently injure them; for this reason the plants should be stood for a short time at the north side of a wall or trees. Protection ought to be given to the pots so as to keep the sun from coming directly upon them; stand them on a bed of ashes sufficiently thick to exclude worms, if the bed is kept damp the moisture arising from it will benefit the plants in hot sunny weather, and will also tend to keep down red-spider, to further secure which all plants that are liable to it should be daily syringed, wetting the under-side of the leaves. Some of the finest rooted and most tender subjects should not be stood out in this way. Amongst such as are better kept under glass all the year may be enumerated Dracophyllum gracile, Leschenaultia biloba, Gompholobiums, Daphne indica, Tetratheca verticillata, Pimelea hispida, and Roella ciliata. With these there is nothing gained by exposure, neither is it well to put out small young stock, as the drying influence of sun and air on the small body of soil in which the roots are contained often has the effect of producing a hard stunted state which it is difficult to get them out of; and when these have been grown through the season in a good light pit or house, from the thinner, more open condition of their shoots than in the case of larger plants, the influence of light will better have solidified the growth as it has progressed.

There are few more useful decorative plants than Nerium (Oleander) splendens, both the pink and white varieties. Why they are not more generally used it is difficult to imagine, as there is scarcely a property essential to a popular plant that they do not possess. They are of the easiest possible culture, being capable of bearing an amount of neglect and indifferent usage that would be fatal to nine-tenths of the plants we cultivate. The flowers are extremely beautiful, and adapted for decorative purposes on the plant or in a cut state. With a little warmth they can be brought into bloom early in the season, and if sufficient are grown a portion will come in by ordinary greenhouse treatment during the later summer months when indoor flowers begin to be scarce. For a roomy conservatory, if desirable, they may be grown to a large size, or they will flower well in a 6-inch pot. To bloom them satisfactorily there is one essential, the wood must be thoroughly ripened; in no way can this be accomplished with so much certainty as by standing them out-of-doors under the influence of full sun in the warmest position that can be found, where the growth will get thoroughly hardened, to further assist which give no more water than is necessary to prevent the young shoots flagging; this will tend to stop any further extension. The plants should be turned out at the present time, and allowed to remain until the beginning of September. In the case of large specimens, after being subjected to this ripening process, the shoots may be taken off with some four or five joints to each, and struck singly in small pots; if a little bottom-heat can be given them without much increase of the temperature overhead, they will root in a few weeks without top growth being excited, after which they be moved into 6-inch pots, and so kept through the winter. Solanums planted out-of-doors in the spring ought, when the weather is dry, to receive enough water to keep them in a healthy growing condition, and should occasionally be examined to see that they are free from red-spider, for although much less susceptible of its attacks planted out than when grown in pots, yet it sometimes makes its appearance, and if not destroyed seriously injures the leaves. A good syringing with Gishurst, at 2 oz. to the gallon, carefully applied so as to reach the whole surface of the leaves, will generally be found effectual. When they are grown in pots and are affected with this insect the best plan is to dip them; they require unremitting attention with water when their roots are thus confined, and should have liquid stimulants once a week, or the foliage is almost certain to have a yellow, sickly hue.

Soft-wooded Plants.—Mignonette sown early in the season for flowering in pots must not be allowed to suffer for want of root-room, the size of the pots used should be proportionate to the strength of the plants and the size they are intended to grow to. This plant ought to have good soil well enriched with rotten manure and a little leaf-mould. Keep the flowers picked off as they are formed, and the plants tied into the required shape. Mignonette looks much better when trained to a more natural form than the stiff, objectionable pointed cones frequently seen; the plants should stand where they will have plenty of light and abundance of air, otherwise they will become weak and drawn—a condition that, if once they get into it, cannot afterwards be remedied: they must never be allowed to suffer for want of water, or it induces a yellow appearance of the foliage. A little more seed should now be sown in 48-sized pots to bloom in the spring, standing them out on a bed of ashes in a frame, with the lights off in all but exceptionally wet weather: when they are well up they should be thinned to three or four plants to each pot, and when some growth has been made move them into others a size larger, in which they will be wintered and ultimately flowered. A little Calceolaria seed may be put in: it is well to sow twice at an interval of about three weeks—the second sowing can be had to flower after the others, and in this way will come in very useful. *T. Baines.*

Orchids.—The earliest plants of Dendrobium nobile that have made up a good growth, must now be taken from the Dendrobium-house where hitherto they have been growing, and if in baskets suspended from the roof of a cooler house, a vinery, Peach-house, or a house of a similar character where plenty of light is obtainable, at the same time where the plants will in some degree be shaded from the direct rays of the sun. As the growths are thus exposed to a greater amount of light and air and a cooler night temperature they will gradually become ripened and matured, and in due season will produce the desired show of flowers. *W. Swan, Fallowfield.*

FRUIT HOUSES.

Cucumbers.—Pot off the young plants intended for early winter fruiting as soon as they have made the first rough leaf, and keep them close to the glass, to prevent drawing. When they begin to grow freely the leaders should be supported with sticks, and if the pit is not ready for their reception by the time the pots have become moderately full of roots, a second shift into 8-inch pots may be given. A close pit, where they can be well syringed, with a little bottom-heat from fermenting materials in preference to hot water, will suit them well. Endeavour to maintain a free healthy growth in the fruiting-pits by frequent removal of old bearing vines and foliage, to make room for young fruitful growths, which should be stopped one point beyond the fruit, and by light cropping and liberal supplies of tepid liquid manure. If shading is resorted to, the blinds should be drawn down early on bright mornings until the fruit and foliage is quite dry, but on no account should they be allowed to remain all day, unless the weather is very bright and the plants show signs of flagging. Maintain a bottom-heat of 80°, and close about 4 P.M. with moisture; avoid fire-heat as much as possible unless, as is now often the case, the external temperature falls below 50°. Plants growing in pits or frames will well repay the trouble of turning and renovating the linings, also for covering with mats at night. Water and syringe regularly, not later than 4 P.M. Dress over twice a week, and use glasses for keeping the fruit clean and straight. *W. Coleman.*

Orchard House.—When the early kinds of Peaches of recent introduction are grown in pots the most forward should now have full exposure to sun and light by turning the leaves off the apex of the fruit and pinching out the points of the shoots to improve the colour, size, and flavour. Later kinds now swelling their fruit should be supplied with abundance of weak liquid manure, and in some cases a renewal of the surface dressing may be found necessary when trees in small pots are carrying heavy crops of fruit, particularly if the roots have not found their way into the borders on which they are placed. Maintain a moist growing atmosphere by syringing freely, and closing the ventilators about 4 o'clock on fine afternoons. Open the house early the following morning, stop all strong shoots, and shorten back where too much crowded for the well-being of the fruit. Figs in pots will require liberal supplies of water while the fruit is swelling, also good syringing to keep the foliage free from red-spider until such time as the fruit shows signs of ripening, when it must be discontinued, but careful watering must be followed up, as any sudden check would end in the dropping of the fruit. Plums now ripe, or ripening, may be placed together at the coolest end of the house, or they may occupy a cool, airy structure with the Cherries, where they can be protected from wet and birds. Although I do not recommend Grapes to be grown in the orchard-house either in pots or otherwise, where their culture is attempted, early kinds will be best adapted for the purpose, and these should be trained as single rods over the paths where they are least likely to be affected by the free use of the syringe amongst the other occupants. Hamburghs, Muscadines, and Sweetwaters, if thinned early, and well stopped and attended, sometimes give good fruit, but their culture in a separate compartment is always attended with the best results. Cherries from which the fruit has been gathered will derive great benefit from frequent syringings to cleanse the foliage from all insects which may have gained a footing during the time the fruit was hanging. If placed on, or partly plunged in, a bed of ashes in a light, airy, but sheltered situation, the young spurs will get well ripened for next year's fruiting. *W. Coleman.*

KITCHEN GARDEN.

Now is the best time to get in the main sowing of Endive of sorts for the main supply for late autumn and winter salading. Some improved varieties of the Batavian section have been introduced of late years, and are so valuable as possessing characteristics of hardiness during winter that they should never be omitted. For early autumn purposes the moss-curled varieties are generally the first to come into use, which are succeeded by the old broad-leaved Batavian, and these again by Fraser's Improved Broad-leaved, and the new Batavian Improved Round-leaved, which is a very desirable sort, and blanches well. The Digswell Prize is a good green curled variety. Now also is a good time to commence the sowing of Lettuces for early autumn and on to early winter supply; indeed, on this and the next sowing will depend the principal supply for storing purposes for the winter, for which they should be well grown up to the tying point, and if taken up and tied when thoroughly dry and clean they will blanch and keep longer than such as have been tied a week or so before storing. The same remarks will apply in some measure to Endive, but, as a general rule, that crop may be kept longer out, and in mild winters may be very well blanched fit for use without storing; still, it is always best to secure a good supply of well-advanced plants for storing, in case of the advent of very severe weather. A good breadth of the earliest-sown should be planted out at once, and every encouragement given to maintain a free and constant growth by frequent applications of water and surface-stirring, which will tend to prevent the running to seed which often occurs in the early-sown plants. Now also is a good time to plant more largely of the different varieties of Lettuce from the successional sowings, as those planted after this time will seldom run to seed, and towards the end of next week a good supply of Hicks' Hardy, Hardy Winter, and Bath Brown Cos should be sown to furnish strong plants to stand through the winter. All these crops will require a well manured and good cultivated soil in order to ensure that crispness and delicacy of flavour so highly prized by all true lovers of salad. There can be no enjoyment of a salad of which the main ingredients, as Lettuce or Endive, are withered and flabby like pieces of thin leather, instead of being thick and crisp, and so tender as almost to melt in the mouth. With the advent of some very desirable showers the work of transplanting the various crops for winter and spring supply must be vigorously followed up. Of course all autumn and early winter Broccoli are put out and well started, those to stand through the winter ought also to be planted in their final stations, if not there must be no delay, for if they are not advanced beyond a certain point during the autumn growth it will often happen that they will not produce heads in the spring, but grow on (if left) through the next summer and winter. The planting-out of more trenches with Celery for succession must not be neglected. Those first planted will now be well started into growth, and may be liberally supplied with stimulants, either as drainage from the manure-heap or a solution of guano in water. Cauliflowers, Cabbages, and other members of the Brassica family are often at this season much disfigured by caterpillar. Their advent should be watched for, and hand-picking at once resorted to. There is no better remedy. Dressing with obnoxious liquids is out of the question. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, JULY 21, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, July 24 { Worcestershire Horticultural and Agricultural Show at Kidderminster (three days).
WEDNESDAY, July 25 — Rochampton Horticultural Society's Show.
THURSDAY, July 26 { Acton Horticultural Society's Show. Kendal and District Horticultural Society's Show.

ASSUREDLY there is little room for dogmatism on any point of natural science, and least of all perhaps in the case of vegetable physiology. On these grounds, then, no less than on the fact that anything that comes from Mr. MURRAY'S pen is worthy of respect, we call attention to his paper on the FLOW OF THE SAP read before the Scientific Committee on Tuesday last, and which, by permission of the author, we reproduce in another column. Mr. MURRAY has the courage of his convictions, and when he has made up his mind upon a certain point he pursues it to its logical conclusion, fearless of consequences and undismayed at the confusion and wreck that may be created. Now if the premises be correct and sound, this fearless devotion to truth regardless of consequences is naturally one of the very highest qualifications of the true naturalist, and one that every man of science should aim at. But before he proceeds to pull down he should be well assured that every step he has made is secure from assault, and that his position is perfectly impregnable. The most valuable part of Mr. MURRAY'S paper is that descriptive of his experiments. He starts with the assumption that there is no such thing as a descent of the sap at all, and, if we correctly interpret his views, that there is no such thing as a descent of the nutrient fluids elaborated, as generally held, in the leaves. To make this assumption a matter of certainty, Mr. MURRAY contrived some experiments in the manner detailed in his paper. To make matters clear without entering into details, which may be found in any textbook, we may say that the old notion of a regular systematic descent of the sap, comparable to the return current of a hot-water apparatus, or to the flow of arterial blood from the heart, has been for some time abandoned or very materially modified. Mr. MURRAY goes a step further, and denies that there is any descent at all.

We refer to the paper itself for an account of the mode of experiment. It must suffice to say that a solution of lithia was introduced into the stem through a wound made for the purpose. The result was that throughout the whole length of one side of the stem, above and below the cut surface, the solution found its way, while not a trace of it could be detected on the opposite unwounded side. Mr. MURRAY'S argument is that on the ordinary principles of endosmose it ought to have been found throughout the stem on the unwounded as on the wounded side. Mr. MURRAY'S results may be accepted without hesitation. The experiments were no doubt carefully made and accurately observed—they are of themselves not open to doubt.

But are we justified, on the strength of these experiments in upsetting the whole theory of the nutrition of plants, based as it is on innumerable experiments and observations, in denying the influence of light on the leaves and other green parts of plants? Can we so lightly abandon the belief—Mr. MURRAY says hypothesis—that plants obtain the greater part of their carbon from the carbonic acid of the atmosphere? Can we bring ourselves, on such evidence, to deny "all power of taking anything into the system through the leaves?" Most assuredly we should show a sad want of scientific caution if we did so.

Suppose Mr. MURRAY'S experiments to be faultless and unassailable — suppose that no explanation be forthcoming save that offered by himself — what then? Should we be justified in at once assigning a degree of importance to them greater than that attaching to the hundreds of experiments which tell a different tale, and upon which the present system of vegetable physiology is now based? To our thinking, certainly not. Mr. MURRAY asks too much of us; indeed, like some merchants, he asks more than he means to take, for the concluding paragraph shows a greater sense of the value, and specially the weight, of evidence than other portions do.

To state the case against Mr. MURRAY'S views fully and fairly, and to indicate where Mr. MURRAY is in opposition to received opinions and facts, would be to write a treatise on the vegetable physiology of the nineteenth century. Let us see whether some one point or so cannot be taken in illustration of the rest. Let us take leaf-action. We had thought that if there was one fact better established than another in vegetable physiology it was the inhalation of atmospheric air by the leaf and other green parts of plants, the breaking up of the carbonic acid gas therein under the influence of light, the retention of the carbon, and the elimination of the oxygen. Consequent on this, we get starch formed in the leaves by the chlorophyll. This is no theory; it is an accepted fact. It has been seen over and over again. That starch, or starch-producing fluid, must surely descend on occasion like the other nutrient fluids, developed or elaborated in the leaf. If not of what use are they? The leaves can hardly be considered as store-houses—they are factories, and from them are drafted the manufactured products upwards, downwards, sideways, according as circumstances necessitate or requirements dictate.

But we cannot now pursue this matter further. Mr. MURRAY'S views would, if accepted, negative all that has been laboriously acquired by chemists and vegetable physiologists from PRIESTLEY downwards. We do not look forward to any such result. Change and progress —the wiping away of many errors, the clearing up of many doubts, we may look forward to, nay, is what we long for in the future, but so radical a revolution as Mr. MURRAY foresees seems to us the height of improbability. Mr. MURRAY has the right to ask us how his results are to be explained, but before we could give an answer satisfactory to him or to ourselves we should require further evidence, and amongst other things as to the tissues through which the fluid passed. Did it pass from cell to cell oozing through the wall of one into the cavity of another, or did it pass through the intercellular spaces laid open by the nick, and by capillary action and gravity press down between the fibres and tubes of the stem? The circumstance that a "nick"—a wound, an exposed surface—was made the absorbent surface would seem to favour the idea that the downward flow in Mr. MURRAY'S experiments was, partially at least, through the intercellular spaces. If so, to that extent it would not interfere with the upward current through the cells. Again, although all or a large number of cells in any particular part of a plant may co-operate and act in unison one with another under certain circumstances—as for instance, when a regular upward current is in action from the root to the leaves—yet nothing is more certain than that the cells have an individuality of their own. One cell, let us say, in the midst of its fellows, acts differently from the rest—it secretes, or it stores up materials of one sort or another, while the others do not. The physical and chemical actions in that cell are necessarily very different from those which take place in its neighbours, and so, to speak familiarly, if a particular cell did not happen to require Mr. MURRAY'S lithia solution it did not get it, while others perhaps got it because they could not help themselves—the "little rift within the lute," the nick, giving access to the fluid, where under natural circumstances it would not enter.

Looked at from a practical gardener's point of view, the question resolves itself very much into this: Are the leaves of any use further than as pumps to pump up sap from below, and evaporators to give it off from their surfaces? Unless we misinterpret Mr. MURRAY'S views, the leaves, according to him, do little or nothing beyond this. Chemists and microscopists will hesitate a very long while before they assent to such a proposition, and the practical gardener a longer time still.

—— OF late years the fashion of DOMESTIC FLORICULTURE has so largely developed, that gardeners find the supplying of the requisite cut flowers are onerous and trying part of their duties. Trusting to the ordinary flower-beds and borders scarcely suffices, as the plants so grown cannot supply the demand made upon their resources, whilst the destruction of the garden beauties is simply lamentable. The cultivation of considerable breadths of plants suitable for cutting, and specially for the decorative purposes to which cut flowers are chiefly applied, should form a feature in every good garden; and where this is done the result more than counterbalances any additional cost or labour involved. We are incited to pen these remarks, having recently observed in the Bedfont seed grounds considerable beds of Foxgloves of the finest spotted kinds, many coloured Canterbury Bells with their long stems, singularly suitable for cutting and keeping a long time; and, not least, a fine breadth of Pentstemons, in abundant bloom and in great variety. Foxgloves and Canterbury Bells should at all times be treated as biennials, seed being sown in the spring of each year. The Pentstemon possesses a more perennial habit, and although not strictly a perpetual plant it can be made so by cuttings, from which plants can be produced freely; but really fine kinds are reproduced from seed in great abundance. The seed from which the bed in question was raised was sown under glass in a cool house in April, 1875, and the young plants put out into the open ground in June carried many fine spikes of bloom in the succeeding autumn. The next year they flowered freely all through the summer, and now they are literally a mass of flower. For vases and centrepieces the spikes of the Pentstemon are invaluable, not the less that a seed-bed produces a great variety of colours.

—— At a recent meeting of the Botanical Society of France M. DUCHARTRE made a communication on the reproduction of tuberous BEGONIAS by means of cuttings rooted in water. Not only are roots produced in this way, but tubers also in the axils of the leaves resulting from the swelling of the axillary buds and shoots as one often sees in the Potato.

—— Under the title of *Die Douglas Fichte*, Mr. JOHN BOOTH, of the Flottbeck Nurseries, has published an account of the DOUGLAS FIR, and other Firs of North-West America. The species particularly alluded to with reference to their introduction into Germany are Abies Douglasii, A. Nordmanniana, Libocedrus decurrens, Cupressus Lawsoniana, Sequoia gigantea (Wellingtonia). Photographs of these are given, and brief details of the size and appearance of the trees in their native countries, as also when cultivated. We shall probably have occasion to speak of this volume more at length on another occasion.

—— The *Journal Officiel de la République Française* of the 26th ult. contains a very long report on the PHYLLOXERA in the French vineyards, which was presented to the Chamber of Deputies on May 4. The report details the characteristics and habits of the insect, the extent of its ravages, and the means adopted for its destruction or to ameliorate its effects. Unfortunately nothing essential is added to what has already been frequently and widely made public. Submersion is acknowledged to be a good remedy where practicable; the use of the sulpho-carbonates has been partially

FIG. 16.—VIEW FROM THE WOODY SLOPES AT CLIVEDEN, LOOKING TOWARDS MAIDENHEAD. (SEE P. 69)

successful; but the introduction of American Vines is the plan most successful. These Vines are either grown by themselves or as stocks on which may be grafted the finer varieties of French Grapes. The American Vines are either not attacked at all by the Phylloxera, or they are so robust as to be but little injured by it. With reference to the Phylloxera in English forcing houses, we may remark that within the last few days, the worst case of the leaf-gall formed by the insect that we have yet seen, came under our notice. So far as our experience is concerned the root form is much more frequent in this country than the leaf-gall.

—— Under the title "INDUSTRIAL ART" Messrs. HARDWICKE & BOGUE have issued the first number of a monthly publication devoted to Art education as applied to practical purposes. It is well got up, and beautifully illustrated with tastefully selected woodcuts. We hope it may do something to save us from ugly whims and caprices, such as that which is so very inappropriately styled the early English style, wherein ugliness and discomfort are made to take the place of refinement and ease.

—— The Rothamsted experiments on "CLOVER SICKNESS," if they do not demonstrate conclusively the cause of the deterioration, yet show by elimination that the primary cause of failure is not attributable to parasitic plants or insects, injury from excreted matters, or the shade of a corn crop, and that therefore it must be looked for in exhaustion of soil. The only means at present known of insuring a good crop of Red Clover is to allow some years to elapse before repeating the crop upon the same land.

—— A short time since we were walking in a fine avenue of Yews, the pathway bordered on each side with a row of BUTCHER'S BROOM (Ruscus aculeatus), a plant worthy of all respect, so hardy and easy to please is it, and withal so sturdy, and in berry so handsome. We noticed that in the long walk in question scarcely a plant was left unmutilated, and on inquiry we learnt that some miscreant herbalist, or his agent, was in the habit of obtaining entrance and cutting off the branches. For what purpose? we asked. The answer was, that it was supposed they were used for medicinal purposes. We doubted this explanation, though it is true the plant has medicinal properties, yet we never met with it in the herbalist's lists, and we know it forms no part of the regular practitioners' medicine equipments. A few days later we were told that the branches were used in the tobacco factories to sprinkle the dried leaves with salt and water, and that for this sprinkling purpose nothing answered so well as the Butcher's Broom. We should be glad to have this confirmed or refuted, as we had the story second-hand. We have seen it used by butchers in the country, and in schoolboy days were quite familiar with its use in flogging chilblains!

—— A sixth edition of Canon HOLE'S *Book about Roses* (BLACKWOOD) has just been issued. It is somewhat thicker than before, as middle-aged books are apt to be, and it is adorned with a portrait of the author—no, we mean of his namesake.

—— The grand conservatory and grounds of Messrs. E. G. HENDERSON & SON'S Pine Apple Nursery, Maida Vale, were on the evening of the 12th inst. the scene of a grand *fête*, botanical, musical, and pictorial, organised with a view of adding to the funds for enlarging St. Mark's Church, Hamilton Terrace.

—— Well may it be said that Kent is the garden of England, when a fruit grower can send to market in one day 2500 pecks, about sixteen tons weight, of Strawberries, as was actually done last Wednesday week by Mr. VINSON, of Swanley.

—— We hear that the Society of Apothecaries, in addition to the usual medals and prizes for botany and chemistry given to medical students, intends to offer a SILVER MEDAL for proficiency in BOTANY, to be competed for by LADIES only, in the hope of diffusing a more general knowledge of this useful and instructive science throughout the domestic circle, and of encouraging the teaching of botany in schools for the education of females. This is a very laudable intent, one quite in keeping with all that the Society has hitherto done for the advancement of botany by maintaining its botanic garden, and one which we trust may be destined in due time to bear abundant fruit.

—— We are requested to state that the gardens at Cleveland House, Clapham Park, will be open for the inspection of visitors on the first Friday in August, and on every succeeding Friday while the carpet-beds are in condition.

—— NYSSA AQUATICA, the Tupelo tree, continues rare in England, although introduced nearly a century ago. This is due probably in some measure to the difficulty experienced in propagating except from imported seeds. It is perfectly hardy, and flowers freely, but it never matures its fruit in this country. On the Continent, in some parts at least, the same thing occurs. It is even hardy, as we learn from the *Berliner Monatsschrift*, in the severe climate of Upper Silesia, where there is a tree upwards of 40 feet high, and one hundred years old.

—— The *Berliner Monatsschrift* for June contains a plate of the fine OLD WEYMOUTH PINE existing in the Royal Botanic Garden AT BERLIN. It is about 70 feet high, and nearly 10 feet in girth 2 feet above the ground. The tree is of irregular but picturesque growth, and it has already suffered from the effects of high winds. Nothing certain is known as to its age, though it is probable that it was planted soon after its introduction into Europe. Unfortunately this interesting tree begins to show signs of decay, and for that reason the editors of the journal in question have hastened to secure its portrait.

—— Dr. J. W. MOLL, Utrecht, has been conducting some experiments on the ORIGIN OF THE CARBON OF PLANTS, with the following results. A leaf, or a portion of a leaf, in an atmosphere destitute of carbonic acid, forms no visible quantity of starch, even if in organic connection or closely bordering on other parts of the plant, which are in a medium much richer in carbonic acid than atmospheric air. Therefore the superfluous carbonic acid within reach of any part of a plant does not cause any visible formation of starch in any other part with which it may be connected, and which is in a space deprived of carbonic acid. The formation of starch in a leaf, or part of leaf, is not visibly accelerated when it is attached to another part of a plant in an atmosphere in which carbonic acid greatly exceeds the normal proportion. The carbonic acid in the soil within reach of the roots cannot cause the formation of starch in the leaves of the same plant in an atmosphere from which carbonic acid is excluded, nor visibly hasten its production in the ordinary air.

—— LASTHENIA CALIFORNICA is a fine showy golden-coloured annual that is well adapted for making a fine effect in the flower garden in spring and early summer. In spring gardens such a colour is much needed, and in warm sheltered spots, the plants, if raised from seed in August and kept in a cold frame during the winter, and then planted out in early spring in well-prepared beds, would in all probability bloom at the end of April and early in May. It has a close, compact habit of growth, which becomes completely covered with bright golden-yellow flowers.

—— A correspondent of *Nature*, alluding to the propensity of sparrows to destroy yellow Crocuses in preference to those of other colours, says that this selection of colour is not confined to birds, as the RABBITS in his garden ate the RED and WHITE VERBENAS, and left the purple untouched. This happened for three years in succession, till the rabbits were kept out by wire netting.

—— In the *American Agriculturist* a method of taking cuttings of bedding Pelargoniums, well known, but not practised so often as it might advantageously be, is thus described:—

"These when set in the open ground make a great growth after the severe heats are over, and afford an abundance of cuttings, but these, having grown rapidly, are very succulent, and if put into the cutting-bench in the ordinary way, would decay before they rooted. To overcome this, and prepare the cutting, Mr. PETER HENDERSON hit upon a plan that worked capitally. Instead of taking the cuttings off at once, he cut the shoot half through, or 'tongued' it. This checked the further growth of the shoot, caused the wood to harden, and a callus to form at the cut surface; in a few days the cuttings were ready, and when treated in the usual manner formed roots at once."

—— We are indebted to Mr. EDMUND TURNOR, M.P., for specimens of NEW ZEALAND FLAX (Phormium tenax) in flower. The plants were raised from seed brought by Mr. TURNOR from New Zealand in 1865, and though they have previously showed signs of flowering they have never thrown up fully developed flower-stems till this year, when on two plants there are eight or ten flower-stems, 6 to 8 feet in height—about their average height in their native country. Mr. TURNOR'S experience in the cold climate of Lincolnshire points to the conclusion that age has a good deal to do with the flowering of the plant. In any case the fact of its producing flowers in the open air in Lincolnshire is very interesting, and the more so as the plants are in no way protected in winter. Mr. TURNOR remarks that should any of the leaves turn brown and die after a severe frost, they are equally serviceable as bast for tying purposes.

—— Another of the series of COLONIAL FLORAS projected by the late Sir W. HOOKER, and prepared at Kew, has lately been issued. The FLORA OF MAURITIUS AND THE SEYCHELLES has been prepared by Mr. J. G. BAKER, who has been assisted in the enumeration of the Palms and Pandani by Dr. BAYLEY BALFOUR, and in that of the Orchids by Mr. LE MARCHANT MOORE.

—— The floricultural committee of the French Central Society of Horticulture has recently published its decision with regard to the gold medal offered by the Society for competition among the introducers of new plants. The conditions were that the plant should be generally recognised as of great merit, and introduced into the trade, or for sale, for the first time since January, 1868. After long consideration it was decided to award the medal for 1877 to Mr. A. LEVET, for the Rose Paul Néron.

—— The clergyman who was the other day convicted of libelling a fellow-parson by sowing Mustard-and-cress in his garden in the form of the words that constituted the libel must be a singularly cold-blooded being. Men usually libel either in hot blood, or without waiting for deliberation. In this case the libeller must have had plenty of time for consideration whilst marking out his lettered design, sowing his seed, and, not least, awaiting its full development. Nine hundred and ninety-nine men out of every thousand would have put the hoe through this production of spite, long ere it was expanded into its full deformity. This man may have been a clergyman, but he was no Christian; he may have had a garden, but was no gardener. Our clerical gardeners—and they are not few—are as a rule kindly, genial gentlemen, who would scorn to tarnish the reputation of their gardens by such wretched exhibitions of malice as these. Mustard-and-cress may be slightly pungent, but it is neither sour nor bitter, and in being made the instrument of libel has itself been grievously libelled.

—— According to the experiments made on the GROWTH OF BEANS by Messrs. LAWES and GILBERT, with different descriptions of manure, since the year 1849 up to the present time, the land being fallowed at intervals, it appears that mineral manures, especially potash, increased the products very much, especially during the earlier years of the experiments. Ammonia salts produced very little effect. Nitrate of soda has produced marked effects. Leguminous crops grown too frequently on the same land seem peculiarly liable to disease. When Wheat was grown eight times in alternation with Beans it was found that the crop of Wheat and the amount of nitrogen in that Wheat was nearly double that gained and detected in sixteen crops of Wheat grown consecutively in another field without manure. In other words, the Beans seem to have in some way contributed to the utilisation by the Wheat of a double quantity of nitrogen.

—— The Spanish Moss, Old Man's Beard, and Long Moss of the Southern United States and the West

Indies, TILLANDSIA USNEOIDES, figured in the July number of the *Botanical Magazine*, is well described in SLOANE'S *History of Jamaica* as a "mossie plant . . . with stalks the bigness of a thread, consisting of a thin skin, whitish, as if covered with a hoar-frost, having within that a long tough black hair, like a horse-hair . . . very often a yard long, hanging down on both sides from the branches of the trees they adhere to, being curled, or twining and winding within another, and making a show of an old man's beard (whence the name), or as if they were made to climb, which I never saw they did." Further on he says "it is used to pack up anything which otherwise may easily be broken, as cotton is sometimes made use of with us;" and again, "the inward black hairs of this moss's stalk are made use of by the birds called Watchipickets for making their curiously contrived nests hanging on the twigs of trees." To this description the Editor of the magazine adds that the Spanish Moss is a very widely distributed plant in the hotter parts of America, from Carolina to South Brazil, and on the Andes, hanging in bunches sometimes many yards long from the branches of trees. It has frequently been sent to England as packing for Orchids, but rarely alive, and it is not till quite lately that it has been successfully cultivated at Kew from plants imported (as packing) from Jamaica.

—— At the meeting of the Prince Consort's Royal Association at Windsor on July 13, Messrs. SUTTON & SONS exhibited a beautiful collection of ANNUALS grown at their seed farm, Reading. It consisted of upwards of two hundred varieties, and attracted much attention from the Royal and other distinguished visitors.

—— In the *Berliner Monatsschrift* for June, H. SCHARRER, Garden Inspector in Tiflis, gives an enumeration of PLANTS USED BY THE INHABITANTS OF TRANS-CAUCASIA AS VEGETABLES and as remedies for various complaints. Among the more noteworthy are the following, with their uses:—If there is much Lolium temulentum in the grain used for making bread the root of Helleborus abchasicus is thrust into the newly-made dough, from which then a quantity of turbid yellow water flows, and the bread is thereby rendered wholesome. The fruit of Physalis Alkekengi is employed to colour butter. Amaranthus viridis, several species of Rumex and Chenopodium, and Urtica urens and dioica are eaten as vegetables. The young shoots of the Nettles, from 1 to 2 inches long, are highly esteemed and expensive, and the leaves of various kinds of Dock are collected and dried for winter use. Dracocephalum moldavicum is cultivated as a substitute for tea, and an infusion of the leaves of Mentha Piperita and M. sylvestris is also drunk instead of tea. The fruit of Sambucus Ebulus is used to make red wine of white; but wine thus treated is injurious to the health. Achillea Millefolium dried and reduced to powder is applied to open wounds. Chelidonium majus is given in cases of internal injury; and infusion of Verbena officinalis is a favourite febrifuge. Galium Mollugo, chopped fine and sopped in sour milk, is given to young geese; and Tragopogon species is collected when young, and eaten raw as a blood purifier.

—— At the meeting of the Council of the ROYAL BOTANIC SOCIETY held on July 14, a SPECIAL GOLD MEDAL was awarded to Messrs. J. CARTER & Co., of Holborn, &c., for the novel and extensive collection of fine-foliaged and flowering annual and other plants grown in pots from seed, which had been exhibited in the gardens of the Society during the month of June.

—— The question of the NECESSITY OR UTILITY OF ANIMAL FOOD TO CERTAIN PLANTS seems to occupy the minds of many observers to the exclusion almost of the possibility of their being able to digest animal matter without its being necessary, or perhaps even advantageous, to their perfect development. As to the utility of animal food to plants, this is a point that no one will pretend to be able to determine by experiments on individual plants. To be conclusive, the experiments must be continued for a number of seasons or generations until some tangible result is obtained. Trials with individual plants appear to prove that animal food is not indispensably necessary to their complete nutrition, and this result, reasoning from analogy, might have been predicted. In tropical and subtropical countries there are thousands of human beings who rarely, if ever, taste animal food, and it is contended that they are equally as strong and productive as the omnivorous peoples of the same regions. But even if we refuse to accept this view so far as the human races are concerned, it is worthy of consideration in any argument relating to plants. Because animal matter is not indispensable to plants, or because it does not appear to be useful in their nutrition, it does not follow that they are unable to digest and assimilate it. Nevertheless, many persons are seeking to prove or disprove the power of certain plants to dissolve and absorb animal substances by first of all determining whether the plants are able to live without. But as one fact cannot invalidate another, the simpler and more logical procedure would be to finally settle whether plants absorb animal matter at all, and then treat the question of the necessity or utility of it to the plant on its own merits.

—— We have had occasion more than once to comment on the very miscellaneous bottles and other vessels considered good enough to exhibit cut blooms in at flower shows. Passing through the show of the National Carnation Society at the Royal Aquarium on Wednesday, we were struck with the form of bottle employed by the Society in question, and which is shown in the annexed sketch (fig. 17). It will be seen that the form is at once serviceable and pleasing. The cost is also slight. Messrs. BOURNE & SONS,

FIG. 17.—BOTTLE FOR SHOWING CUT-FLOWERS. (HALF REAL SIZE.)

Denbigh-by-Derby, we believe, supplied them to the Society at the rate of 18*s*. a gross. There really is no reason why flower shows should not be made as complete and perfect in their appointments as possible, and a little matter like that just alluded to makes a great deal of difference in the amount of gratification gained by the spectator.

—— Professor REICHENBACH, being about to leave home for a short time, requests us to say that urgent letters may be forwarded to him, Poste Restante, Nice, France, till August 5. He further begs his correspondents to attach to each specimen they send him a label with a number and the initials of the sender, corresponding with similar information given in the letter accompanying the specimens.

—— From an official statistical return issued by the Minister of Agriculture in France, we learn some details as to the ANNUAL FRUIT CROP OF FRANCE. The yield of stone fruit, Plums, Apricots, Peaches, Cherries, &c., in 1873, was returned at the value of £423,000, but the mean average is double this amount. Of seed fruit, Apples, Pears, Quinces, &c., the value was stated at over £2,500,000, but the average is about one-third higher than this. Other fruit trees, such as Capers, &c., produce about £300,000 more. The acreage under Vines is about 5 per cent. of the productive land, and comprises 2,583,000 hectares (6,379 309 acres). Algeria has also about 46,000 acres under Vines. Bavaria has 22,000 hectares under Vines; Rhenish Prussia, 20,000; Wurtemberg, 19,000; the Grand Duchy of Baden, 18,000; and the Duchy of Hesse, 8000. The total production of the German vineyards in 1872 was 2,000,000 hectolitres of wine. In Hungary there are 375,000 hectares under Vines, producing annually 12,628,000 hectolitres of wine; this is double the land under Vines in Austria, and the most considerable in extent after that of France. In Roumania there are 95,500 hectares under Vines. In Russia the average production is about 2,000,000 hectolitres [a hectolitre = 22 gallons about] of wine. Spain has 1,000,000 acres under Vines. The annual production of wine in Italy is from 28,000,000 to 30,000,000 hectolitres, valued at £40,000,000. The entire world produces 150,000,000 hectolitres of wine—France produces on the average nearly half, of which only about 3 000,000 hectolitres are exported. Every year over 10,000,000 lb. of Grapes are sold in the city of Paris; what the consumption throughout the country is it is impossible to estimate. The export of fruits for the table from France were, in kilogrammes:—1871, 35,566,649; 1872, 25,995,955; 1873, 29,245 384; 1874, 63 743 540. The imports of table fruit, however, exceed the exports, ranging from 52,000,000 to 71,000,000 kilos. per annum. The exports of Chestnuts are from 4,000,000 to 6,000,000 kilos., and the imports about 3,000,000 kilos.

—— We note the fact that our correspondent Mr. A. DEAN, of Bedfont, was elected a member of the School Board for Feltham, Middlesex, on Saturday last, taking second place on the poll.

—— In the *Journal of the Central Horticultural Society of France* is the report of a commission appointed by the Society to examine the FLORAL DECORATIONS IN THE APARTMENTS OF THE PALACE OF THE ELYSÉE on the occasion of a grand evening given by the Marshal MACMAHON. Some of the particulars will interest those who have to conduct the arrangement of floral decorations on a large scale. The decorations at the Elysée were designed and executed by Mr. DEBRIE, sen., who employed no fewer than 4780 plants in pots—from large Palms, Camellias, &c., to Primulas and Tulips, &c.—300 dozen bunches of green moss, and upwards of 350 yards of gilded rattan and other edgings. The large entrance vestibule was ornamented at the lower end with a group of large specimens of Seaforthia elegans and Phœnix leonensis, their handsome shining silvery foliage overhanging a statue which was flanked by two splendid plants of Dracæna indivisa, about 10 feet high, and clothed with leaves to the base. At the further end of the grand staircase of honour the light and delicate foliage of two fine Cocos flexuosa was reflected in a mirror, with profusely flowered Camellias. A specimen of a red-flowered variety of Azalea indica placed at the base of this mirror was exceedingly effective. On the landing of this staircase was a magnificent Latania, surrounded by two rows of bright red Primulas, which greatly heightened its beauty. In the saloon of the small *buffet* were twelve elegant groups of Lilacs, Roses, and Camellias, which were so light and well-selected, and so beautifully reflected in the crystal furnishings, that the effect was quite magical. The saloon of the *aides-de-camp* was ornamented with two consoles furnished in the most exquisite taste with Tulips, Lilacs, Roses, and Hyacinths. In the large reception-room was a single large console bearing fourteen Azaleas of divers colours, four Camellias, fifteen Heaths, four Lilac Charles X, forty Lycopodiums, fifteen Aphelandra and Gesneras for a bordering, and two fine specimens of Cocos flexuosa in the centre, the whole forming a most seductive combination of colour, brilliancy, elegance, and lightness. The adjoining apartments were decorated in the same style in different pleasing combinations. In the hall of the Baths there was a very tasteful and brilliant combination of Vriesia Glaziouana, Aphelandra and Gesnera, with Cocos flexuosa and white Lilac. The staircases to the apartments of Madame la Maréchale were ornamented with magnificent Palms, as Phœnix, Areca, &c., various Chinese Bamboos, 6 to 10 feet high, which contributed greatly to the lightness of the decoration; and Phormium Colensoi and Veitchii. In the Council-chamber there were two splendid consoles, in the shape of a boat, very tastefully decorated with Tulips and white Primulas. But the masterpiece of all was to be found in the large *buffet*, where light hangings had to be concealed as much as possible. For this purpose thirty large Cocos flexuosa were employed, alternating

with gigantic and rare vases filled with pyramids of Camellias of various colours. Azaleas, Phormium Colensoi, and other subjects contrasted well. Three hundred pots of Camellias formed a garland of brilliancy the eye was loth to leave. About a thousand Camellia flowers were stuck in the hangings not covered by the plants, forming a fairy picture. Lilacs and Tea Roses gave great elegance to the table-stands. Among other striking plants not yet named, Aralia Sieboldi, and Strelitzia augusta should be mentioned. If the report from which we have made the foregoing extracts is tolerably complete, the variety of plants used on this grand occasion was not great, and rare and costly plants easily damaged were altogether excluded.

—— According to the *Bulletin de Statistique Municipale* of Paris about 3900 tons of fruit were sold in the *halles* of Paris during the year 1876. And during the same period about 2320 tons of vegetables, excluding Potatos, were disposed of. The quantity of Potatos is estimated at about 727 tons. The total number of laden vehicles which arrived in the square of the *halles* during the year was 594,574. During the month of June the maximum number, 84,751, was attained, and the minimum, 25,290, was in February.

Fig. 18.—View in the pleasure grounds at Cliveden.

Home Correspondence.

Naming of Orchids.—Amateur Orchid cultivators will, I doubt not, echo my complaint of the unscrupulous naming of Orchids by vendors at Orchid sales, and especially of a growing practice of sending the same plants into the market under different names. For instance, I and others have been imposed upon by Saccolabium curvifolium luteum, which proves to be the same as was sold under the two other names of Vanda lamellata and Aerides tesselatum, an insignificant and worthless plant, a large quantity of which was also sold as being Saccolabium ampullaceum. Almost an entire importation sold as O. Hallii has proved to be O. Lindleyanum. An importation sold lately as O. pulchellum majus is the ordinary pulchellum, a very inferior flower. An Aerides Fieldingii (so sold and priced as sent) is only A. suavissimum. I could state twenty other cases, but these will suffice to indicate the not very creditable practice to which I refer. I am aware that it is not done with the knowledge or sanction of Mr. Stevens, who is always ready with information as to the persons by whom his customers are thus deceived, but I think more might be done for our protection against what are too often positive frauds. Thus, if the vendors will not warrant the plant as true, it might be so notified in the catalogues; as, for instance, "O. pulchellum (qy. majus)," or "supposed Hallii," or such-like. Buyers would then know what they were buying. As it is, we accept the unqualified statement in the catalogue as true, and feel not a little vexed when it proves to be false. Mr. Stevens might do much towards suppressing this wrong by adopting the plan I have suggested, and buyers would do more by insisting, in all cases of gross misstatements, upon the return of their purchase-money, which Mr. Stevens, I believe, always enforces on vendors who use his room for purposes of imposition. *Edward W. Cox, Moat Mount, Mill Hill.*

New French Roses.—Mr. Shirley Hibberd must have fallen into some error if he made the statement that in 1874 there were only fourteen new Roses sent here from France, and in 1876 again fourteen. He must surely have taken Eugène Verdier's issues alone, or the names adopted in some nurseryman's list. This last is a very uncertain test under any circumstances, as few trade importers now take the whole lot, as some formerly did. I have not at hand a copy of the lists I communicated at the time to more than one horticultural journal, but in each case they were nearer fifty than fourteen. Last year, again—the smallest issue for some time—the number exceeded forty. Professed authorities should be accurate. *π.*

Lilium cordifolium.—Seeing from the *Gardeners' Chronicle*, page 51 of the present volume, that Lilium cordifolium is about to flower at Kew, probably for the first time in England, it may be of some interest to your readers to learn that in my nursery there are at present six plants of this Lily, throwing flower-stems. I remember that we had this Lily in flower in our nursery a long time ago, when it was first introduced, but the plants which are now about to flower are much younger than the plant was which flowered here before. It is a general remark that in this country also Lilium giganteum is flowering in a younger state and more abundantly than usual, the flower-stems, however, are somewhat shorter than otherwise. Among other rare Lilies which have flowered in my nursery I observe Lilium Stantoni, which was somewhat forced, and seems to be well adapted for such treatment. *J. H. Krelage, Haarlem.* [We believe we have seen this plant flowering many years ago, in Mr. Noble's nursery at Sunningdale. Eds.]

Arundo conspicua.—In the centre of a circular bed in the vegetable garden here is a plant of this hardy and effective subject with forty-five flower-spikes now in perfection (July 17)—some of them are 9 feet in height. The general appearance of this plant is sufficient to recommend it for ornamental work apart from the charming aspect which it presents when in flower with its fine stems surmounted with graceful pendulous tinted plumes; this object is surrounded with a ring of the old "Red-hot-poker plant," Tritoma Uvaria, also in flower, and this, with its fiery looking heads, makes a favourable contrast, which produces a charming bed. *G. T. Miles, Wycombe Abbey.* [Too much cannot be said in praise of the Arundo, which is valuable for its early blooming and graceful habit. Eds.]

Harrison's New Hybrid Musk.—I have come to entertain a high opinion of this as a decorative plant, and I look upon it as one of the most useful of the new productions of the past year. I write this much because I have heard statements tending to depreciate the plant. Soon after it was distributed I obtained four small rooted cuttings, and put them into a 24-sized pot. They have grown into a small specimen, 5 inches high by 7 or 8 inches through, and it is now completely loaded with large yellow flowers. I can count as many as fifty expanded at one time. It is one of the brightest and most effective objects in my greenhouse, and I think it will be largely grown as a decorative plant for summer and autumn. I have been testing its peculiar perfume with the common Musk, and find Harrison's hybrid to be as richly endowed as the latter. What a window plant it will make for cottagers when it becomes more widely distributed! Some of the flowers come handsomely blotched with yellowish brown. *Richard Dean, Ealing, W.*

Climbing Roses.—I can quite agree with "D., Deal," in his remarks about Rêve d'Or. I have just seen a most vigorous specimen on a tall fence facing east, but somewhat protected by a house opposite. It is considered by the grower a splendid variety both for bloom, foliage, and hardiness. Another variety, equally good for climbing, is Belle Lyonnaise, which is bearing superb blooms on a fence facing east. Maréchal Niel is also blooming very freely round the corner of a house facing south and east. Mr. George Paul may be right in calling Paul Néron ugly, but I think the word too strong, and the number and size of the blooms almost compensate for the somewhat imperfect form. *H. T. D., Cheltenham.*

Monœcious Araucaria. — I think the only instance we have of an Araucaria imbricata bearing both male and female flowers on the same tree is that noticed some years ago at Bicton. [See our figure at p. 291, 1873.] When visiting Castle Kennedy the other day, Mr. Fowler pointed out to me a tree carrying two catkins and six cones. To lovers of Conifers this is a thing of some interest. In the same avenue with the tree referred to above, there are trees bearing cones only, and other trees catkins only. *T. S., July* 16.

Walnuts Dropping Off.—On Saturday night we had heavy steady rain all night, with some wind. In the morning I found the ground under the Walnut trees strewn with young Walnuts. The wind, however, was not sufficient to do any harm to the Apple or Damson trees. This induces me to ask whether the Walnut tree is more liable to shed its fruit than other fruit trees? The number of the young Walnuts lying about seemed to me to be so large for one night's fall off one tree that I had them collected and counted. There was 1976 in all, which weighed 8 lb. The rain of yesterday has knocked down 250 more. The tree never has ripened much fruit, nor have I ever seen it with much on it, but this year, in spite of the quantity above referred to, there appears to be as much left as its full crop of previous years. The tree is about 40 feet high, and 5 feet 3 inches girth 4 feet from the ground. The bark is cracked for about 9 feet from the ground, but this does not seem to have affected the foliage, which looks beautiful. Could it affect the falling of the fruit? *J. A. C.*

Single Banksian Rose. — In your Rose Supplement you ask about the single Banksian Rose. I saw it beautifully in blossom in March last, in Mr. Hanbury's garden at La Mortola, near Mentone: it was the yellow variety. Mr. Hanbury did not know whence it was procured. Mr. Boissier, of Geneva, who had been there a few days before, was wonder-struck at it, and said that the existence of the single form in Europe was unknown to him. *J. V. V.*

Abies Engelmanni.—I have read Mr. Barron's letter respecting the above in the *Gardeners' Chronicle* of the 14th inst., and can fully bear him out in his remarks respecting the beauty and hardiness of this fine Conifer. I happened to have purchased at the same sale a parcel of this seed, which has turned out to be the fine variety alluded to. The plants are now fully 3 feet in height, and I have been sending them out freely for the last two or three years—the green under the name of A. Engelmanni, and the one of a more glaucous appearance under the name of A. Engelmanni glauca. I may state that both the varieties for the last two or three years have been great favourites of mine, and, as Mr. Barron mentioned, are totally distinct from Abies Menziesii. *John Waterer, Bagshot.*

Phœnix rupicola. — This interesting plant is figured in the *Gardeners' Chronicle* for last week, with a brief note which might lead to the impression that it is nothing more than a horticultural variety introduced into gardens with a distinctive name for trade purposes. Mr. Bull can so easily afford to admit a reclamation, that I am sure he will permit me to place the actual history of this particular specimen on record. The Palm was originally discovered by Griffith, in Bhotan and the Mishmi Hills. Dr. Anderson found it in the Teesta Valley at a height of 400—1500 feet, and described it as a distinct species in the *Journal of the Linnean Society*, vol. xi., pp. 13, 14. His paper was read June 18, 1868, and in the same year he sent us a parcel of seed—the first which had reached English gardens — from which several plants were raised, and of these Mr. Bull had the plant now figured on March 15 of the present year in exchange for other plants. *W. T. Thiselton Dyer, Assistant Director, Royal Gardens, Kew.*

Trees and Shrubs at Colwyn Bay. — The annexed list of trees and shrubs now growing in my garden at Nant-y-Glyn, Colwyn Bay, North Wales, may be of use to anybody intending to plant in that neighbourhood. I have not included the more common and hardy trees in the list. Those marked * live but do not flourish, and those marked (*w*) are on a wall, generally facing E.S.E. The garden is on a slope facing the above quarter in a valley running down to the sea, and about 150 feet above it, and swept by N.E. winds from the sea, but protected by a high hill from the N.W. winds, which are the most injurious. The soil is mostly decomposed clay-slate (Wenlock shale) of various depths, the rock cropping out in places, and full of pieces of rock, which make it very dry and warm. The lowest temperature registered this year by one of Casella's minimum thermometers in a louvre stand was 29°, in March. Zonal Pelargoniums in a sheltered spot were in good bloom on April 30. *Alfred O. Walker.*

	When Planted.		When Planted.
Abies Morinda, 18 feet ..	1868	Aralia japonica	1872
,, Menziesii, 18 feet .	1868	Eucalyptus globulus, 15 feet	1872
,, Hookeriana * ..	1870	,, longifolia(?), 15 feet	1872
Pinus insignis, 16 feet ..	1869	,, sp., 15 feet.. ..	1872
,, Hartwegii	1872	Clematis indivisa lobata (*w*)¶	1876
,, Devoniana ..	1872	Passiflora cœrulea (*w*)..	1871
Cupressus sempervirens, 12 feet	1870	Ceanothus azureus (*w*) ..	1871
,, torulosa	1872	Cantua dependens (*w*) ..	1874
,, macrocarpa, 16 feet	1869	Embothrium coccineum.	1874
,, funebris	1872	Skimmia oblata	1871
Widdringtonia cupressoides	1872	Eurybia parvifolia ..	1872
Retinospora squarrosa ..	1873	Eugenia apiculata ..	1872
,, plumosa	1873	,, Ugni	1874
,, ,, aurea	1874	Raphiolepis ovata ..	1873
,, ericoides	1868	Acacia affinis, 10 feet ..	1872
,, filifera	1875	Melaleuca squamea, 6 feet	1872
,, pisifera	1873	Piptanthus nepalensis (*w*)	1871
Araucaria Bidwillii* ..	1872	Berberis nepalensis ..	1872
Athrotaxus selaginoides*	1872	Photinia serrulata ..	1871
Podocarpus macrophylla*	1872	Eriobotrya japonica ..	1871
,, andina	1872	Fabiana imbricata ..	1871
,, Totara*	1872	Pittosporum undulatum, 10 feet	1872
Juniperus drupacea, 8 ft.	1869	Ozothamnus rosmarinifolius	1872
Prumnopitys elegans ..	1873	Plagianthus sp.	1872
Chamærops humilis (?)..	1872	Olea fragrans*	1871
Cordyline australis ..	1872	Paulownia imperialis ..	1872
Thamnocalamus Falconerii	1873	Cistus creticus	1872
Bambusa Metaké ..	1872	Grislinia littoralis ..	1873
Veronica Hendersoni and others	1873	Eleagnus japonicus var.	1871
Berberis Wallichii ..	1872	Fuchsia globosa†† ..	1872
Fremontia californica, 5 feet	1872	,, Riccartoni‡‡ ..	1872
Leptospermum scoparium	1872	,, hybrids various§§	1874
Clianthus puniceus (*w*)‡	1870	Escallonia, various species	1869
Phygelius capensis§ ..	1874	Mandevilla suaveolens.. (*w*)	1876
Pentstemon cordifolius‖	1874	Holböllia latifolia (*w*) ..	1872
Aralia Sieboldi	1872		
,, trifoliata	1872		

† Two plants which flowered last summer and appear to be dead in consequence. ‡ Killed by moving in 1875. § Is a shrub here. ‖ Is a shrub here. ¶ Has made good growth this cold spring. †† Forms a large bush. ‡‡ Sometimes killed down to the ground. §§ Killed to the ground in winter except Madame Cornelissen.

Roses Duke of Edinburgh and Lord Clyde.—In reference to the remarks on these Roses at p. 54 of the *Gardeners' Chronicle* of last week, I hope I may be permitted to say that they were raised from seed by me in 1859 when a partner in the late firm of Adam Paul & Son. *William Paul, Paul's Nurseries, Waltham Cross.*

The Late Heavy Rains.—From Saturday A M. to Monday at 9 A M. we had 3 98 inches of rain, which since then has been supplemented by another half-inch. The Cherries are nearly all split open, and Strawberries are rotting in heaps. Truly this is a trying season for the "craft." *A. S. K.*

Village Botany. — You have alluded in your leader of the 14th to the introduction of botany in the village school of Hitcham by my father, the late Professor Henslow. Perhaps it might induce others to follow his example if they knew somewhat of his method. With this view I would refer your readers to my description of them in a paper, "Outline of Professor Henslow's Practical Lessons in Botany," in the *Leisure Hour* for 1862 (p. 676). It is alluded to by Professor Oliver in his "Lessons in Elementary Botany," who also refers to the late Professor's pamphlet, *Illustrations to be Employed in Practical Lessons on Botany Adapted to Beginners;* this latter is, however, now out of print. In the same volume of the *Leisure Hour* (1862) will also be found accounts of the "Village Excursions" and "Hitcham Horticultural Shows," which were so eminently successful under the management of the Professor. I may add that I introduced botany on the same plans into the village school of Steyning in 1859 to 1861, and found it was quite as much appreciated by the Sussex as by the Suffolk children. The master and parents equally approved of it, chiefly, perhaps, on the score that it kept the children from idling and playing in the streets, inasmuch as they were most enthusiastic in collecting flowers in the fields during their play hours. *George Henslow.*

The Austrian Brier.—On a copper Austrian Brier, at least fifteen years old, this year there appeared a sprig of the yellow Brier. The branch was of last year's growth. No. 1 sprig was copper, No. 2 on the opposite side was yellow, No. 3 was again copper. In each case there was a whole bunch of flowers with their distinctive marks. Is the copper variety a sport from the yellow, or *vice versâ*. *John H. Arkwright, Hampton Court, Leominster.* [The yellow is the normal form. EDS.]

Hoodia Barklyi.—A note in the *Gardeners' Chronicle* for last week mentions the flowering of this species in the Royal Gardens. The plant so called is, however, I believe, a new species, and will be described by me in the *Journal of the Linnean Society.* The original plant of Hoodia Barklyi—a species I described from imperfect materials obligingly supplied to me by Sir Henry Barkly, late Governor of the Cape—is now, as I learn from him, dead. The plant now flowering at Kew appears to me quite distinct, though in some respects intermediate between Hoodia Gordoni and H. Barklyi. *W. T. Thiselton Dyer, Assistant Director, Royal Gardens, Kew.*

Subterranean Cucumbers.—Last year in my garden I met with a subterranean Cucumber measuring 16 inches in length and 7½ inches in circumference. It weighed 2 lb. The colour was cream, except nearest the surface, which was slightly tinged with green. It had grown in shape somewhat like the letter S. To substantiate my remarks, I enclose you a paragraph taken from our local paper, the *Wilts and Gloucestershire Standard* of May 27, 1876:—

"AN UNDERGROUND CUCUMBER.—A day or two ago, Mr. James Trinder, of the Fleece Hotel, accidentally discovered a vegetable curiosity in his garden. While examining a Cucumber bed he moved the earth, and, strange to say, 2 inches under the surface was a beautiful Cucumber, of singular growth, weighing 2 lb. The Cucumber was of cream colour, with a slight tinge of green on the part nearest to the top. It may be seen at the 'Fleece,' and is well worth the notice of horticulturists."

It is my opinion that after the blossom was set my man, in adding more soil to the frame, had completely buried the fruit with the new soil, and, not being separated from its parent, it continued to grow until discovered. The colour is accounted for by the absence of light and air. Several tried to eat it, but found it too earthy in flavour. *James Trinder, Cirencester.*

Abies Menziesii Parryana.—Following Mr. E. André's invitation, after having once more compared my materials with Professor Parlatore's description, I am now fully convinced of my error in giving the the name of Abies commutata, Parl. (A. Engelmanni), to the seeds which Mr. Roezl sent me as belonging to a beautiful variety of A. Menziesii. As I lay no claim to infallibility I candidly confess my error, and hope that Mr. André will now be satisfied. Still the two facts I wished to make public in my first article remain in full force—firstly, that the honour of introducing this fine Conifer for the first time belongs to Mr. B. Roezl; and secondly that the seedlings raised from those seeds Mr. Roezl sent home and distributed by me under the name of A. commutata are the very same thing as the plant in Professor Sargent's garden, at least if Mr. Roezl's distinct and repeated statement is to be trusted. *E. Ortgies, Zurich.*

Begonia weltoniensis.—This is one of the most useful plants for conservatory decoration during the spring and early summer with which I am acquainted, its dwarf habit, profusion of soft pink flowers, and elegant dark green foliage affording a little relief from the never-ending glare of Pelargoniums, Calceolarias, &c., which usually occupy such structures at that season of the year. Having been very successful in its growth a few details of my practice may interest some of your readers. After the plants

have done their duty in the conservatory I place them in a house or frame, giving them plenty of light and air until the stems become thoroughly hardened and almost leafless. They are then cut down, and the pots wintered under the stage in an ordinary greenhouse, where they get little or no water until spring. When they commence to grow, which will be about February, I shake them out of their pots, removing nearly all the old soil, and repot in a compost consisting of equal parts loam, fibrous peat, and leaf-mould, with a liberal addition of silver-sand. After potting they are placed in an intermediate house until they show flower, when they are staked out and removed to the conservatory, where they will remain fresh for several months. If grown from cuttings they should be struck as early in spring as procurable (and if wanted for specimens the flowers picked out the first year), repotting when necessary, and subjecting them to the ripening process when the season of growth is over. Under this treatment they will make nice bushy plants from 2 to 3 feet through the following year. *John Wilkes, The Gardens, Park House, Cheadle.*

Reports of Societies.

Royal Horticultural: *July* 17.—Lord Alfred S. Churchill in the chair. Mr. Andrew Murray announced his intention of deviating from the usual practice obtaining at these meetings of noticing all the subjects exhibited himself, by getting gentlemen possessing special knowledge of any particular branch of horticulture to communicate their experiences as occasion required; and in furtherance of this object he called upon Mr. G. F. Wilson to make a few remarks on the Lilies which he exhibited. Mr. Wilson first pointed out a specimen of the old Lilium Martagon album which when seen in perfection, as it usually was in Miss Hope's garden at Wardie Lodge, Edinburgh, was grand indeed, but it usually made a poor show in the neighbourhood of London. Next to come under notice was a large form of the fine white Lilium longifolium, which had been named Wilsoni by Mr. Max Leichtlin; Lilium Krameri was also a striking variety, and it had the great advantage of being grown easily out-of-doors; it was a very free grower, and withstood any ordinary amount of frost, besides being a very beautiful flower. The North American L. pardalinum was remarkable for the endless variety which the flowers exhibited in the shades of its crimson, the reflex of the petals, and the colour of the spots.—Colonel Trevor Clarke stated that he had identified a species of Crinum shown by Messrs. Veitch as C. erubescens, by means of a coloured illustration of that plant in an old volume of the *Botanical Magazine.* Colonel Clarke also commented upon some flowers of a pretty yellow hybrid Begonia, between B. Pearcei and B. cinnabarina, and which is being rapidly propagated at Chiswick for distribution among the Fellows.—Mr. Murray then commented upon other subjects exhibited, and the proceedings terminated.

Scientific Committee.—Rev. M. J. Berkeley, Vice-President, in the chair.—This, the last meeting of the present session, was well attended; a large number of interesting objects were exhibited, while Mr. Murray's paper, printed elsewhere, excited much attention, the discussion upon it being unavoidably postponed. In the meantime a sub-committee was appointed to devise further experiments, and it was understood that every facility for the purpose would be rendered at Chiswick.

Amadou.—Rev. M. J. Berkeley showed a mass of fungus material similar to Amadou, and which had been extracted in lengths of 4 feet and upwards from the cavities in the trunks of Eucalyptus obliqua, at Goulburn, New South Wales. The specimens were sent by Baron von Müller.

Disease of Sugar-cane.—Mr. Jackson, of the Kew Museum, sent specimens of this, which has been alluded to on former occasions, but which is now known to be the work of a peculiar species of Coccus.

Hybrid Elisena.—Colonel Trevor Clarke exhibited flowers of a hybrid raised by him between the two so-called genera Ismene and Elisena. In the genus Ismene the stamens are straight, while in Elisena they are deflexed. Now in the hybrid the three upper filaments were declinate, the three lower ones straight or ascending.

Hybrid Begonias, &c.—Colonel Clarke showed specimens, showing that hybridisation could not be trusted to ensure a definite coloration—thus, × B. weltoniensis, pale pink, was a hybrid between B. Dregei, white, and B. Sutherlandi, orange, but has none of the orange colour of the latter. A second crop of × weltoniensis by Sutherlandi produced scarcely any other result. Colonel Clarke also showed a fruit of the Sikkim Cucumber, figured by us last year, and a cross between this and Telegraph, but the result was not noteworthy.

A New Condition of the Vinegar Plant.—Mr. Worthington Smith stated that in some recent experiments on the action of light he had occasion to prepare the following mixture as a restraining agent (in place of pure acetic acid) for the development of negatives. Sulphuric acid, 3 oz.; granulated zinc, 4 oz.; gelatine, 24 oz; and distilled water, 36 oz.; the whole being boiled in a closed vessel for three and a-half hours. For the purpose of the experiments seventy-five times the bulk of distilled water had to be added at the time of use. Mr. Smith stated that the original mixture permanently retained its transparency, but on the additional amount of distilled water being added the invariable result was that the mixture quickly became turbid and more or less filled with minute feathery bodies. These feathery bodies appeared within twenty-four hours and grew rapidly, at length traversing by long and extremely fine threads every part of the solution. The fungus bore no sort of fruit whilst in the dilute mixture, but on being transferred to syrup it floated on the top of the sugary solution, and immediately formed a film, which was a true Vinegar-plant. On the film being removed from the syrup and allowed to dry it produced Penicillium crustaceum. Mr. Smith exhibited the plants in question in the solutions, showing the different growths.

Pollen of Fuchsia boliviana.—The same gentleman exhibited a drawing of the pollen of this plant, and pointed out the curious fact, that instead of the pollen being triangular, as is common in nearly all the Onagraceæ, in this instance it was oval, and resembled in shape the pollen of Fuchsia procumbens.

Plants, &c., Exhibited.—By Mr. Berkeley, Allium neapolitanum; by Colonel Clarke, Watsonia plantaginea; from Mr. Woodbridge, cut specimens of Cerasus ilicifolius and Stuartia virginica; from Mr. Maw, Lilium polyphyllum (a Sikkim form of Lilium Martagon), Allium narcissiflorum, Linaria villosa, and Dioscorea pyrenaica—the latter a very remarkable plant from its isolated habitat, far away from the other members of the genus; from Mr. Elwes, a form of Roscoea purpurea (?), with the flowers and foliage of the ordinary form, but without the tuberous roots. These differences may, it was suggested, be accounted for by different climatal conditions, and by the circumstance that the plant is sometimes an epiphyte; Calopogon pulchellus, a bog-Orchid from Canada, &c.; from Mr. G. F. Wilson, Tropæolum speciosum, a plant so beautifully grown in Scotland, so seldom seen in England. It was suggested that the roots should be kept moist, and largely manured with pig-dung; from Mr. Hemsley, leaves of Rose affected with Rose Caddis; from Mr. Cannell, sports of Pelargoniums, showing dimorphic condition. These matters being disposed of, Mr. Murray then read his paper (see p. 72).

Floral Committee.—W. B. Kellock, Esq., in the chair. The meetings on this occasion were held in the old quarters—the Council-room, which was conveniently filled with an interesting assortment of plants, cut flowers, and fruits. First-class Certificates were awarded to Messrs. James Veitch & Sons for the new white Hydrangea Thomas Hogg, which has been shown on several previous occasions, and in better condition than it was to-day. Considering the lateness of the season for Hydrangeas in pots the plants were very fresh, proving, so far, its usefulness. To the same firm for Begonias Monarch and Mrs. Charles Scorer, both of the new tuberous rooted section. Monarch has fine dark metallic green foliage, a strong neat habit, and very large, broad, smooth rich scarlet-crimson flowers. The flowers of the dwarfer-habited Mrs. Charles Scorer are of large size and splendid form, the petals being very broad, bluntly rounded, and of a deep crimson colour. To Mr. Mill, gr. to Lord Rendlesham, Rendlesham Hall, Suffolk, for Odontoglossum coronarium miniatum, a miniature form of a very showy species, which we do not remember to have seen before. To Mr. Turner, Slough, for Clove Carnation Mrs. Matthews, a very fine white flower, deliciously scented, and a very free grower. To Mr. Croucher, gr. to J. T. Peacock, Esq., Sudbury House, Hammersmith, for the distinct and very handsome Eagle's Claw Echinocactus (see p. 749, vol. vii.), now provisionally named E. grandicornis. To Mr. B. S. Williams, for Croton Queen Victoria, a bold and striking new form, with leaves over 1 foot in length, and about 2 inches wide, lanceolate, deep metallic green, and heavily blotched and barred with orange and yellow, and flushed with fiery-orange. To Mr. Parker, Tooting, for Lathyrus latifolius splendens, a fine, rosy-purple Sweet Pea. Sir Trevor Lawrence, Bart., M.P. (Mr. Spyers, gr.), received a Cultural Commendation for a very fine plant of Lælia Brysiana (purpurata) with four splendid spikes of flowers. Sir Trevor also sent a fine healthy and well-developed plant of the singular Brassavola Digbyana, with seven very large cream-coloured flowers, the lips of which are very heavily fringed, which was recommended by the Council for a medal. Mr. B. S. Williams also contributed, in addition to the fine Croton Queen Victoria above-mentioned, several new plants, including Lobelia Lilac Queen, a dwarf, very compact, and free-flowering variety of a very pleasing lilac or rosy lilac shade of colour. Messrs. Veitch & Sons also showed several other hybrid Begonias, and a group of the handsome slate-blue Mexican Lisianthus Russellianus; also a species of Crinum (erubescens) from the South Sea Islands, and fine examples of Eulalia japonica zebrina. Mr. J. Pithers, The Gardens, Munster House, Fulham, sent several seedling tuberous-rooted Begonias; and from Messrs. Downie & Laird, of Edinburgh, came a stand of fifty seedling fancy Pansies, remarkable for their size and the richness and variety of their colours. A vote of thanks was awarded. Mr. Turner again sent his new Rose, Penelope Mayo; and Messrs. William Paul & Son, Paul's Nurseries, Waltham Cross, received a vote of thanks for an interesting collection of Roses, either raised at or first sent out from that nursery. G. F. Wilson, Esq., again sent a contribution of cut blooms of various Liliums, including the handsome L. longiflorum. Mr. Wilson also showed a cut spray of the grand old Tropæolum speciosum, grown in the open air in his garden at Weybridge—a vote of thanks was awarded; as also to Messrs. Croucher & Boller, 73, South Row, Kensal New Town, for a group of a dozen and a half plants of the Old Man Cactus, Pilocereus senilis. Messrs Barr & Sugden sent a large and choice assortment of cut Lilies, English Iris, and several varieties of Iris Kæmpferi. Mr. J. Reeves, nurseryman, Acton, sent a grand lot of Balsams, the flowers being of remarkable size, very double, and bright in colour. A very fine specimen, with about one hundred spikes, of Dendrochilum glumaceum, came from Mr. Selwood, gr. to the Duke of Westminster, Eaton Hall, Chester, and was recommended for a medal. A very attractive collection of cut blooms of Zonal Pelargoniums, Verbenas, and Sweet Williams, came from Mr. Cannell, of Swanley, who also contributed a curiosity in the form of a Pelargonium, well named "Half-and-Half," about half of the pips being pure scarlet in colour, and the remainder pink; the latter, besides being totally different in colour, were also dissimilar in the shape and substance of the petals. It would be interesting to know, if this was a seedling, what were the parents, and if a sport, from what variety. Mr. Puttick of Acton also showed a choice group of market plants.

Fruit Committee.—Mr. John Lee in the chair. The most meritorious productions that came under the notice of the committee to-day were half-a-dozen magnificent examples of Vines in pots contributed by Messrs. H. Lane & Son, Berkhampstead, and which were, if anything, finer than any that even these famous growers have shown before. Four of them were Black Hamburgh, and the other two Foster's Seedling; there were about a dozen bunches on each, varying from 1 lb. to 3 lb. in weight, the berries being fine in size, though scarcely finished as to colouring. The Council, on the recommendation of the committee, awarded a Silver Knightian Medal. Mr. Turner, Slough, showed an excellent sample of a promising new Pea named Dandie Dinmont, remarkable for the length of its curved pods and the fine size of the Peas. It is being grown this year at Chiswick, and will, no doubt, be heard of again. Mr. Turner also showed a capital dish of that excellent Potato, The Schoolmaster, grown on a south border. Messrs. James Carter & Co. showed a new Pea named Little Wonder, very dwarf, a great bearer, with the pods large and straight, and the Peas of capital flavour. As a field Pea this must prove a great acquisition. Another very good Pea, named Hardy's Sequel, was shown by Mr. James Hardy, The Seed Grounds, Bures, Suffolk. It grows about 4 feet high, and is very productive, the long pods being also very well filled. Mr. Ollerhead, gr. to Sir Henry Peek, M.P., sent a fine Queen Pine; and Mr. Burnett, gr., The Deepdene, sent two very handsome dishes of Peaches. From Mr. Miles, gr. to Lord Carrington, came a magnificent dish of Bigarreau Napoléon Cherries; and Mr. William Bull contributed a nice brace of Cucumber Excelsior, a rough-skinned and white-spined variety, resembling the Telegraph in form.

The National Carnation and Picotee Society's Southern Show: *July* 18 *and* 19.—The first Southern show of this Society was held on Wednesday and Thursday last in the Royal Aquarium, Westminster, and we are pleased to say that it was an eminently successful one, both as to the numbers staged, and the high quality of the flowers exhibited—a circumstance the more remarkable when we take into consideration that the season has been a most unpropitious one for this flower, and that the dates selected were quite a week too soon for Southern growers, and about three weeks too early to catch the Northern bloom. It was out of the question to expect any flowers from beyond the Trent, and as a matter of fact Northern florists were unrepresented, except in the persons of those redoubtable giants in floriculture, the Rev. F. D. Horner, of Kirkby Malzeard, and Mr. Ben Simonite, of Sheffield, whose presence proved a great source of gratification to

their Southern brother specialists. As regards the exhibition, it may be said that larger ones may, and no doubt have been, held, but it is very doubtful if so much quality has before been brought together. There were five competitors in the class for twenty-four Carnation blooms, not less than twelve dissimilar varieties, and the competition for the premier positions was very close between Mr. James Douglas, gr. to F. Whitburn, Esq., Loxford Hall, Ilford, and Mr. Turner, of Slough—so close, indeed, that the judges placed them equal 1st. The Hon. Sec., Mr. E. S. Dodwell, 11, Chatham Terrace, Larkhall Rise, S.W., was 2d; Mr. John Hines, of Ipswich, 3d; and Mr. S. Bertram, Burgh Mills, Woodbridge, 4th—the flowers from all being smaller than those shown by Mr. Douglas and Mr. Turner, but in all other respects very good indeed, and especially Mr. Dodwell's, which were very correct, and had a charmingly refined appearance. Mr. Turner had splendid blooms of Sybil (Holmes), rose flake; Eccentric Jack (Wood), crimson bizarre; James Douglas (Simonite), purple flake; Mary Ann, rose flake; Ajax (Hextall), purple flake; Duke of Edinburgh (Abercrombie), scarlet bizarre; Merimac (Woods), rose flake; John Bailey (Dodwell), scarlet flake; John Keet (Whitehead), rose flake; Florence Nightingale (Sealey), purple flake; Sportsman, (Heddesley), scarlet flake; Flora's Garland (Brooks), rose flake; Mr. Hextall (Simonite), crimson bizarre; Squire Trow (Jackson), purple flake; Annihilator (Jackson), scarlet flake; and Admiral Curzon (Easom), scarlet bizarre. Mr. Douglas' flowers were The Clipper, scarlet flake; Juno (Baildon), purple flake; Mars (Puxley), scarlet flake; John Keet, Marshal Ney (Headley), crimson bizarre; James Taylor and Sarah Payne (Ward), pink and purple bizarre; Sportsman, Admiral Curzon, Lord Raglan (Bowers), crimson bizarre; John Bailey, Earl of Stamford (Elliott), purple flake; Dreadnought (Daniels), scarlet bizarre; Samuel Newman, J. D. Hextall, James Douglas, Rose of Stapleford, Falconbridge (May), pink and purple bizarre; Rifleman, crimson bizarre; True Briton, scarlet bizarre; Premier (Milwood), purple flake; Mr. Battersby (Gibbons), scarlet flake; and Lovely Ann (Ely), rose flake. In the class for twelve dissimilar varieties Mr. Douglas was again awarded the 1st prize; Mr. E. S. Dodwell being again a good 2d, Mr. John Hines 3d, Mr. S. Bertram 4th; Mr. John Buxton, 321, Wandsworth Road, S.W.; 5th, and Mr. H. Catley, Bath, 6th. Mr. Douglas was here also in fine form with John Keet, James Douglas, The Clipper, Mary Ann (Holmes), purple flake; Marshall Ney, True Briton, Rifleman, Satisfaction, Admiral Curzon, J. D. Hextall, Premier and Sportsman. The three prizes in the smaller class for six went in the following order—to Mr. Arthur Medhurst, 32, Priory Road, Wandsworth Road; Mr. William Ellis, Wandsworth Road; and Dr. Abercrombie, of Cheltenham. In the 1st prize stand the flowers shown were James Douglas, Mars (Hextall), scarlet bizarre; John Bailey, John Keet, Admiral Curzon, and J. D. Hextall (Simonite). This which should have been the largest class in the show, was, strange to say, the poorest as regards numbers. The competition was very good in the class for single specimens of the various types, and the following awards were made:—Scarlet bizarres: Mr. Douglas 1st and 2d with Admiral Curzon, and 3d with Campanini (Turner); Mr. J. Hine 4th, with Lord Ranclife (Halliday), and Mr. Douglas 5th, with another bloom of Admiral Curzon. Crimson bizarres: Mr. Turner 1st, with Unexpected, and 2d with Mr. Hextall (Turner); Mr. Douglas 3d, with Marshal Ney, 4th with J. D. Hextall, and 5th with Graceless Tom (Wood). Pink and purple bizarres: Mr. Turner, 1st, 2d and 4th with James Taylor, and 3d and 5th with Sarah Payne. Purple flake: Mr. Turner 1st, with True Blue (Taylor), and 2d with James Douglas; Mr. John Hines, 3d, with Mayor of Nottingham (Taylor); Mr. Turner 4th, with James Douglas, and 5th with Ascendant (May). Scarlet, flakes: Mr. Turner 1st, with Sportsman; Mr. Douglas 2d and 3d, with the same fine variety; and Mr. Turner 4th and 5th, with Annihilator. Rose flakes: Mr. Turner 1st, 2d, and 3d, with Sybil (Holmes), 4th with Mary Ann, and 5th with John Keet. The premier Carnation in the show was a lovely flower of Holmes' Sybil, shown by Mr. Turner.

Picotees were equally as well shown as Carnations, both as to numbers and quality, and nearly the same growers competed in the several classes. In the leading class for two dozen blooms Mr. James Douglas had no rival to share the honour of being 1st, though Mr. Turner was a very close 2d, Mr. E. S. Dodwell being a good 3d, and Mr. T. S. Ware, Tottenham, 4th. Mr. Douglas' flowers were grand in every respect, and so indeed were Mr. Turner's, which were, however, a trifle smaller than the amateurs'. The varieties shown by Mr. Douglas were Princess of Wales (Fellowes), red-edged; Mrs. Bower (Bower), red-edged; Mrs. Allcroft (Turner), rose-edged; Picco (Jackson), heavy purple-edged; Obadiah (Kirtland), heavy scarlet-edged; Mary (Simonite), light purple-edged; John Smith) heavy red-edged; Edith D'Ombrain (Turner), heavy rose-edged; Prima Donna, purple-edged; Ann Lord (Lord), light purple-edged; Miss Small (Fellowes), heavy red-edged; Mrs. May, Mrs. Little (Hooper), light purple-edged; Lord Valentia (Kirtland), heavy red-edged; Ethel (Fellowes), medium rose-edged; Ganymede and Juliana (Turner), heavy-edged scarlet. Mr. Douglas also came in 1st with twelve, showing splendid blooms of John Smith, Mrs. Allcroft, Mrs. May, Mrs. Bower, Ann Lord, Picco, Mrs. Summers (Simonite), heavy purple-edged; Juliana and Mary. Mr. E S. Dodwell was a good 2d, Mr. J. Buxton 3d, Mr. S. Bertram 4th, Dr. Abercrombie 5th, and Mr. John Hines 6th. In the class for six the highest award went to Mr. Arthur Medhurst, who had medium-sized but very refined blooms of Leonora (Fellowes), heavy red-edged; Juliana, Mrs. Niven (Marris), heavy purple edged; Clara, red edged; Alice (Lord), light-edged purple, and J. B. Bryant (Ingram), heavy red-edged. Mr. William Ellis, Wandsworth Road, came in 2d; and Mr. Gibson, gr. to T. F. Burnaby Atkins, Esq., Sevenoaks, 3d. The single specimen classes were here also well represented, and the prizes were awarded in the following order:—Red, heavy-edged: 1st, Mr. S. Bertram, with Colonel Clark (Norman); 2d, Mr. Douglas, with Princess of Wales; 3d, Mr. Turner; and 4th, Mr. John Hines, with the same variety; and 5th, Mr. Turner, with the Rev. F. D. Horner (Fellowes). Only one light red-edged variety was shown, *i.e.*, Thomas William (Cloudy), shown by Mr. Turner. Purple, heavy-edged: Mr. Turner 1st with Leah, and 4th with Cynthia (Turner), light-edged usually, but medium in this instance; and Mr. Douglas 2d and 5th with Chanticleer (Fellowes), and 3d with Mrs. May. Purple, light-edged: 1st and 3d, Mr. Douglas with Mary; Mr. Turner 2d with Cynthia—very correct here; 4th with Mrs. Harland, and 5th with Alice (Lord). Rose or scarlet, heavy-edged: Mr. Douglas 1st with Mrs. Allcroft, and 2d with Ethel; 3d, Mr. Turner, with Miss Wood, 4th with Mrs. Allcroft, and 5th with Miss Wood. The premier Picotee was John Smith, a very fine heavy red-edged flower, shown in Mr. Douglas' stand of twenty-four.

Several varieties were shown for certificates, but these were only awarded to two, viz. Lady Louisa (Abercrombie), a pretty heavy-edged light rose flower, and Clove Carnation Mrs. Matthews (Matthews), pure white, very sweet, and a rare grower. Both of these were shown by Mr. Turner. Yellow-ground Picotees were very poorly represented, and concerning them it need only be said that the prizes went to Mr. T. S. Ware, Mr. H. Catley, and Mr. Henry Hooper. A fine lot of blooms were shown in the miscellaneous classes for selfs or Fancies, for the most part "good flowers gone wrong" in the matter of colour, but very showy for all that. The awards for twenty-four blooms went to Mr. Turner, Mr. Douglas, and Mr. Buxton; and for twelve to Mr. Turner, Mr. Dodwell, and Mr. Hooper, of Bath.

A Rose Show, but not the show of the season, was held in conjunction with the above, the prizes being offered by the Royal Aquarium Company. In the way of comments or details we need say but little, the display being only of moderate dimensions, and, owing to the lateness of the period, and the late heavy rains, there was a great lack of quality. The Hereford growers had, on the whole, the best of the competitions, the three highest prizes offered going to that city. With forty-eight single trusses Messrs. Cranston & Co. were well 1st, Mr. B. R. Cant, of Colchester, coming in 2d, and Messrs. Paul & Son, Cheshunt, 3d. Mr. Keynes, Mr. Turner, and Mr. Bennet, of Stapleford, also competed, but at a manifest disadvantage. Messrs. Cranston & Co. were also 1st for twenty-four trios, Mr. Turner being 2d here, and Mr. Cant 3d. Mr. W. Corp, of Oxford, was the most successful competitor in the next two classes, taking 1st prizes for twenty-four and twelve respectively, Messrs. Cranston & Co. coming in 2d, and Mr. H. Bennett 3d in the first-mentioned class; and Mr. Turner and Mr. Bennett in the latter. The leading amateur exhibitors were Mr. Jowitt, of the Old Weir, Hereford; and Mr. R. N. G. Baker, of Heavitree, Exeter—the first-named gentleman being 1st for twenty-four singles, and Mr. Baker occupying the same honourable position for eighteen distinct single trusses. For twelve distinct varieties, three trusses of each, the Rev. E. N. Pochin, of Leicester, was 1st. Mr. B. R. Cant sent the finest stand of a dozen Teas or Noisettes, and in a class for six blooms of any variety of Tea or Noisette Rose, Mr. J. Tranter came in 1st with some rich golden-yellow coloured Maréchal Niels, while in a corresponding class for Hybrid Perpetuals Mr. Cant was 1st with Alfred Colomb.

Amongst the miscellaneous contributions to the show were a fine group of Lilium auratum and a large collection of showy Verbenas from Mr. Turner, a large collection of Carnations and Picotees and Pansies from Mr. Ware, of Tottenham; a fine stand of cut Verbenas from Mr. Cannell, of Swanley; and a basket of plants of the charming Mauve Beauty Stock from Mr. Richard Dean, of Ealing. Messrs. H. Lane & Son, of Berkhampstead, also showed the same half-dozen pot Vines exhibited by them on the previous day at South Kensington, and we need scarcely say that they proved a great source of attraction.

Ludlow Rose Show.—Seven-gated Ludlow has distinguished herself once more in the annals of history—she has held a Rose show all to herself. What a picturesque town it is! Crowned by the most perfect palatial ruin in England her streets creep terrace upon terrace up the wooded hill which rises abruptly from the bed of the River Teme. Within walls, over which of yore floated the banners of victorious Stephen—where the Edwards, Henry VIII, and Elizabeth held court—where Prince Arthur (at all events an important part of him) lies buried—the modern archers of the Teme celebrate their innocent orgies, and return-ticketers sow broadcast shells of the wonted hard-boiled egg.

In 1460, while the Wars of the Roses were raging, Ludlow was the *rendezvous* of the Yorkists, and it was at a distance of only a few miles that Pembroke fought his losing Battle of Mortimer's Cross. In memory of these battles the pretty little prenestine Rose (Prænestina variegata), so well known by its scarlet streaks, was named York and Lancaster, combining as it does the red and white, their distinctive fancies. Who knows that it was not introduced in the button-hole of one of the "choice body of veterans from Calais," who were brought over by the Earl of Warwick and quartered within these seven gates? Peace to their ashes! And what would say the modern disciples of bones, nitrate of soda, guano, soot, and the like, to the instructions given 120 years ago in *Eden, or the Compleat Gardener*, for the proper cultivation of this and that other miraculous variety, the "double red?" I give them: "No compost is needed for them, as common garden mould perfectly answers the purpose."

Later on her beauties will adorn the portfolios and walls of many a high-art collection, as long as water-colour shall endure by Varley, David Cox, Leitch—in short by every artist whose good genius has guided him and his easel within sight of Ludlow Castle. But a modern war of the Roses has been fought. A small faction (now, we hope, defunct) arrayed itself against the promoters of this Rose *gala*. Did they forget that Roses, though certainly during that short period do reign supreme, usurp only one fortnight? Are not the remaining fifty weeks of the year enough for the other branches of horticulture? Oh, monster of the green eye, it is not the first time you have dallied with an emblem the purity of which should have placed it beyond your venom!—for is it not written anent "Lord Thomas and the faire Annett,"

> "He had a Rose into his hand,
> He gave it kisses-three,
> And, reaching by his nut-brown bride,
> Laid it on Annett's knee."

(N.B.—The "nut-brown bride" is discovered hanging over the fair Annett holding a dagger at point, fully a foot long, but she was none the worse for it.) However, pluck, and the ably directed energies of a lady who lives not 100 miles from Ashford Hall won the fight, and the trysting tree was declared to be the Assembly Rooms, on July 12, 1877.

Next year (for this is to be an annual event) the committee would do well to adopt the card-trick of the National, for I heard an exhibitor say that the jam on the double entry label was not honey to the lip; moreover, it was the cause of a block at the narrowest part of the approach.

The general management and ubiquity of the officers in charge was beyond praise, and could not have been excelled had they been the most practised veterans, for which exhibitors were very grateful—it matters much.

Of novelty *quâ* Rose there was none. Among the nurserymen—whose boxes were judged by the Rev. C. H. Bulmer, Mr. J. H. Arkwright, and Mr. T. Jowitt—Lee, of Lyonshall, took three 1sts, with fresh and well set up flowers; Cranston, Griffiths, and F. A. Dickson, of Chester, taking the 2ds and 3ds. Such a disposition of prizes reminds one of the old rhyme, slightly altered—

> "To teach his foreman Roses his leisure he'd employ
> Until at last the old man was beaten by the boy."

Lee and Griffiths are both sports from Cranston (I do not the least detract from their high merit), but the fact is that Mr. Cranston was exhibiting at Clifton and a third place on the same day. But what a dodo to be in three places at once! He always goes on with a good sport at any risk.

Among the amateurs (open), Mr. Jowitt was 1st for thirty-six and twelve, and Mr. J. H. Arkwright for twenty-four and twelve Maréchal Niels; Miss Tarratt and Rev. C. H. Bulmer taking the 2ds and 3ds. The prizes for local amateurs were taken by Mr. Berrington, Mr. Keddie, and Miss Hall. It will take another year to bring cottagers to the scratch. Mr. Arkwright sent an interesting collection of twenty-four varieties of real old ones (half-a-handful

of each)—Persian yellow, with the straw-coloured and pink Briers in centre, supported by Bourbon Noisette, Provence, Moss, Damask, and Boursault; but to name them, who could do it, unless perchance Mr. Curtis? The absence of prizes for trebles induced several to stage their spare Roses with good effect.

The Bay-leaf for floral decoration incited but few to action, but to see Miss Evans' lovely vase was worth a journey — simplicity, grace, and treatment of tone were throughout predominant. Yes, simplicity can be predominant. Once an enthusiastic amateur went to a celebrated artist (say Frederick Tayler), and thus he spake: "Give me lessons; I don't want much, only just to make a sketch with a few lines, as you do." Quoth the great man: "Go home again; this result is from the laborious study of forty years." The art is one of leaving out lines, not of cramming them in; but every stroke must be in its right place. Is is not so also of the decoration of a vase? Materials, flowers, foliage, glass were all there, but with that one exception all I saw was either a crude formality or a simple bit of haymaking. Yes, there was one other—a leaning tower of Pisa, a toss-up whether the centre of gravity fell within or without the vase.

I have heard since that the practice of detaining Roses obtained at the close of the show. For reasons which I need not give, this must not be. In Edward IV.'s time the privilege of trying and executing culprits within herself was granted to Ludlow. Rose stealers beware!—this faculty may be revived.

But you are yawning. Ludlow has stuck one more feather in her cap. *Corvesdale.*

Royal Caledonian Horticultural: The Rose competition and summer flower show of this Society took place on Wednesday, July 11, in the Music Hall, Edinburgh. In the Rose competition the number of entries was greatly restricted to what was expected, on account of many of the nurserymen and gardeners having no blooms in a sufficiently advanced state. If all outdoor flowers were deficient in numbers, the display of those raised under glass was far above average merit and very attractive. Of ornamental foliage plants and Palms there was an excellent exhibit. The Fuchsias were well-grown and in capital condition, but the Pelargoniums were hardly up to the mark. The Cape Heaths were exceptionally fine. Mr. Walker, of Lanark, showed some dainty Orchids, including Odontoglossum Alexandræ, Dendrobium nobile, and Phalænopsis Luddemanniana, the latter with over twenty flowers. The collections of Ferns was one of the features of the exhibition, and seldom before has so uniformly fine a lot of this favourite plant been got together at a Caledonian show. The cup given by the Lawson Seed and Nursery Company for the best six exotics fell to Mr. James Green, gr. at Murrayfield, with the following six varieties:—Todea superba, T. intermedia, and the Adiantums cardiochlæna, assimile, gracillimum, and pedatum.

In the Rose competition the well-known name of Hugh Dickson, of the Belmont Nursery, Belfast, once more headed the list of honours. On this occasion he had fewer rivals than formerly to contend against—the only other nurserymen who tried conclusions with him being Messrs. Robertson & Galloway, Glasgow, and Mr. Thomas Smith, Stranraer. Mr. Dickson's prize Roses sustained the high reputation of the Belmont Nursery. The gem of the collection was undoubtedly Beauty of Waltham, with large and well-disposed petals of rare merit. Others, however, were not far behind it, among which may be noted Camille Bernardin, the Duke of Edinburgh, La France, Le Havre, and Etienne Levet. Messrs. Robertson & Galloway's lot was also exceedingly good. To Mr. Smith, Stranraer, who, by the way, was not in time to have his entries scheduled, the judges made an extra award for a lot of twenty-four Roses which were in every way deserving of the honour accorded to them. In the gardeners' and amateurs' class Mr. Parlane came to the front with an excellent two dozen from the gardens at Golfhill. One or two looked nearly as good as some in the Belfast cases, such as La France, Dupuy Jamin, and the Duke of Edinburgh. The fragrant Tea Roses were a very choice array—one bloom, named Rubens, in the case of Mr. M'Culloch, Phantasie, being in its way a perfect beauty.

The fruit shown was not plentiful but was of excellent quality, though many of the Grapes were far from ripe. Mr. Johnston, Glamis, again asserted his superiority as a grower in this department, his collection being first-class. To Mr. M'Connachie was deservedly awarded the 1st prizes for Hamburgh and Muscat Grapes, both being ripe and beautifully finished. The plate of Peaches from Whitehall which took 1st also deserves a word of notice. There were comparatively few exhibits of vegetables. As usual, several of the nurserymen of the city contributed greatly to the adornment of the hall by sending exhibition plants from their greenhouses. The orchestra and the front table were mainly occupied by the Lawson Seed and Nursery Company, with a goodly collection of Palms and other ornamental plants. Messrs. Dickson & Co., Waterloo Place, were strong in fancy Pansies and Violas; Messrs. Methven, Princes Street, had a somewhat miscellaneous assortment of plants in pots and cases, conspicuous among which was a collection of Iris; while Messrs. Downie & Laird exhibited some fine Pansies, Violas, and Pelargoniums. First-class Certificates were given to Messrs. Dickson & Co. for their white bedding Viola Nonpareil, for the show Pansies Pilrig Beauty and Mrs. Thomson, and for the following fancy Pansies:—Mrs. Cree, Mrs. Ingram, William Blackwood, and Louisa Milne. Messrs. Downie & Laird also obtained a First-class Certificate for the undernoted fancy Pansies:—Mrs. Currie, Mrs. Jamieson, Mrs. Stevenson, Mrs. Wolfe Murray, Lady Scudamore Stanhope, Lady Hay, and Miss Hay. *Scotsman.*

Wanstead and Leytonstone Floricultural: *July* 5.—This Society held its eleventh annual exhibition in the grounds of J. Biggs, Esq., Oak Hall, Wanstead, and speaking by comparison with its predecessors it well maintained its position in all respects save vegetables, which have been but very indifferently shown in any part of Essex this season. The chief classes for plants were well contested. Alderman Finnis (Mr. Simmons, gr.), having been very successful with stove and greenhouse plants, Fuchsias, Tricolor Pelargoniums, Gloxinias, Achimenes, and vegetables, &c. For fine-foliage plants, for which the heaviest prizes in the show were offered, S. Ellis, Esq. (G. Hay, gr.), was 1st, with large showy examples. The class for six Coleus was warmly contested, the highest award being carried away by J. Harrold, Esq. (W. Knott, gr.), Duke of Edinburgh being very conspicuous amongst them. Splendid examples of Lycopodiums came from W. Fowler, Esq. (Mr. Monk, gr.), some of which, even L. apoda, were 2 feet in diameter, and perfect examples of cultural skill—the same exhibitor being 1st with Hydrangeas, specimen Ferns, Crotons, bouquets, &c. Some very fine examples of Carnation Souvenir de la Malmaison were shown by A. Geere, Esq. (Mr. Frost, gr.), which proved quite a feature at the exhibition. Amongst amateurs Mr. Abbott had some excellent Ferns. In the classes for cut Roses Mr. Bristow, Little Blake Hall, proved a worthy exhibitor, distancing his competitors.

Perhaps one of the best filled and contested classes consisted of that "open to all," wherein a group of fifteen plants, flower and foliage, to be arranged for effect and quality, were asked. The chief prize fell to Mr. Monk, gr., as above. We were pleased to see at this end of the tent, a well flowered specimen of the pretty Asclepias curassavica. The best "design of a flower garden, size 5 feet by 3 feet," was contributed by Mr. Windebank.

An admirable collection of wild flowers was staged by the Misses Loscombe and G. A. Stable, both the Latin and English names very legibly written being attached to each specimen. We were gratified to see amongst them the lovely old flowering Rush, Butomus umbellatus, and to be assured by a reverend gentleman present that this fine old British plant really exists in the neighbourhood. The single vase for a drawing-room table, by Miss Biggs, worthily took the 1st prize—that for dinner-table decoration, put up by Miss Bland, taking a similar award. Perhaps the finest six pots of Strawberries we ever saw staged were those shown by R. R. Cotton, Esq. (J. Beadle, gr.), whether for size of fruit, their abundance, or the immense foliage and robustness generally;—they were exceedingly fine. Fruits were fairly well shown—J. Biggs, Esq., Oak Hall (J. Cassell, gr.), being 1st with Black Grapes; Mr. G. Hutchinson (Mr. Thurgood, gr.) staged splendid crimson Queen Strawberries, the Peaches of G. Wilkinson, Esq. (Mr. Sayers, gr.), being as good Royal Georges as any we recollect to have previously seen staged. *W. E.*

Newcastle Botanical and Horticultural: *July* 11 *and* 12.—The great summer show of this Society was held in the Leazes Park, a portion of the Town Moor, and a more beautiful spot for a flower-show cannot well be found, more especially when the weather is favourable. The ground most suited to the show lies high and much exposed to winds—a matter of great importance in selecting tents for the purpose; in this respect the committee seemed equal to the occasion. The first sight would impress one of a huge winter-garden, or a large tent covered in with span or ridge-and-furrow roofing. The larger specimens were arranged on tables near the ground, whilst others for cut flowers and fruit were fixed at suitable heights, in some cases a little too high—a defect easily remedied another year. Although the Newcastle show has had some good meetings and caused great excitement in the North, on this occasion it has even surpassed itself, and this to a certain extent is the result of issuing a liberal schedule—in fact I think it safe in saying that it contained more special prizes than any other schedule issued. There is another important feature here that it would be well for other societies to imitate—that is, to secure sufficient funds by subscription to cover the expense of the show: a capital plan of providing against a rainy day.

Unfortunately for the local exhibitors the leading prizes were taken by distant exhibitors. The 1st prize for six stove and greenhouse plants, £10, went to Mr. Tudgey, gr. to T. F. G. Williams, Esq., Henwick Grange, Worcester, with splendid plants of Anthurium Scherzerianum, Genetyllis tulipifera, and others equally fine; 2d, to Mr. T. Wilson, Normanby Hall, Middlesborough: in this collection were some fine Ixoras and Allamandas, well grown and splendidly flowered. Mr. Moult, gr. to Lord Ravensworth, showed a splendid plant of Ixora Williamsii in his collection: this proves to be the best Ixora in cultivation. The class for three flowering plants were much of the same character as the six, the 1st going to Mr. Sleighthole, Armley, near Leeds, who had one of the best flowered Stephanotis floribunda seen this season. The ornamental-foliage plants were numerous and exceedingly fine, the 1st prize going to Mr. Tudgey, with well grown specimens; 2d to Mr. Noble, gr. to J. Fry, Esq., Darlington. In this collection was the finest plant of Croton Johannis that we have seen, well coloured. This will make a splendid exhibition Croton.

The class for six Ferns brought several exhibitors—Mr. Tudgey 1st, with six neat-grown plants of Gleichenias, Adiantum gracillimum; Mr. Noble 2d, Mr. Thompson 3d. The class for three Ferns were nice, well-grown plants, and a number of competitors. The class for three Ericas was only middling, the 1st and 2d going to Mr. Tudgey. Show Pelargoniums were very fine, Mr. King, of Bedale, taking 1st, 2d, and 3d in the same class. This is a matter that has happened in other classes, and would seem worth the attention of the committee. There were also some nice collections of Zonal Pelargoniums shown. For six Coleus in 6-inch pots there were sixteen exhibitors, one of the most difficult classes the judges had to deal with. Mr. Moult 1st, Mr. Sherwin 2d, Mr. Stockeley 3d. Lilium auratum, two pots, 1st to Mr. Sleightholm, of Leeds, were gigantic plants, at least 8 feet high and well-flowered. Dinner-table plants brought sixteen competitors. This is a class of plants worthy of encouragement, as it forms a very interesting feature in a flower show, and it also provides a useful plant for home decoration. Cut flowers (forty-eight Roses), brought ten exhibitors, and of note, from a distance—the finest lot ever exhibited in Newcastle: Mr. Turner, of the Royal Nurseries, Slough, had the honour of taking the 1st prize; Messrs. Davidson & Co., Hereford, 2d; Messrs. Cranston & Co., Hereford, 3d. Class 19, thirty-six Roses: Messrs. Cranston & Co. 1st, Mr. Turner 2d, Messrs. Davidson & Co. 3d. Class 20, twenty-four Roses: Messrs. Cranston & Co. 1st, Mr. Turner 2d, Messrs. Davidson & Co. 3d. There were many other classes of Roses, which were shown in excellent condition, and formed a very important feature of the show.

Table Decorations.—The 1st prize in this class was a magnificent cup offered by the President, Major Wood, worth 25 guineas. This was taken by Mr. Thompson, gr., South Hill, Chester-le-Street. This was decided by all the judges present to be the best they have ever seen, and more especially the arrangement of the epergnes for the centre. The other prizes taken—2d, Mr. Gellenden; 3d, Mr. Sanderson; 4th, Mr. Methven; 5th, Mr. Edmondson. These were all put up in a creditable manner, and altogether commanded considerable admiration.

Fruit.—This was on rather a limited scale, but the quality in most cases was good. For the best Pine-apple, Mr. H. C. Letts, gr. to Earl Zetland, Upleatham, was 1st; Mr. Noble, of Darlington, 2d. Two bunches of white Grapes: Mr. Moult 1st, Mr. James Mann 2d, Mr. Hutchinson 3d. Two bunches black Grapes: Mr. Hutchinson 1st, Mr. Simpson 2d, Mr. Mann 3d. Peaches and Nectarines were in limited quantities, but the prizes for fruit were not such as to command a large show.—In the amateur's class there were some excellent plants shown, far above the average that we generally meet with.—A large circular tent was principally filled with miscellaneous collections from the trade, the one from Mr. B. S. Williams occupying the greater part of the centre, staged with some beautiful specimens of his new and rare plants, including Croton Queen Victoria, Adiantum palmatum, Panax laciniatum, and altogether the most choice and attractive group ever shown in Newcastle. Mr. Watson, Mr. Thompson, Mr. S. Nain, Mr. Charlton, Stewart & Mein, all exhibited large collections, which added very much to the interest of the show. (*From a Correspondent.*)

Obituary.

The death is announced of Mr. Peter Drummond, of the well-known firm of Messrs. William Drummond & Sons, seedsmen, Stirling. Mr. Drummond died at Edinburgh, at the age of seventy-eight.

STATE OF THE WEATHER AT BLACKHEATH, LONDON.
FOR THE WEEK ENDING WEDNESDAY, JULY 18, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
July	In.	In.	°	°	°	°	°				In.
12	29.74	—0.08	76.5	53.1	23.4	62.8	+ 0.4	52.1	68	WNW; WSW	0.00
13	29.58	—0.24	75.0	53.7	21.3	62.2	— 0.3	50.3	65	S.W. Calm	0.00
14	29.24	—0.58	69.3	59.4	9.9	62.7	+ 0.1	57.7	85	S.S.W.	0.34
15	29.12	—0.70	65.5	57.0	8.5	59.3	— 3.4	51.9	77	S.W.; S.S.W.	0.10
16	29.18	—0.63	61.0	54.7	6.3	57.0	— 5.7	52.6	85	S.S.W.; S.	0.64
17	29.42	—0.39	62.0	54.3	7.7	57.1	— 5.6	51.1	80	S.S.W.	0.08
18	29.70	—0.11	69.5	51.7	17.8	58.8	— 3.8	45.2	61	WSW	0.00
Mean	29.43	—0.39	68.4	54.8	13.6	60.0	— 2.6	51.6	74	S.W.	sum 1.16

July 12.—A very fine warm day. Partially cloudy.
— 13.—A fine day, warm and cloudy. Few drops of rain at 11 P.M.
— 14.—Dull and showery, fine at times. Cool day.
— 15.—Generally fine, but frequently dull and showery.
— 16.—A dull miserable wet day. Cool. The rain fell very heavily at night.
— 17.—Overcast and dull till evening. Then fine. Clear at night. Rain fell in early morning, and from 5 to 7 P.M.
— 18.—A fine day. Partially cloudy. Cool.

LONDON: *Barometer.*—During the week ending Saturday, July 14, in the vicinity of London, the reading of the barometer at the level of the sea increased from 30.19 inches at the beginning of the week to 30.32 inches by the morning of the 9th, and steadily decreased to 29.29 inches by the end of the week. The mean reading for the week at sea level was 30 inches, being the same as that of the previous week, and 0.02 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 77¼° on the 10th to 60½° on the 8th; the mean value for the week was 71½°. The lowest temperatures of the air observed by night varied from 45¼° on the 8th to 59½° on the 14th; the mean for the week was 52½°. The mean daily range of temperature in the week was 19°, the least range in the day was 10°, on the 14th, and the greatest 24¼°, on the 10th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—8th, 51°.9, −10°.1; 9th, 57°.2, −4°.9; 10th, 63°.8, +1°.6; 11th, 61°.8, −0°.5; 12th, 62°.8, +0°.4; 13th, 62°.2, −0°.3; 14th, 62°.7, +0°.1. The mean temperature of the air for the week was 60°.3, being 2° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 151¼° on the 10th, 143¼° on the 12th, 139° on the 13th, and 127¼° on the 11th; on the 9th the reading did not rise above 106°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 35¾° on the 8th, 39¼° on the 9th, and 40¼° on the 13th; the mean of the seven low values was 43¼°.

Wind.—The direction of the wind was S.W., and its strength brisk. The weather during the week was for the most part fine and cool, though the sky was generally cloudy.

Rain fell on two days during the week; the amount collected was 0.40 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 79¼° at Norwich, 77¾° at Cambridge, 77½° at Blackheath, and 77° at Nottingham; at Liverpool and Bradford 66¼° was the highest temperature. The mean value from all stations was 72¼°. The lowest temperatures of the air observed by night were 40¼° at Nottingham, 42¼° at Bristol and Eccles, and 43° at Hull; at Liverpool 53¾° was the lowest temperature: the general mean from all stations was 45°. The range of temperature in the week was the greatest at Nottingham, 36½°, and the least at Liverpool, 12½°. The mean range of temperature from all stations was 27½°.

The mean of the seven high day temperatures of the air was the highest at Cambridge, 73¾°, and the lowest at Liverpool and Bradford, both 63½°; the mean from all stations was 68¼°. The mean of the seven low night temperatures of the air was the lowest at Truro, 49°, and the highest at Liverpool, 55½°; the mean value from all stations was 52½°. The mean daily range of temperature in the week was the least at Liverpool, 8°, and the greatest at Cambridge, 22°; the mean daily range from all stations was 15¾°.

The mean temperature of the air for the week from all stations was 58½°, being 3½° lower than the value for the corresponding week in 1876. The highest value was 61°, at Norwich and Cambridge, and the lowest 56¼°, at Truro, Eccles, and Bradford.

Rain.—The amounts of rain measured at the several stations varied from 2¼ inches at Wolverhampton and Manchester (2 inches of which was measured on Saturday at each place), to one-tenth of an inch at Norwich and Bradford, at Portsmouth two-hundredths of an inch only was measured. The fall of rain on Saturday, July 14, at some places was very heavy, 1¼ inch fell at Liverpool, 1½ inch at Eccles, 1 inch at Sheffield, and eight-tenths of an inch at Brighton, Bristol, and Hull, whilst at Portsmouth, Bradford, Norwich and Sunderland no rain fell. The average fall over the country was nine-tenths of an inch nearly. The weather during the week was generally fine, though the sky was for the most part cloudy.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 72¼° at Aberdeen to 62½° at Greenock; the mean value from all stations was 67¼°. The lowest temperatures of the air ranged between 42½° at Aberdeen and 49½° at Edinburgh; the general mean from all stations was 45¾°. The mean range of temperature in the week from all stations was 21½°.

The mean temperature of the air for the week from all stations was 57°, being 2¼° lower than the value for the corresponding week in 1876. The highest was 58½°, at Edinburgh, Dundee, and Aberdeen, and the lowest 55°, at Paisley.

Rain.—The amounts of rain varied from 1½ inch at Greenock, 1¼ inch at Dundee, and 1 inch at Glasgow and Edinburgh, to one-quarter of an inch at Aberdeen; the average fall over the country was nine-tenths of an inch.

DUBLIN.—The highest temperature of the air was 72½°, the lowest 51¾°, the range 20¾°, the mean 60¾°, and the fall of rain 1¼ inch.

Erratum.—At p. 58, col. 2, July 14, in "Meteorological Observations for June," the mean amount of cloud should be 4.2.

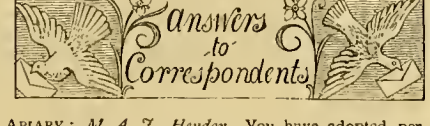
JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

195. The subjoined questions would be better referred to some local solicitor, but as some of our correspondents may be able to give their personal experience we print the questions. It will be seen that they refer to matters of great importance to horticulturists. Complaints frequently reach us as to the uncertainty of the law, or perhaps of its administration, and on all accounts it is most desirable that some authoritative settlement should be arrived:—1. "Having purchased some land for a nursery and being now erecting greenhouses on it, I wish to know if they are not exempt from the supervision and control of the Local Board in the form and materials used in their construction, as they are away from other property? 2. Are not all horticultural erections considered stock-in-trade, and not rateable?" *J. W. Williams.*

196. ANTS.—Would some of your readers oblige me as to the best means of ridding a meadow of ants? The soil is clay, and I have dug them out every winter for years, but to very little purpose, as they seem as strong as ever. *A Constant Reader.*



APIARY: *M. A. J., Hendon.* You have adopted, perhaps unconsciously, the nadir system with your bees. It is difficult to state which hive the queen will have made her home, although she will probably in your case be discovered in the under hive. We should advise you to take the bottom hive away about the first week of August. First smoke them thoroughly with old fustian, then, without losing time, turn the bottom hive on the top of a pail; at the same time carefully lift the upper hive on the top of it, tying a tablecloth in the centre, so as to keep in the bees; then gently drum, or beat the under hive with both hands; in about a quarter of an hour the whole of the bees will have ascended to the old hive. This may now be lifted on the old stand. This operation of driving should be performed on a very fine and warm day about noon; if it is done carefully you will not sacrifice the life of a single bee, and you will also be secure of the queen. If the old hive is worthless or decayed drive them into the lower hive; in this case you will find very little honey. If you find any difficulty write us again at once.

BOOKS; *T. G. H.* We know of no book specially devoted to the subject.

CUCUMBERS: *R. S. W.* T. The appearance is not like the disease, but is rather suggestive of debility. As they were growing so vigorously, possibly you have not kept up the feeding.

FUCHSIA: *C. Turner.* Mr. Bland's Champion of the World is an enormous flower, and evidently, from the foliage, of vigorous growth also. The leaves sent were 4 inches long by 2½ inches broad; and the flower (red and purple, double) 3 inches across the expanded sepals, which are over ¾ inch broad, and 2½ inches across the densely double corolla. For a conservatory, where it could be grown to large size, it would be a telling variety, but is too coarse for pot-culture.

GRAPES: *Subscriber.* The berries are badly scalded; the sun must have caught them damp, or else they have been deprived of the shade of the foliage. The variety is very subject to this affection.

INSECTS; *A Sufferer.* The leaves are being devoured or skeletonised by the Rose-leaf Saw-fly. You can do nothing but pick them off and burn them, or kill them between the finger and thumb.—*J. Mullings.* Crioceris Asparagi, the Asparagus beetle. It belongs, as your intelligent correspondent surmises, to the same family as the Colorado beetle. No cure known on the small scale except careful hand-picking and knocking off the larvæ into an open umbrella held reversed below them, and then destroying those that are taken. *A. M.*—*J. Webster.* The Lime-leaf nail-gall produced by a small mite called Phytoptus tiliarum. Not common. *A. M.*—*A Subscriber, Reading,* sends us three beetles, which were found clinging to the inside of a barrel received from New York last April, and which he thinks may "probably be a species of Colorado beetle." They are no such thing—only common black beetles!—*C. B.* This is the Pear tree slug (Tenthredo adumbrata)—a saw-fly that does considerable mischief to the fruit by destroying the cuticle and parenchyma of the upper surface of the leaf whenever it is present in large numbers. *A. M.*

INSECT IN BEE-HOUSE: *A. F.* Osmia parietina—a wild bee whose nest is often found in locks and other out-of-way places. It does no harm to hives so far as we know. *A. M.*

INSECT IN GINGER: *W. T.* The small borer has done all the mischief. Its name is Xyletinus pectinicornis. More next week. *A. M.*

JASMINE: *Cam.* It appears to be the variety of the white Jasmine sometimes called grandiflorum, which is we believe the same as Jasminum affine. We were not aware that it produced double flowers, and would recommend you to propagate some of the shoots which do so, and see if this quality is constant, or merely the result of the very "free" growth you mention.

LANDSCAPE GARDENER: *Agricola.* Read the works of Kemp, Repton, and Loudon, and place yourself under some one who stands high in the profession. The practical part can only be learned by experience, and the principles by well directed study.

MEALY-BUG IN CONSERVATORY: *W. R. B.* We have no experience to warrant us in recommending carbolic acid. As the house is to be cleared and the creepers all cut back well, we should recommend before painting and whitewashing to thoroughly wash and scrape the walls and roof, using soft-soap dissolved in water, and applied as hot as possible—boiling hot—from a garden engine after washing, if practicable. Then we would remove the whole of the surface soil to the depth of 2 or 3 inches and renew it, or if paved all over the scrubbing and scalding process should be fully carried out on the floor also. Of course all cavities and crevices on the wall or woodwork should be closely stopped with mortar and putty respectively before applying the whitewash or paint. So much for the house. The stems of the creepers so far as retained should be thoroughly washed with soap and water, and the plants set outdoors—no doubt infested more or less—should be looked over, cleaned, and well washed with the engine two or three times before they are returned to the house.

MILDEW: *W. D. F.* You do well in dusting the leaves and fruit with flowers of sulphur. The easiest way of applying it is through a muslin bag. You must be very careful not to put too much sulphur on the pipes, or make them too hot, or the result will be a serious loss of foliage. Try Speed's Mildew Annihilator. It is sold in bottles, and has been highly spoken of.

MIMULUS: *Mimula.* The specimens were too imperfect to judge; it seems to have some of the features of M. roseus, but as a seedling it may be distinct in habit, and eventually prove to be worth introducing to general cultivation.

NAMES OF PLANTS: *Dick Radclyffe & Co.* An umbelliferous plant, which we cannot name without flowers and fruit.—*Agricola.* 1, Cynosurus cristatus; 2, Poa trivialis; 3, Festuca ovina.—*W. Hopwood.* Clethra arborea.—*Duncan Munro.* Melia Azedarach.—*F. W. N.* Pyrola rotundifolia, nat. ord. Ericaceæ.—*Z. Y. X.* Campanula persicifolia.—*N. G.* Vanda testacea, Rchb., Aerides testaceum of Lindley.—*C. R.* Dendrobium chrysanthemum.—*J. C. K.* Saccolabium gurwalicum, very near S. guttatum.—*A. J. N.* There are too many garden varieties of Coleus for us to undertake to name any of them, and especially from leaves only.—*W. D. F.* We cannot find any indication of their having been received.—*A. B.* Lastrea æmula.

PELARGONIUMS: *J. George.* Your flowers had sadly fallen to pieces. St. George (Ivy-leaved) is, however

a decided advance on any we have seen yet in size of flower and in form; it is a bright rose-pink. The other Ivy-leaved sorts are less striking. General Grant, a scarlet Zonal, is all that can be desired, so far as the quality of the flower and truss are concerned.

PHYLLOXERA: *C. H.* The specimens were hardly sufficient to decide with certainty, but we fear the worst. Please send some more roots, and pack them so that they will not get dry before reaching us.

STRAWBERRIES: *G. C. Short.* The box and its contents were completely smashed.

TOUTING FOR SITUATIONS: *R. S.* The practice you mention is decidedly very bad.

TREES: VARIOUS: *G. M.* 1, yes, but not advisable; 2, apply to Messrs. Barron & Son, the Elvaston Nurseries, Borrowash; 3, the flowers are red, and produced in the autumn. It grows to a moderate sized tree.

VINE-LEAVES SPOTTED: *A. M. P.* We should regard the yellow spotting as a sign of debility, so that your suggestion, that the borders are in a bad condition, is probably correct. We do not detect any insect or fungus.

VINE MILDEW: *Constant Reader.* Try Speed's Mildew Annihilator.

WHITE PLUM LEAVES: *Diss.* Generally considered due to excess of bloom; but we are not satisfied with the correctness of the explanation.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

COMMUNICATIONS RECEIVED.—A. A. (thanks).—C. W. S.—W. S.—A. W.—P. L. S.—J. F. R.—A. S. K.—J. H.

Markets.

COVENT GARDEN, July 19.

Cherries are still arriving in bad condition, and are only cleared at very low prices. Currants have improved, and Raspberries continue to make ready sales at high rates. Owing to the London season being nearly over, the demand for high-class fruits has considerably decreased, and we may now look forward to a steady fall in such goods as Peaches, Grapes, Melons, &c. *James Webber, Wholesale Apple Market.*

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	1 0– 2 0	— zonal, 12 sprays	0 3– 1 0
Carnations, per dozen	0 6– 2 0	Pinks (white and coloured), 12 bun.	6 0–12 0
— 12 bunches	3 0– 9 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Rocket, 12 bunches	3 0– 6 0
Eschscholtzia, dozen bunches	2 0– 6 0	Roses (outdr.), 12 bun.	2 6– 9 0
Eucharis, per doz.	4 0–12 0	— (indoor), per doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	— moss, 12 bunches	6 0–12 0
Heartsease, 12 bun.	1 6– 6 0	Stephanotis, 12 spr.	2 0– 9 0
Heliotropes, 12 spr.	0 6– 1 0	Stocks, 12 bunches	4 0– 8 0
Lilies (in variety), 12 sprays	1 0– 2 0	Sweet Peas, 12 bun.	3 0– 9 0
Mignonette, 12 bun.	4 0– 9 0	Sweet Sultan, 12 bun.	4 0–12 0
Myosotis, 12 bunch.	3 0–12 0	Tropæolum, 12 bun.	1 0– 4 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	4 0–12 0	Fuchsias, per dozen	4 0–18 0
Bedding-out plants, per doz.	1 6– 3 0	Heaths, variety, doz.	12 0–60 0
— in boxes, each	1 6– 2 6	Heliotrope, per doz.	6 0–18 0
Begonias, per doz.	6 0–12 0	Hydrangea, per doz.	6 0–24 0
Bouvardias, do.	12 0–24 0	Lilium in var., each	1 6– 6 0
Calceolaria	6 0–18 0	Mignonette, per doz.	3 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	4 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargoniums, p. doz.	9 0–36 0
Cyperus, do.	6 0–12 0	— scarlet, per doz.	2 6– 9 0
Dracæna terminalis	30 0–60 0	Petunias, per doz.	6 0–18 0
— viridis, per doz.	18 0–24 0	Rhodanthe, per doz.	6 0–12 0
Ferns, in var., p. doz.	4 0– ..	Roses, per dozen	18 0–60 0
Ficus elastica, each	2 6–15 0	— fairy, per dozen	4 0–12 0
		Valotta purpur., doz.	12 0–18 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	6 0– ..	Mint, green, bunch	0 6– ..
Beans, French (new), per 100	1 3– 2 6	Mushrooms, per pott.	1 0– 3 0
— English, per bush.	16 0 —	Onions, 12 bunches	9 0– ..
Beet, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per bunch	0 9– ..
Carrots, per bunch	0 7– 0 10	Peas, green, p. bush	3 0– 6 0
Cauliflowers, per doz.	1 6– 4 0	— shelled, per qt.	1 6– ..
Celery, per bundle	1 6– 2 0	Radishes, per bunch	0 1– 0 3
Chilis, per 100	3 0– ..	— Spanish, doz.	1 0– ..
Cucumbers, each	0 6– 1 6	— New Jersey, doz.	2 0– ..
Endive, per doz.	1 0– 2 0	Rhubarb, per bundle	0 6– 0 8
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
Gooseberries, green, per quart	0 6– ..	Spinach, per busbel	2 6– ..
Herbs, per bunch	0 2– 0 4	Tomatos, per doz.	3 0– ..
Horse Radish, p. bun.	4 0– ..	Turnips, per bundle	0 4– 0 6
Leeks, per bunch	0 2– 0 4	— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	3 0– 6 0

Potatos (new):—Jersey Kidneys, 10s. to 14s. per cwt.; Rounds, 9s. to 10s. per cwt.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apricots, per box	2 0– 3 0	Peaches, per doz.	6 0–24 0
Cherries, p. ½-sieve	6 0– 8 0	Pears, per doz.	.. .. ..
Grapes, per lb.	1 6– 8 0	Pine-apples, per lb.	2 0– 6 0
Lemons, per 100	8 0–12 0	Strawberries, p. lb.	0 4– 1 6
Melons, each	4 0–10 0	Figs, green, each	0 4– 1 0
Oranges, per 100	12 0–20 0		

SEEDS.

LONDON: *July* 18.—Rather more activity is now seen in the agricultural seed trade, the recent genial and welcome rains having greatly stimulated the demand for field Rape and Mustard seeds. Several parcels of new English Trifolium have this week arrived at market: this year our home-grown seed has the start of the French. A noticeable feature of the market to-day was some speculative business in yearling Trefoils at a considerable advance on late currencies. One or two samples of new English Trefoil Cosh have already put in an appearance on Mark Lane. As previously noted, the prospects of the new Trefoil crop are uniformly unfavourable, both at home and abroad. In red Clover seed there is no business at present doing. Foreign Italian will, it is said, be plentiful; and, consequently, low offers are being made from France. In bird seeds there is no variation of importance. For the few blue Peas remaining, former terms are readily obtained. Feeding Linseed tends upwards. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was firm. The prices demanded for Wheat, both English and foreign, were 2s. above those of a week back, but millers were not anxious buyers, and the improvement was not in all cases submitted to. For Barley an advance of 1s. per quarter asked upon grinding qualities was not readily given. Malt remained as before. For Oats prices were the turn better, except as regards Archangel. Maize was fully as dear; while Beans, Peas, and flour were quiet at late rates.—The tone of the market on Wednesday was hardly so good as on Monday, owing to the more settled weather. The holders of Wheat, however, were not anxious sellers, and notwithstanding the limited businesss doing the advanced prices of Monday were supported. Barley was rather dull, and of Oats, of which there was a good supply, the trade was disappointing. Maize was pretty firm; and as regards Beans, Peas, and flour no change was reported.—Average prices of corn for the week ending July 14:—Wheat, 62s. 3d.; Barley, 34s. 7d.; Oats, 28s. 10d. For the corresponding week last year:—Wheat, 48s. 5d.; Barley, 32s. 3d.; Oats, 30s. 1d.

CATTLE.

At the Metropolitan Market on Monday there was a demand for beasts, and prices were not lower, choice qualities meeting a very ready sale. Sheep and lambs were plentiful, but trade was dull for them. The top quotations are quite the extreme for choicest descriptions. There were very few calves on offer, and trade was unaltered. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 8d. to 6s. 2d.; calves, 5s. to 6s. 4d.; sheep, 5s. to 5s. 6d., and 5s. 10d. to 6s. 8d.; lambs, 7s. to 7s. 10d.; pigs, 4s. 4d. to 5s. 4d.—On Thursday prime small stock sold at about Monday's prices, but inferior was drooping. For sheep the trade was rather healthier, and the best breeds a shade dearer. Lambs were quiet but steady, and calves sold at about late rates.

HAY.

The Whitechapel report for Tuesday states that there was a steady trade for fodder at the following prices:—Prime Clover, 100s. to 140s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 124s.; inferior, 70s. to 85s.; and straw, 44s. to 60s. per load. The supply was moderate.—On Thursday there was a fair supply of hay and straw on sale; trade was moderate, and prices steady. Quotations:—Clover, best, 100s. to 140s.; inferior, 85s. to 95s.; hay, best, 90s. to 124s.; inferior, 70s. to 85s.; and straw, 44s. to 60s. per load.—Cumberland Market quotations:—Superior old meadow hay, 128s. to 135s.; inferior, 105s. to 114s.; new hay, 90s. to 105s.; superior old Clover, 132s. to 140s.; inferior, 105s. to 118s.; new Clover, 90s. to 110s.; and straw, 57s. to 60s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that, with arrivals on a moderately extensive scale, the trade continues steady, at the following prices:—Jersey, round, 200s. to 220s.; ditto, kidneys, 210s. to 240s.; Cherbourg, round, 200s. to 210s.; ditto, kidneys, 190s. to 220s.; Essex kidneys, 200s.; Kent kidneys, 260s.; Essex shaws, 190s. to 210s.; Kent shaws, 200s. to 230s.; Dutch Potatos, 3s. 6d. to 4s. 6d. per basket.—The imports into London last week consisted of 988 baskets 200 bags from Rotterdam, 776 cases 302 boxes from Cherbourg, 434 barrels 148 tons from Dunkirk, 123 baskets 41 packages from Antwerp, 516 boxes from Palermo, 495 boxes from Barfleur, 276 cases from St. Vaast, 73 barrels from Hamburg, 77 baskets from Havre, 58 from St. Nazaire, 26 from Malta, and 35 packages from Naples.

COALS.

Business at market during the week was steady at previous prices, the only rise being in Hartleys, which advanced 6d. Quotations:—Bebside West Hartley, 17s. 3d.; Walls End—Haswell, 19s.; Hetton, 19s.; Lambton, 18s. 6d.; Seaton, 15s. 3d.; East Hartlepool, 18s. 9d.; Thorpe, 16s. 6d.

Sole Medallists for the Best Hot-Water Apparatus at the Unitsd States Centennial International Exhibition, Philadelphia.

By Her Majesty's *Royal Letters Patent*

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ENDLESS-FLAME-IMPACT
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The most Powerful, the most Rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The **'Boiler of the Future.'** I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," July, 1877.

WRIGHT'S PATENT

ENDLESS FLAME-IMPACT BOILERS.

"The first intimation I had of the existence of these boilers, or of their inventor, was a pamphlet I received through the post. Its perusal sa-isfied me that Mr. Wright had a sounder theoretical knowledge of the subject of heating water than any author I had ever perused. I also liked the construction of his boiler better than any I had previously met with. Mr. Lewin, gardener, Drumpellier, was represented as having fixed one of these boilers, and as bearing testimony to its excellence; and as I knew Mr. Lewin to be not only a good gardener, but a shrewd, clever man. I felt satisfied that the boiler must be of the excellence which my own knowledge of such matters led me to conclude it was from its construction.

"Having occasion to be in the neighbourhood of Glasgow last February, I went to Airdrie and called on Mr. Wright, who took me to the foundry in Glasgow where the boilers are manufactured. There he put one together in a few minutes, and a closer examination of it only strengthened my preference for it over all boilers I had previously seen. I ordered a 4-C boiler, which I have fixed to heat 2600 feet of 4-inch pipe in two early vineries. One, a Muscat-house, 200 feet long and 16 feet wide, is built and planted, the other will not be built till autumn; so that at present the boiler is only heating 1300 feet of pipe, which it does with a very small fire and the damper nearly close in, burning little more than half the coal used in any other boiler I have—and I have some of the most approved, both of my own and other people's designs.

"The result of the trial I have had of Wright's boiler is, that I have ordered four more, and will pull out all my other boilers as opportunity occurs, and replace them by his, with a view both of saving and efficiency.

"No doubt many will ask wherein consists the cause of the efficiency of this boiler over others? To explain this, it may be well to observe that when fresh coal is added to the fire of any other boiler known to the writer, the first process that goes on is the distillation of the gas from the new coal, and its rapid discharge, in advance of the flame, up the chimney and unconsumed. This is not only a great evil in itself, but to effect it the heat is extracted from the fire that was in the furnace when the fresh coal was added, and little or no benefit is got from the fire till the gas is up the chimney and the destruction of the carbon in the coal has begun.

"Many expedients have been adopted to prevent this loss; and no doubt careful stoking can do much in the case of large boilers for generating steam, where there is a long fire, and where the fresh coal is always added to the front of the fire, compelling the gas to pass over the red fire and get ignited; but in the case of boilers used for heating hothouses, this is not practicable, and especially with ever-changing stokers, who, as a rule, think if they throw a given quantity of coal on the fire no further care is needed. Now, in the case of Wright's boilers, distillation of gas takes place as in others, but it has no possible chance of escape unconsumed—for gas and flame are compelled to meet face to face, over and over again, ere they leave the boiler; consequently all the gas is consumed, and the heat from it made to impinge directly on the flat surfaces of the various sections of the boiler on its way upwards. Here lies the great secret of this boiler's power.

"What also adds not a little to increase the power of the boiler is the method adopted for supplying a hot-blast, by passing air from the front of the cast-iron stand on which the boiler is placed through an intricate passage, till it is discharged at the back of the ash-pit under the bars. This leads to the most perfect combustion of the commonest dross-coal. There is also an arrangement by which a hot-blast is thrown into the furnace through the furnace door. Then there is a moderate supply of air entering the furnace all round, where the first section is laid on the heater-jacket of the boiler; this has the same effect on the fire as the well-known Argand burner has on the lamp, giving a clear fierce flame. These boilers are made up of a series of simple castings, jointed by means of india-rubber rings, which allow them to expand and contract; therefore they are sure to be the safest of boilers.

"WM. THOMSON.

"Tweed Vineyard, June 14, 1877."

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"This is a handy volume, consisting of seventy pages of letterpress and illustration, containing much and varied information likely to prove useful to all cottagers, &c., who possess a garden. To all such, who require a cheap and reliable book of reference, we heartily recommend it."—*Lloyd's.*

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"The information conveyed in this little book is well adapted for all persons having small plots of ground. The necessary operations for each month are clearly laid down, and are of a thoroughly practical nature. The sorts of both fruit and vegetables are well selected, many of them being excellent in quality. To our readers who are interested in the cultivation of their flower and kitchen gardens, we can safely recommend this as being a most concise and useful work."—*Bell's Messenger.*

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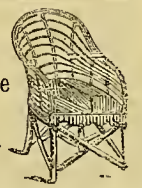

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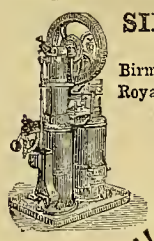

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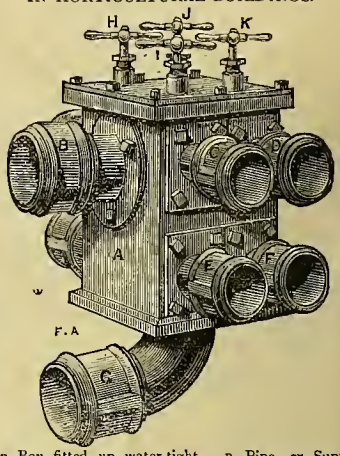

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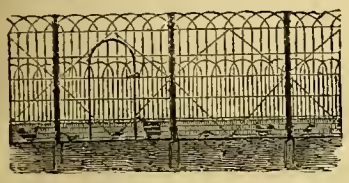

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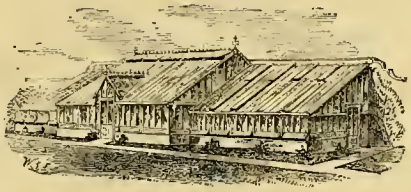

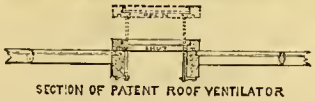

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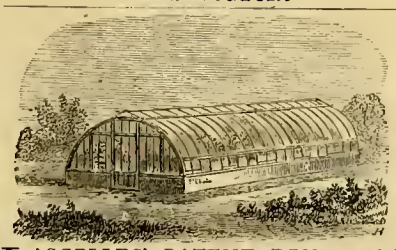

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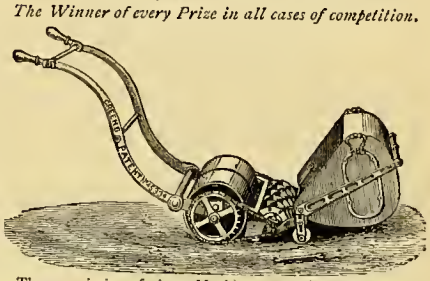

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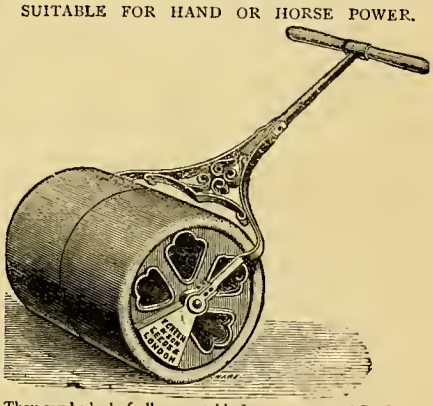

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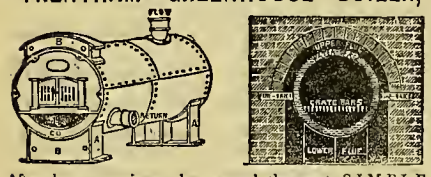

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MARENDAZ AND FISHER have now received from their Agents at Archangel a large shipment of new ARCHANGEL MATS, which they are prepared to offer to the Trade only.
James Street, Covent Garden, London, W.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60s. to 100s. per 100; superior close-wove, 40s., 50s. and 55s. per 100; Packing Mats at 20s., 30s., and 35s. per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

NEW SEASON'S ARCHANGEL MATS. My first parcel has just arrived in excellent condition. Prices to the Trade on application. TAGANROG MATS, PETERSBURG MATS and DUNNAGE MATS, at the lowest prices.
JAMES T. ANDERSON, Importer, 149, Commercial Street, Shoreditch, London, E.

WANTED, a small, MINIATURE GLASS GREENHOUSE (a Model). State price and where to be seen.—AMICUS, Post-office, Stacksteads.

PRICKLY COMFREY (SYMPHYTUM ASPERRIMUM).
Whole Roots purchased by
THOS. CHRISTY AND CO., 155, Fenchurch Street, London.

WANTED, Seedling PRIMULA SINENSIS FIMBRIATA, red and white; also Seedling CINERARIA, ready for potting off; a large quantity of GERANIUM, Vesuvius, cuttings. State price and particulars to J. COWAN, The Vineyard, Garston, Liverpool.

WANTED, BUDS for BUDDING, of MARECHAL NIEL. Quantity and price.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

Sutton's Choice Strains of
FLORISTS' FLOWERS.
SUTTON'S CALCEOLARIA "PERFECTION," 3s. 6d. per packet.
SUTTON'S PRIZE PRIMULA, 2s. 6d. per packet.
SUTTON'S SUPERB CINERARIA, 2s. 6d. per packet.
SUTTON'S PRIZE CYCLAMEN, 2s. 6d. per packet.
Post-free.
The Queen's Seedsmen, Reading.

To the Trade.
ROSE BLOOMS.
Price until further notice 8s. per 100, at
CRANSTON'S NURSERIES, King's Acre, Hereford.

Strawberry, President.
CHARLES TURNER recommends the above as being the best for general purposes.
Strong Plants to fruit next season, 5s. per 100: established in small pots, 13s. 6d. per 100. All the most approved kinds for forcing are now ready, in large pots.
A DESCRIPTIVE CATALOGUE may be had on application. The Royal Nurseries, Slough.

STRAWBERRY PLANTS.—200,000 Garibaldi and twenty other varieties, true to name, at 15s. per 1000, for cash.
J. B. YOUNG, Landscape Gardener, Bridge of Allan.

Daniels' Defiance
GIANT EARLY MARROW CABBAGE.—The earliest, sweetest, largest and best Cabbage in cultivation. Sow at once. Seed, with cultural directions, 1s. 6d. per packet, post-free 1s. 8d.
DANIELS BROS., The Queen's Seedsmen, Norwich.

To the Trade.
NEW TURNIP SEEDS for PRESENT SOWING.
H. AND F. SHARPE have just harvested their new crop of WHITE-FLESHED TURNIP SEEDS, and are prepared to make special offers to the Trade at very moderate prices. The Seed is ready for immediate delivery.—Seed Growing Establishment, Wisbech.

GIANT ROCCA ONION.—The largest and best in cultivation for autumn sowing; frequently weighs from 2 to 3lb. each. Sow at once. Seed, with complete cultural instructions, 1s. per ounce, post-free, 1s. 2d.
DANIELS BROS., Seedsmen to the Prince of Wales, Norwich.

COLLARDS for SALE.—Several millions of strong plants, at 2s. per 1000, for cash only.
R. BATH, Wansunt Farm, Crayford.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

DICKSONS AND CO. invite inspection of their celebrated Bedding VIOLAS and PANSIES, which for some months have been and are now in great beauty. The collection in their Pilrig Park Nursery numbers upwards of 130 sorts, so that intending Purchasers have an opportunity rarely offered of making the best possible selection. Blooms can be sent by post on receipt of six stamps.
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Seedlings.
W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, North Britain, are now booking Orders for Seedling Forest Trees, &c., for the coming season. Their 1-yr. and 2-yr. seedling Larch are fine.
Quotations furnished on application.

WALLFLOWER PLANTS (dark red).—The above are good Plants for immediate planting, invaluable for Cut Flowers for Market, in early Spring. Free to London, at 12s. per 1000. Sample plant if desired.
W. H. CUTTS, Seed Grower, Kelvedon, Essex.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, in 4 bushel bags, at 1s., bags included; or Truck-load, 25s. Delivered free to any rail in London.
J. STEVENS AND CO., Fibre Works, Greyhound Yard, 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 1s., bag included; truck-load, loose, free to any Rail, 25s.
POTTER OVLER, Spitalfields Market, N.E.

COCOA-NUT FIBRE REFUSE may be had at 1s. per 4-bushel bag, bag included; a truck, 250 bushels, £1 5s.; one-horse load may be had at the factory, 3s., by sending for it.
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HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12s. 6d.; 21-oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36s.; 3ds, 46s. per 300 feet;—21-oz. 4ths, 36s.; 3ds., 46s. per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

SALES BY AUCTION.

Orchids, Ferns, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, August 3, at half-past 12 o'Clock precisely, a quantity of plants of Odontoglossum cirrhosum, O. maculatum, O. madrense, O. grande, O. citrosmum roseum, O. pulchellum majus, Lycaste Skinneri, Brassavola Digbyana, Oncidium ornithorrhynchum; about fifty masses of Dendrobium Findlayanum; several small Collections of Established Orchids; fifty lots of Ferns, including Todea superba, T. pellucida, Hymenophyllum species, Dicksonia squarrosa, Cyathea dealbata, and several small Collections of Specimen Stove and Greenhouse Plants, &c.

On view the morning of Sale, and Catalogues had.

On WEDNESDAY, August 1, 1877, in the Town Hall of Bruges, Belgium, between the hours of 11 A.M. and 6 P.M.,

A PUBLIC SALE

OF A RICH COLLECTION OF

Cycads, Araucarias, Phormiums,

LAURELS, and PALM TREES,

Some Specimens of which are unique in Europe.

Public Exhibition on Tuesday, July 31.

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FOR SALE, a NURSERY BUSINESS, in an important town, South Coast. The premises are well adapted, and at present command a large trade, which daily increases. There are six hotheuses and forcing pits. Rent £40. Lease 18 years. Price low.—Full particulars of Mr. JOHN J. DEVERELL, Auctioneer, 70, Keotish Town Road, N.W.

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To Florists.—Sevenoaks, Kent.

TO BE LET, with Immediate Possession, in consequence of the failure of health, the GROUNDS, PREMISES, and BUSINESS of a FLORIST. Apply to J. VOLLER, Sevenoaks.

TO BE LET, a small NURSERY, in one of the pleasantest suburbs of London. Good frontage to the main road. Established sixteen years. Rent low. A good opportunity. For particulars apply to A. B., Post-office, Spring Grove, Isleworth, W.

TO BE LET, at Ferring, FLORENCE VILLA, together with Coach-house, Stable, &c., and large productive GARDEN of about 3 Acres, inclosed by a 7 feet wall, with about 118 choice Fruit Trees, comprising Nectarine, Apricot, Peach, Green Gage, Cherry, &c: 450 Standard Fruit Trees, and a good Vinery, with eight vigorous Vines. The Land, at present used as a Market Garden, is generally very well arranged with Asparagus, Seakale beds, &c.

The property is situated near the Goring and Angmering Railway Stations, and 4 miles from Worthing.

For view of the Premises apply to Mr. BELSEY, the present occupier, and for further particulars to Mr. HENTY, The Grange, Ferring, near Worthing, Sussex.

FOR SALE, at Oundle, Northamptonshire, a LEAN-TO GREENHOUSE, 28 feet 6 inches long, by 16 feet wide, 13 feet high at back, and 7 feet in front. Ends and front partly brick and partly glass. Hanging Lights in front 3 feet 6 inches deep.

For price and further particulars apply to J. W. SMITH, Esq., Oundle; or to see the same to EDWARD DUNCOMBE, New Street, Oundle. Oundle is on the Peterborough branch of the London and North-Western Railway.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.

Fresh SPHAGNUM, 10s. 6d. per sack.

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SCOTT'S WASP DESTROYER.—The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 1s. 6d., 2s. 6d. and 5s. each. The larger sizes are the cheapest. May be obtained through any Seedsman, or direct from

JOHN SCOTT, The Royal Seed Stores, Yeovil.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.

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GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

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By DRAINAGE, ENCLOSING, CLEARING, and the ERECTION of FARM BUILDINGS and COTTAGES.

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ADVANCES MONEY:

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The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

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The Collection of the above twelve splendid varieties for 25s., postage or package free.

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CALCEOLARIA.—Geo. Wheeler's Superb Strain, being in habit very compact, stout, and dwarf, of great variety in colour, and beautifully marked. Is inferior to none. Retail packets, 2s. 6d., 1s. 6d. and 1s. each. Trade packets, 21s. to 5s. each.

G. W. distributed his first raised hybrid Calceolaria in 1830, at 2s. each in trade; and in 1832 supplied many sorts of 6 plants each to the trade at 42s. the set.

IMPERIAL CABBAGE.—G. Wheeler's Improved Genuine, after a test of about half a century, still maintains its character of first-rate Early. A limited quantity still on hand at the rate of 1s. 2d. per ounce.

Prepaid Orders for the above will be sent post-free.

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Strawberries all the year round.

GARIBALDI (true).

H. CANNELL begs to inform the public that he has many thousands of the above invaluable variety, established in small 60's, just ready for shifting, 15s. per 100; plants from ground, 6s. per 100. From the fact of his being situated in the midst of hundreds of acres of the Kent fruit gardens enables him to offer really all the best and most approved kinds of Strawberries in cultivation. A halfpenny card will bring you full and valuable particulars.

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PHLOX, Miss Robinson, pure white, very sweet, equal to Stephanotis to cut from 1s. each.

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H. CANNELL begs to inform his Customers, Friends, and the Public generally, that his AUTUMN CATALOGUE of all the New Soft-wooded Plants, and the best older varieties, is now ready, and will be sent post-free. H. C. wishes to draw particular attention to his 250 varieties of ROSE BUDS, Cuttings of his unrivalled collection of Geraniums, Verbenas, Fuchsias, Coleus, Petunias, Lobelias, Lantanas, Dahlias, Chrysanthemums, Mimulus, Pansies, Violas, &c., all of which are supplied at this season very cheaply, and many thousands of Seedling Primulas, Cinerarias, 1s. 6d. per dozen, are now ready to be posted off.

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NEW ROSES, IN POTS.

TEA and NOISETTE ROSES, IN POTS.

CLEMATISES, IN POTS, of best New and Old Sorts.

ORCHARD-HOUSE TREES, IN POTS.

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HARDY ORNAMENTAL TREES IN GREAT VARIETY.

EXTENSIVE COLLECTIONS,

Showing variation in colour, of deepest green and purple, and brightest gold and silver, assuming habits pyramidal, spreading, and weeping; leaves entire, or cut and divided like Ferns, spotted, or variegated—planted in groups to show contrast of form and colour—now in great beauty at THE ARBORETUM, five minutes' walk from Isleworth Station.

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Rose Blooms for Decoration supplied.

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PANSIES, best English, and blotched flowers, 1s. 6d. each pkt.

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BEGS TO ANNOUNCE THAT HIS

BULB CATALOGUE, NO. 173 T.T., FOR THIS SEASON,

Is now ready, and will be dispatched to his numerous Customers.

Those not receiving the same may apply either to him or his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C., when a copy will be sent immediately, post-paid.

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CATTELL'S RELIANCE CABBAGE

Is the best sort to grow for spring cutting. Numerous Testimonials and my own trials prove it to be the earliest and best in cultivation. J. C. tried it this season with several sorts highly recommended by other Growers, and cut good Cabbage from his Reliance a month before the others were ready.

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TEBBS' UNIVERSAL FUMIGATOR,

For Greenhouses, Conservatories, Ferneries, Frames, Poultry Houses, Infirmaries, Ships, Bed-rooms, &c.

This cheap and thoroughly effective Fumigator requires no attention when once lit, no fear of flaming, no waste of material, every particle being given off in dense smoke.

Testimonial.—"I shall never think of using pots again."

Price 3s., large size 4s. 6d. each. Wholesale and Retail of FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C. And Wholesale of CORRY AND SOPER, Shad Thames, London, S.E.

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Directions for use will be sent with each packet.

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SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

Indestructible Terra-Cotta Plant Markers.

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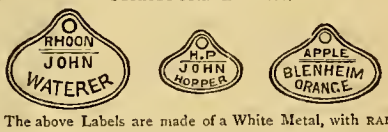

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WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

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Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

SPECIAL NOTICE.

Lewis Brook (late of the firm of Brook & Gallop) begs to inform the Trade that he has disposed of his share in the business of Seedsman and Florist to his late partner Mr. F. Gallop, but that he will still continue to carry on his business as a Fruiterer, Greengrocer, and Potato Merchant, at the old premises, 195, Western Road.

195, Western Road, Brighton.

F. Gallop begs to announce that having purchased Mr. Brook's interest in the Seed and Florist business, and finding larger premises necessary to meet the increasing demands of business, he has secured a large plot of ground at 30, Western Road, nearly opposite, and is erecting new premises, which will be entirely devoted to the purposes of the trade of Seedsman and Florist, and, as soon as completed, the business as now carried on by him will be transferred there.

Until the completion of the new premises, please address all communications to the old address, as above.

F. GALLOP

(Late GEO. PARSONS),

SEEDSMAN AND FLORIST.

ESTABLISHED 1826.

MIGNONETTE, MILES' NEW HYBRID SPIRAL.

F. G. has much pleasure in announcing that he has purchased the entire Stock of the above-named New Mignonette, which is now acknowledged to be the finest variety ever exhibited. It caused quite a sensation at the great Show at South Kensington on May 2, 1877; being the variety that attracted the attention of Her Majesty the Queen.

DESCRIPTION.

This new Hybrid Spiral Mignonette, raised by Mr. Miles, and which has been so much admired by the Trade and Public generally, is far superior to any other in cultivation, the habit being dwarf and branching, with spikes often attaining a length of from 8 to 14 inches. By pinching the side shoots the centre spike attains a length of from 18 to 21 inches. The odour of this variety is superior to any other in cultivation. It is much hardier, and well adapted for market purposes.

Letter from Mr. MILES.

Wm. Miles begs to announce to his numerous applicants that he has disposed of the whole of his Stock of New Hybrid Spiral Mignonette to Mr. F. Gallop (late Geo. Parsons), as exhibited by him at the Royal Horticultural Society, obtaining a Certificate, May 15, 1876, and again, June 21, 1876, also at the Royal Botanic Society, Regent's Park, same date. (Signed) Wm. Miles.

Extract from the "Journal of Horticulture and Cottage Garden," June 7, 1877.

This is the finest Mignonette that has come under our notice. It is the same variety that attracted the attention of Her Majesty the Queen at the great Exhibition at South Kensington, on May 2, 1877.

ELECTROS OF THIS BLOCK, 5/- EACH.

Extract from "The Garden," April 21, 1877.

New Large Flowering Mignonette.—At the Horticultural Exhibition at South Kensington, on Wednesday last, Messrs. Brook & Gallop, of Western Road, Brighton, exhibited some remarkable examples of Miles' Hybrid Spiral Mignonette, a robust and floriferous variety, and certainly the largest flowered form that I have yet seen, producing as it does erect columnar spikes, 6 inches or more of which are covered with fully expanded blossoms. As a vigorous free growing variety, for ordinary decorative purposes or for Market, this Mignonette should soon become popular, seeing that it is as fragrant as the older forms, and that it possesses a very distinctive appearance.

DIRECTIONS for SOWING.

Sow in the open ground in April, and for succession throughout the summer, covering the seeds about quarter of an inch deep. For Winter and Spring Flowering, sow in pots of loam, mixed with a little leaf mould, in August and September, and protect from frost in cold frame. For early flowering, sow in February and March, on a slight bottom-heat. Thin out or transplant before the plants get crowded.

NONE GENUINE UNLESS THE PACKET BEARS MY NAME AND ADDRESS.

2s. 6d. per Packet. Price to the Trade on application.

As the Stock of Seed is very limited, early Orders are requested to ensure a supply.

THE BRIGHTON SEED WAREHOUSE, WESTERN ROAD, & 30, CORN EXCHANGE, BRIGHTON.

All Communications to be Addressed to Western Road.

Wholesale Agents—Messrs. HURST & SONS, Seed Merchants, 6, Leadenhall Street, London, E.C.

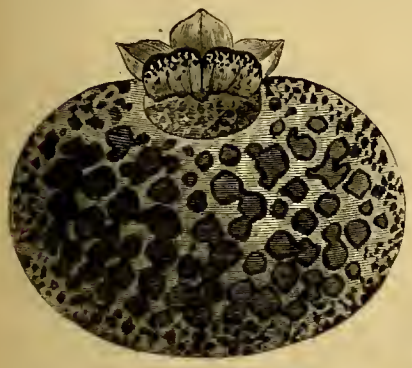
CHOICE FLOWER SEEDS
For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, Post-free on receipt of P.O.O. or Stamps.

	Per packet—s.	d.
AURICULA, choicest mixed, alpine .. .. 6d. and	1	0
CALCEOLARIA HYBRIDA, very choice, mixed 1s. ,,	2	6
CINERARIA HYBRIDA, from named flowers.. 1s. ,,	2	6
CARNATION and PICOTEE, from stage flowers 1s. ,,	2	6
HOLLYHOCK, Prize English .. .. .. 6d. ,,	1	0
INDIAN PINK, splendid double, mixed	0	4
MIMULUS, Clapham's superb, very fine..	1	0
MYOSOTIS DISSITIFLORA—Forget-me-not	0	6
PANSY, choicest mixed English .. .. .. 6d. and	1	0
PRIMULA SINENSIS, choicest mixed.. .. 1s. ,,	2	6
POLYANTHUS, finest gold-laced, choice	1	0
STOCK, Brompton, scarlet Giant	0	6
,, East Lothian, splendid	0	6
SWEET WILLIAM, very choice, mixed..	0	6
WALLFLOWERS, splendid double, mixed .. 6d. and	1	0
GREENHOUSE PERENNIALS, 12 fine varieties ..	6	0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4	6

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.

THE FINEST STRAIN OF CALCEOLARIA.



SUTTON'S "PERFECTION."

After many years' careful selection we have succeeded in producing a strain of Calceolarias which for beauty and form of flower, richness of colour, and habit of plant, is acknowledged to be far superior to any yet in cultivation. Our houses have been visited during the blooming season by some of the most eminent authorities of the day, all of whom agree in pronouncing our Improved Strain to be of unusual excellence.

Price 3s. 6d. per packet, post-free.

SUTTON'S SUPERB CALCEOLARIA } 2s. 6d. per packet,
JAMES'S INTERNATIONAL PRIZE } post-free.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING,

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.

,, Half Specimens, 5s. to 7s. 6d. each.

NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—CRANSTON & CO.

B. S. WILLIAMS'
NEW AND CHOICE
FLOWER SEEDS FOR 1877.

Per packet—s. d.

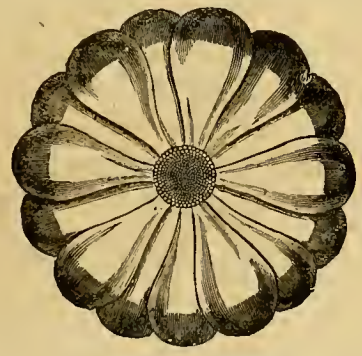
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

From Capt. COSENS, *Aberystwith, May* 13, 1877.
"The Calceolarias, from the seed Capt. Cosens had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."

PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5s., 3s. 6d., 2s. 6d., and 1 6

PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

From Mr. F. DENNING, *Gardener to* J. Fenton, Esq., *Yardsley, February* 26, 1877.
"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."



CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

From Mr. J. WEST, *Gardener, Cheadon Park, May* 21, 1877.
"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

CYCLAMEN PERSICUM GIGANTEUM (new).. .. .. 2s. 6d. and 5 0
Do., do., do., Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and 1 6

VICTORIA and PARADISE NURSERIES,
Upper Holloway, London, N.

SATURDAY, JULY 28, 1877.

THE FOLKLORE OF THE ROSE.

(*Continued from p.* 38.)

THE popularity which the Rose attained in this country at an early period led to its employment in different ways. Thus we find it occasionally taken as a substitute for rent. In 1576 the then Bishop of Ely granted to Sir Christopher Hatton a great part of Ely House, Holborn, for twenty-one years, on condition that the tenant should pay annually, on Midsummer Day, a red Rose for the gate-house and garden, the Bishop reserving to himself the right of walking in the gardens, and gathering every year 20 bushels of Roses. The good Bishop would be somewhat startled could he see the changes which have passed over his "garden" since that period. Mr. Ingram, in his *Flora Symbolica*, says that Sir William Clapton granted to Thomas Smith a piece of ground called Dokmedwe, in Hanstede [? Hampstead], for the annual payment of a Rose, at the nativity of John the Baptist, to Sir William and his heirs, in lieu of all services; "dated at Hanstede, on Sunday next, before the Feast of All Saints, 3 Henry IV., 1402."

The Rose has in all times and in all countries been a favourite flower for planting and strewing upon graves. Both the Greeks and Romans employed it in this manner, and sometimes even annexed codicils to their wills commanding that their graves should yearly be strewn or planted with Roses. Antony, when dying, begged of Cleopatra that she would scatter perfumes upon his tomb, and cover it with Roses. In Turkey, according to Phillips, a Rose is sculptured on the monuments of such women as die unmarried; while in Poland they cover the coffins of children with these flowers, and throw them from the windows as the funeral procession passes along the street. Roses are also among the flowers planted upon graves by the Chinese. In the German portions of Switzerland both old and new churchyards are called "Rose gardens," and the same name is given to many ancient heathen burial places in the depths of the forests. The graves of Catholics and Protestants are sometimes distinguished by red and white Roses respectively; but this is a modern observance.

Among ourselves, the planting of Roses upon graves was formerly general in South Wales, and was also observed in many parts of England. Thus Camden says that at Ockley, in Surrey, the custom of planting Rose trees on graves, especially on those of young men and maidens who had lost their lives, had been observed "time out of mind," but it is not now retained in that locality. A similar occurrence took place at Barnes, in the same county, where one Edward Rose, a citizen of London, who died in 1653, bequeathed £20 for the purchase of an acre of land for the poor of the village, on condition that a number of Rose trees were planted round his grave, and duly tended. A similar request was made by one Thomas Stevens, a poor and aged man who is buried at Stoken Church, in Oxfordshire, who desired his son to dress his grave with flowers on the annual recurrence of St. Peter's Day. The wild Rose trees growing in Lowton Field, in Yorkshire, are said to have been originally planted upon the grave mounds of those who fell in the combat between the Lancastrians and Yorkists in

1461 by the survivors of the fray; and it is locally believed that Rose trees transplanted from the "bloody meadow," as it is called in the neighbourhood, will not grow elsewhere.

Besides such matters as the foregoing, there is a good deal of folklore pure and simple connected with Roses. Wilsford in his *Nature's Secrets* says that "when Roses or Violets flourish in autumn, it is an evil sign of an insuing plague the year following, or some pestiferous disease." A writer in the *Connoisseur* (No. 56), after describing the well-known Midsummer Eve love-charm connected with the Orpine, goes on to say:—"Our maid Betty tells me that if I go backwards, without speaking a word, into the garden, upon Midsummer Eve, and gather a Rose, and keep it in a clean sheet of paper without looking at it till Christmas Day, it will be as fresh as June; and if I then stick it in my bosom, he that is to be my husband will come and take it out." It is probably to this charm that Herrick refers in the *Hesperides*, when he says, speaking of a bride—

"She must no more a-maying,
Or by rosebuds divine
Who'll be her Valentine."

In Thuringia the Rose holds a similar position as a love-charm; a maid who has several lovers will name a Rose-leaf after each, and then scatter them upon the water; that which sinks the last representing her future husband. In some parts of Germany it is customary to throw Rose leaves on a coal-fire as a means of ensuring good luck. In Germany, as well as in France and Italy, it is believed that if a drop of one's blood be buried under a Rose-tree, it will ensure rosy cheeks. The Rose is also associated in Westphalia with a charm against nose-bleeding and other hæmorrhages. This charm consists in the repetition of the words—"In Christ's garden stand three Roses, one for the good God, the other for God's blood, the third for the Angel Gabriel: blood, I pray you, cease to flow." In Suabia it is somewhat different:—"On our Lord's grave spring three Roses; the first is Hope, the second is Patience, the third is the will of God: blood, I pray you, be still."

In former days the red and the white Rose were supposed to possess different and often antagonistic properties. Thus a MS. of the time of Henry VIII. prescribes among the things that are "good for the brayne," "to smell the rede Rose and to wasshe the temples wt the water of rede Roses stylled;" while "to smell to a whytte Rose" is reckoned among things "evell for the brayne." In the seventh edition of Withering's *Arrangement of British Plants* (1830) the same idea is maintained. Speaking of white Roses, it is stated that "besides the cordial and aromatic virtues which reside in their volatile parts, [they] have an aperient effect, which remains in the decoction after distillation. The red Rose, on the contrary, has an astringent and gratefully corroborant virtue." It is hardly necessary to say that this idea has no foundation in fact, or that the medicinal properties of the Rose are quite unimportant. This, however, was not always considered to be the case, for Langham, in his *Garden of Health* (1633), gives no fewer than a hundred and forty-one ways in which it may be employed. In a curious little work, entitled a *Book of Fruits and Flowers*, published in 1656, are some quaint recipes for the employment of Roses, of which the following may serve as samples:—

"Syrupe of Roses.

"Take Damask Roses, clip off the white of them, and take 6 oz. of them to every pint of faire water, first well boyled and simmered; let them stand twelve hours, as you doe in the syrupe of Violets, wringing out the Roses and putting in new eight times, then wringing out the last put in onely the juice of 4 oz. of Roses, so make it up: if you will put in Rubarb, take to every two drams, slice it, string it on a thred, hang it within the pot after the first shifting, and let it infuse within your Roses. Some use to boyle the Rubarb in the syrupe, but it is dangerous. The syrupe purgeth choller and melancholy."

"To Preserve Roses.

"Take 1 lb. of Roses, 3 lb. of sugar, 1 pint of rose-water, or more. Make your syrupe first, and let it stand till it be cold, then take your Rose leaves, having first clipt off all the white; put them into the cold syrupe, then cover them, and set it on a soft fire, that they may but simper for two or three hours; then while they are hot, put them into pots or glasses for your use."

Langham gives a recipe for making "Vinegar of Roses," which runs thus:—

"Gather them before they be full blowne in dry weather, lay them on a board halfe a day, then put them into vinegar, close stopt twenty-four houres; then stampe them and set them in glasses in the sunne all summer, then streine it and use it: if it be renewed with Roses every tenth day it is the better; it may be made with wine, either white, red, or claret." For "Sugar Rosat," "stampe one pound of new gathered Roses with foure pounds of sugar, and sun it in a glasse thirty daies. It may be kept three yeares."

Although they can scarcely be considered as possessing important properties, Roses are still employed in medicine. An infusion of red Rose petals is employed as an agreeable vehicle for other medicines, and a confection of them is also in use. The Rose employed for this purpose is Rosa gallica, an Eastern species which has been widely cultivated from a very early period, and exists in gardens under a variety of forms. The authors of *Pharmacographia* tell us that the Provins (often erroneously written Provence) Rose is a variety of this species, so called from having been long cultivated at Provins, a small town about 60 miles south-east of Paris, where it is said to have been introduced from the East by Thibaud VI., Count of Champagne, who died on his return from the Crusades in 1254. Be this as it may, Provins became much celebrated both for dried Rose petals and for the conserve, syrup, and honey of Roses made from them. The red Rose is cultivated at Mitcham to a small extent, under the erroneous name of Damask Rose; it is also grown for the druggists in Oxfordshire and Derbyshire, and more extensively in some parts of France, Holland, and Germany. The Cabbage Rose (R. centifolia), which is the species chiefly employed in the making of Rose-water, is also cultivated to a small extent at Mitcham, and in the market-gardens to the west of London. The attar or otto of Roses is yielded by a variety of Rosa damascena, a plant which, although usually regarded as distinct, is looked upon by Mr. J. G. Baker as most probably a cultivated race of R. gallica. Messrs. Fluckiger and Hanbury say that the earliest allusion to the distillation of Roses that they have met with is in the writings of Joannes Actuarius, who was physician to the Greek Emperors at Constantinople towards the close of the thirteenth century. *B. M.*

New Garden Plants.

Odontoglossum madrense, *Rchb. f.*

I have often been asked, what is this species? It is that very same species that Mr. Ortgies once gave into the hands of Messrs. Veitch under the name of O. maxillare. It was well represented as such in the *Botanical Magazine*. To a certain extent I was indeed responsible for this name having been given. Mr. Roezl sent three remains of faded flowers, the only vestiges he gathered when the plant was collected, and those Mr. Ortgies of Zurich kindly sent me for being named. (Ah to name such *beaux restes*—worthy rivals of those crushed, smashed scraps which Messrs. the Editors of the *Gardeners' Chronicle* enjoy so much!) They are at hand. Well, I thought of O. maxillare, Lindl., and maxillare it was named. But, as it is with all mistakes—"*post equitem sedet atra cura*"; finally the plant flowered, and I saw immediately that it was different, totally different—new, quite new. I named it O. madrense, and described it. It is indeed in the way of the old Odontoglossum nebulosum, but far more slender, and for this reason, according to my taste, far more elegant. The flowers are white, beautifully adorned with broad greenish, or reddish brown spots at the base of the petals and sepals, now and then with a blotch scattered somewhere. The white column is densely covered with hairs at its base. It appears to be a very rare plant, only seen by the lynx-eyed Mr. Roezl, and, as it appears, now by Mr. Franz Klaboch, Mr. Roezl's Czechian nephew, who has complained bitterly how difficult it is to find the plant. Ah, yes, many plants are difficult of access, and one requires the fullest enthusiasm of plant love to meet with them. *H. G. Rchb. f.*

Eria Davana, *n. sp.**

A curious species of the "flavæ" section bearing the closest affinity to Eria sicaria, Lindl.! The type of this species has depressed narrow leaves, and the trilobed lip, with a narrow anterior lobe and a single long callus. Our species is totally different. It has a lip as broad at the apex as at the base, with very narrow side lobes, a short claw, and an emarginate anterior lobe. The callus is longitudinal over nearly the whole of the length of the lip, and at the apex it goes back each side in a lateral short shank. The flowers are arranged in a loose raceme, whose rachis is white woolly as are the flowers on the outside, while the bracts, which nearly equal the inferior stalked ovaries, are naked. The colour of the flowers is honey-yellow. The lip has numerous brown blotches, and the callus is nearly black. The plant has a creeping rhizome, small ovoid pseudobulbs, with usually three very leathery linear-lanceolate acuminate leaves, which are a span high. The flowers are smaller than those of Eria flava. I obtained it from my second oldest English correspondent, our excellent Orchidist, Mr. J. Day. *H. G. Rchb. f.*

Vanda cœrulescens, *Grif.*, Lowiana.

This is an exceedingly pretty novelty. Give a Vanda cœrulescens Boxallii an amethyst coloured middle segment of the lip, and a little amethyst dot at each end of sepals, and you have this nicety, dedicated to Mr. Lowe, who was so lucky to introduce it. *H. G. Rchb. f.*

A WORKING-MEN'S FLOWER SHOW.

The impetus which has been given to plant growing by parochial flower shows both in country villages and in great towns—where, as we have lately seen in Westminster, the poor are encouraged to beautify the dusky rooms of their courts and alleys by the introduction of plant life—is already producing good results. The movement is greatly helped forward by such inexpensive liberality as that manifested annually in the Government parks and gardens by the distribution of bedding plants before the commencement of the frosts; by such graceful acts as the distribution of Hyacinth bulbs which takes place in Manchester, we believe, every winter; or by such meetings as that held last month at the Liverpool League Hall, when a handsome collection of plants, contributed for the purpose by various donors, was distributed by Father Nugent to the poor working-women whom he has induced to abandon the use of intoxicating drink. But it must not be forgotten that, besides these efforts, which are either originated or mainly supported by the so-called higher classes, there are in some districts, and notably in Lancashire, botanical societies supported entirely and organised throughout by working-men; and these societies, however humble their organisation, have existed for a very considerable period, and have done and are still doing very useful work. Exactly a century ago there was one of these working-men's botanical societies at Eccles, six miles from Manchester, which numbered about forty members, and similar associations were soon established at Oldham, Aston-under-Lyne, and other Lancashire towns. This was long before the more aristocratic, but scarcely more useful, Horticultural Society of London had started upon its career. These district societies were in the habit of meeting together occasionally for comparison and mutual improvement; and these meetings, which were usually held on Sundays at some respectable public-house, were conducted with great propriety until towards the close of the last century, when they were temporarily discontinued. They were resumed, however, after a few years, and have since then been carried on with more or less regularity, the botanical societies of Lancashire,

* *Eria Davana*, n. sp.—Aff. Eriæ sicariæ, Lindl.; pseudobulbis ovoideis triphyllis; foliis lineari-lanceolatis loratis valde coriaceis; racemo laxifloro tomentoso; bracteis scariosis lineari-lanceolatis nudis ovaria pedicellata inferiora subæquantibus; ovariis pedicellatis tomentosis; sepalis triangulis extus tomentosis, tepalis angustioribus calvis; labello trilobo latis lateralibus oblongis angustis; lobo antico ab isthmo brevi dilatato oblongo emarginato; callo ligulato per lineam longitudinalem, ante apicem utrinque crure retrorso.—Ind. Or.; coll. Day.

Cheshire, and Derbyshire being united in annual gatherings, while more local associations have also their annual and other meetings. Curiously enough Eccles, the *fons et origo* of these associations, does not now itself possess a botanical society. The earliest society, after the interregnum to which we have alluded, was the Middleton District Society; that at Prestwich, the nearest to Manchester, was established on September 11, 1820. The meetings of these societies are almost always held on Sunday afternoons, a circumstance which may scandalise those who would underrate the liberty conveyed in the precept that "the Sabbath was made for man, and not man for the Sabbath," and although they take place at public-houses they are conducted in so orderly a manner as to leave no ground for censure. A meeting at Prestwich was, indeed, once interfered with by the authorities, but the botanists were not really to blame. Several of the societies possess good libraries and large herbaria; that at Prestwich fills about 200 volumes. The Stockport Botanical Society, as well as one or two others, possesses also a good collection of living plants, many of which have been obtained from distant localities by members who have made special excursions for the purpose.

The Bury Working Men's Botanical Association has just (Saturday, July 7) held its annual exhibition and gala, and a brief account of the proceedings thereat may prove interesting to some at least of our readers, more especially as on the following day one of the amalgamated meetings of the Lancashire Botanical Association took place. Owing to the unfavourable state of the weather the attendance, as well as the number of entries for the different prizes, was but limited; moreover, the plants shown were, as we are informed, very inferior in quality to those of other years. The following is a list of the classes in which prizes were awarded:—Six wild flowers, three prizes; wild bouquet, two prizes; two wild plants in bloom, two prizes; twenty-four wild flowers, two prizes; four garden blooms, three prizes; six Roses, two prizes; cultivated bouquet, one prize; two greenhouse plants in bloom, two prizes; three stove or greenhouse cut blooms, three prizes; British Ferns, three prizes; with an extra prize for the most curious plant shown, which was obtained by the exhibitor of a Pitcher-plant. Most of the sets of wild flowers would have been disqualified by a severe critic. It appeared that any plant included in British lists was allowed a place among the wild ones; but besides these Spiræa aruncus, a foreign Lavatera, and other undoubted foreigners were noticed. The greenhouse plants were very poor, and very sparingly represented, the 1st prize being taken by a scarlet Pelargonium and a Heliotrope. A curious object was put in as a claimant for the last prize—it was a manufactured specimen, mainly constructed of Dog's-tail-grass (Cynosurus cristatus), and was probably sent as a joke. It should be mentioned that the tent in which the show was held was flanked at the entrance by two fine specimens of Heracleum sibiricum, about 10 feet high.

On the next afternoon (Sunday) the eighth annual meeting of the Lancashire Working Men's Botanical Association was held in the same tent, at which there was a large attendance of representatives from the various societies belonging to the Association. The following districts were represented by delegates:—Rochdale, Middleton, Prestwich, Swinton, Bolton, Heywood, Milnrow, Farnworth, and Bury. The chair was taken by Mr. R. H. Alcock, of Bury, who is the President of the Local Natural History Society, and has done much to help forward the study of natural science in the district. He delivered a brief address upon the work of the Lancashire botanists, and, somewhat to our regret, defended the practice of some of them in introducing plants to localities where they were likely to establish themselves permanently. The most interesting portion of the meeting then commenced. "As specific discrimination and accuracy in botanical nomenclature are the chief objects sought to be obtained by the aid of the meetings"—to quote from the information given to the members—"all persons who attend are hereby respectfully solicited to bring with them such specimens of plants, either indigenous or exotic, but particularly the former, as they can conveniently procure." In compliance with this request, most of the delegates present, as well as other members, brought specimens; and these were laid out on a long bench, in accordance with the Linnean system, that method being the one always employed on these occasions. In consequence of the weather, fewer specimens than usual were exhibited. We are indebted to Mr. Alcock for a complete list of the Phanerogams and Ferns shown, from which we select the following as among the most interesting:—Hippuris vulgaris, Utricularia minor, Valeriana pyrenaica, Plantago maritima, Sambucus Ebulus, Geranium phæum, Pyrola rotundifolia, Ligusticum scoticum, Atropa belladonna, Hottonia palustris, Glaux maritima, Carex hordeiformis. Mr. Percival, the President of the Association, who occupied the post of botanical referee, named each plant as it was handed to him, giving not only both an English and the Latin name, but occasionally information as to the local habitats or medicinal properties of the plants under notice. By one of the rules of the association, the specimens exhibited "become the property of the President, who shall dispose of them in such a manner as he may think will give general satisfaction." In this way a distribution takes place, and both useful information and specimens are given and received. A collection of mosses was also named; and Mr. Percival discharged his duties in a manner which fully accounted for the respect and esteem in which he is held by his fellow-botanists.

While wishing long-continuance and all possible success to these associations, we are glad to learn from Mr. Alcock that, so far as Bury is concerned, many of the good men among the botanists are joining the Natural History Society. Such a proceeding cannot fail to be beneficial both to the men and to the Society: the former will have the opportunity of mixing with minds somewhat more cultivated than their own, while the Society will gain much from the addition of new and active members to its ranks. The Lancashire working-men have an independence and an abruptness of manner which is at first somewhat startling to a Southerner; but they have with this an amount of perseverance and firmness which cannot fail to command the esteem of those who can look beyond the rough exterior to the practical energy and genuine industry which that exterior at first sight conceals. *B.*

[We should be among the last to say aught against innocent recreation, and specially against the study of God's works on the Sabbath, but now that the Saturday half-holiday is a recognised institution, it would be surely better to hold the meetings in question on that day, in any case to avoid meetings at a public house, and, last, to give up the Linnean system as quite obsolete! EDS.]

GARDEN VEGETATION FOR JUNE.*

THE weather during June has, upon the whole, been pleasant, but by no means warm. The lowest temperatures experienced were during the nights of the 7th, 12th, 13th, 16th, 17th, and 24th, indicating 43°, 39°, 41°, 37°, 41°, and 40°, while the highest night temperatures were on the 4th, 10th, 21st, 26th, 27th, and 29th, indicating 52°, 53°, 52°, 58, 55°, and 55°. At this time (June 30) vegetation is still much behind. Last season was considered a late one, but this year many trees are still later, both as regards leaf and flower. A few instances may be quoted to show the difference, the same plant or tree being fixed on each year for the purpose. The following Ash (Fraxinus Ornus) was in perfection this year on June 28, in 1876 on the 15th, and in 1875 on the 7th. The common Elder (Sambucus nigra) did not show its first open flowers this year till June 27, in 1876 on the 16th, and in 1875 on the 5th. The Portugal Laurel had no flowers expanded on June 30, while in 1875 it was in full flower at that date. During the same year the Cratægus tanacetifolia was recorded as being in full bloom on June 25, while no flowers are yet to be seen open. The ordinary Thorns have been very full of bloom, particularly the single white and red, both being in perfection on the 25th. The Lime tree (Tilia europæa), although covered with blossom-buds, has as yet no expanded flowers.

The following trees were observed to be in a free-flowering condition on June 30, viz., Laburnums, double and some white Hawthorns, scarlet-flowering Horse Chestnuts, flowering Ash, and many varieties of Sorbus, while the common Horse Chestnut showed its first open flowers on June 20. They were exceedingly poor, and have been so throughout—scarcely a tree, except in sheltered situations, having perfect leaves.

The large Sorbus domestica in this garden, which has been occasionally noticed for its peculiarity of flowering, has this year the western half covered with bloom, while last year it was the eastern half. This alternation of flowering has been observed on the same tree for several years. The tree has two main branches proceeding from a stem 7 feet high and 5 feet in circumference.

In my report for May I stated that a peculiar yellow tint had been observed on the young foliage of many trees, particularly when late in coming out. It is somewhat remarkable that the older trees of what is known as the Corstorphine Sycamore, celebrated for its early yellow foliage, which afterwards becomes green, have this year been late in coming into leaf, and were deficient both as regards colour and duration in their coloured condition.

The American Oaks, more particularly the species known as Quercus rubra, has this year been late in coming out. All the leaves have a peculiar yellow tint.

Subjoined is a list of trees whose foliage was still behind on June 30:—Sugar Maple, scarlet American Oak, Weeping Ash, small-leaved English Elm, Walnut, Turkey Oak, Hornbeam, Celtis occidentalis, Ostrya virginica, Juglans alba, Tulip tree, Ptelea trifoliata, Robinias, Catalpa tree, Platanus, and Taxodium.

Besides trees, perennial, herbaceous, and annual plants are very backward.* On the rock garden 336 species and varieties were counted in flower on June 30, while last year at the same date the number was 452 species and varieties.

List of some of the more Conspicuous Plants in Flower in the Rock Garden.

Arenaria balearica
,, grandiflora
Aster alpinus albus
Astragalus alpinus
,, leontinus
,, vaginalis
Atum palestinum
Aubrietia grandiflora major
,, Hendersoni
Brodiæa coccinea
Campanula turbinata
,, ,, alba
Chamæbatia foliculosa
Chrysobactron Hookerii
Cyclobothra cœrulea
,, pulchella
Delphinium cashmirianum
,, nudicaule
Dianthus alpinus
,, nitidus
Erodium manascavi
Epilobium latifolium nanum
Erigoron Roylii
Eriogonum aureum
,, subumbellatum
Erysimum alpinum
,, helveticum
Fragaria lucida
Genista pilosa
Hæmanthus sp. Natal
Helianthemum of sorts, single and double
Hutchinsia alpina
Linnæa borealis, Scotch
,, ,, American
Lithospermum prostratum
Meconopsis nepalensis
Menziesia polifolia variegata
Onosma echioides
Orchis foliosa
,, maculata superba
Oxytropis cœruleus
,, lapponicus
Papaver alpinum
,, ,, aurantiacum
Phlox Nelsoni
,, violacea
Potentilla peduncularis
Pentstemon humile
,, Menziesii
Pernettya candida
Polemonium pulchellum
Primula scotica
,, sikkimensis
Rhododendron ferrugineum
,, ,, album
,, ,, hirsutum
Rosa pyrenaica
Rubus arcticus
Saponaria ocymoides major
Saxifraga mutata
,, pyramidalis and others
Salvia carduacea
Sedum spathulatum
Silene alpestre
,, maritima rosea
Symphyandra Warnerii
Trifolium alpinum
,, uniflorum
Vaccinium Mortonia
Veronica Guthrieana
,, rupestre
,, pinguifolia

THE GRAPE VINE AS A DINNER-TABLE PLANT.

I WAS very much struck the other day, on a visit to Drumpellier, the seat of Colonel Buchanan, to see quite a bevy of Vines in pots about 5 inches diameter, and each Vine not more than 20 inches in height, with one and two bunches of Grapes each, from ½ lb. to ¾ lb. weight, in first-rate condition as to berry, and in fair colour. On further examination I found that Mr. Lewin, the clever contriver of this natty plan, had pot Vines tied down to a single wire about 6 inches from the stage, trained like a cordon Apple tree. On each of these Vines were springing up perpendicularly the laterals with bunches, and in order that they might be made serviceable for detachment, when ripe, they were inveigled into a 5-inch pot to root away on their own account precisely like the larger ones. The pots were full of roots, and stood regularly distributed along the top of the high kerbstone common in Pine stoves, not less than six, and in some cases eight, to each Vine rod. To make the whole more dinner-table like, sprays of Selaginella of the common kind were made to clothe the surface of the pot, and the laterals were kept well rid of shootlets by pinching.

* Read at the July meeting of the Botanical Society, Edinburgh, by Mr. M'Nab.

* On July 12 it was impossible to procure in the fields on this side of Edinburgh specimens of Wheat, Oats, and Barley in a state for examination at the Botanical Class, a circumstance of very rare occurrence at this particular date.

This is a much better plan than taking the rod through the bottom of the pot; moreover, it enables the grower to have six or more plants to each Vine, which is a great deal for a pot Vine treated in this way. On the dinner-table the plants, laden with fruit *bonâ fide*, are of the most captivating character, and look as fresh a week after as they do the day they are placed upon the tables. The plan is so excellent and so novel that I thought a simple record of it might be interesting to your readers in general, and to pomological readers in particular.

I might add that Mr. Lewin finds it attended with better success not to be too quick in inserting, or rather placing, the layers on the ground within the limited pot area (for there is really no insertion), because of the tendency to weaken the food supply from the principal store pot if the laterals were provided with their independent roots at too early a stage.

The sorts grown are chiefly Black Hamburgh, with Buckland Sweetwater as a white; and there is a succession of them, some doing duty a fortnight ago, others as late as can be. The plan is of quite recent adoption with Mr. Lewin, and his employer, who is pretty exacting in matters of taste in connection with indoor decoration of all kinds, is quite delighted with his Tom Thumb fruiting Vines. *James Anderson, Meadowbank Nurseries, Uddingston, July 24.*

CIRCULATION OF THE SAP.

There are one or two points in your leader of last week on my paper on the flow of sap as to which I should like to remove what I think is a misapprehension on your part. I do not at all reclaim against the tone of your article. I hope that, had I been in your position, I should have had the sense to treat it in the same way. It would never do were the leaders of public opinion on scientific points to allow themselves to be blown about by every breath of doctrine, or too readily to welcome every innovation, I therefore perfectly subscribe to the propriety and wisdom of the caution you exercise; but then, although you may think that I am perhaps running too fast, that is no reason why you should handicap me with more than the weight that properly belongs to me, but this is what I think you do when you say that my views "would if accepted negative all that has been laboriously acquired by chemists and vegetable physiologists from Priestley downwards." Now nine-tenths of what has been so done does not apply to my inquiry at all. The researches to which you allude mainly relate to growth. My inquiry does not touch growth. I distinctly point out in my paper the different position which growth occupies from assimilation. Growth goes on by day or by night intermittently so long as there is matter to build with; assimilation only takes place while the plant is being supplied with food—when that is stopped assimilation stops too. My inquiry relates only to the direction in which the food is supplied for assimilation, and that surely cannot affect growth. It cannot matter to the cell whether the assimilated matter on which it is to work is presented to it from above or below. Therefore, so far as regards growth, I submit that it does not enter into the inquiry at all. And as regards assimilation the question is limited to two points—first, whether the process of assimilation is confined to the leaves (a proposition which I dispute); and second, whether matter elaborated in the leaves finds its way down from them to other parts of the plant or not. I do not interfere at all with the process or existence of elaboration or assimilation in the leaves. I believe it goes on there as in every other growing part of the plant—the breaking up of the carbonic acid gas therein (not indeed under the influence of light, for I dispute the power of light to effect the chemical changes—its possession of such power as far as I can learn is a pure assumption), the retention of the carbon, and the elimination of the oxygen to which you refer may all be conducted very much as you describe. All that I say is, that the plant gets the carbon so treated from the roots and not from the atmosphere. What does it matter to the process where the carbon comes from, provided it is there? One word more by way of explanation of what I imagine to be the purpose of the leaves: I quite agree with you that they are not store-houses, I also agree that they are factories, or rather machinery. But then they are no more factories than any other growing part of the plant is, and in addition to their general functions each is also a factory for its own uses. The leaf elaborates the materials necessary for its own structure and to enable it to fulfil the special functions with which it is charged, which, as I think, are mainly that of a very powerful pumping apparatus. When there is more material produced than is required for the leaf, instead of being distributed and sent back to the rest of the plant it is, according to my view, carried past the petiole, and employed in making more leaves. This is the crucial point on which we differ. You think that the "manufactured products of the leaf are drafted upwards, downwards, sideways, according as circumstances necessitate or requirements dictate." I believe that wherever they are once elaborated there they remain—that each structure and each element, when once dealt with (elaborated), has a particular function for which it is fitted, and a particular post which it does not quit, and that it cannot be sent like a "handy man" to do odd jobs in different parts of the plant or to give additional force where more strength is needed. *Andrew Murray.*

—— The value of new opinions depends materially upon the nature of the facts by which they are supported. The introduction of a foreign body into the stem of a tree, whilst productive of interesting results, can hardly be accepted as pointing to a clear and definite fact. Mr. Murray lays great stress upon the fact that out of the myriads of scions grafted and budded upon stocks we see no influence exercised by the scion upon the stock, such as might be looked for if there were a downward flow of sap; but I insist that that fact proves nothing, for the simple reason that out of the myriads of stocks used for budding and grafting the stock is found to exercise comparatively little influence upon the scion. Mr. Murray holds that the stock does exercise an influence upon the scion; perhaps so, but not in the direction of altering its character, only in influencing its growth. Out of the myriads of Briers used as stocks for the Rose, who ever heard that the budded scion partook in consequence of any of the features of the Brier? A Quince stock does not impart to the Pear a Quince character or flavour, neither does the wild Crab stock affect the quality of the Apple. If it cannot be shown that in the unquestioned ascent of the sap the stock effects any change upon the character of the scion the argument that the absence of any evidence of change being wrought in the stock by the influence of the scion is proof against the theory of the downward flow is utterly inconclusive, indeed it points to the probable fact that the stock is simply a medium for the conveyance of nutrition in the form of sap from the soil to the leaves, and nothing more. Now I am tempted to offer for consideration a few illustrations that occur to me. The branch of a Cherry tree here was rung last winter by taking out all round it the bark to a width of about one-eighth of an inch, the purpose being to see if fruitfulness could thereby be induced. The result is that now the wood immediately above the cut is nearly twice as stout as is the wood below it. Now, as I understand Mr. Murray's theories, I should assume that, looking at the severe check given by the cut to the upward flow, the wood below ought to be the stoutest, instead of the wood above. I think the result, however, rather points to the conclusion that the sap did ascend in spite of the cut, was duly assimilated in the leaves, and then returned to build up the plant, but could not pass below the cut because its channels of passage downward through the "cellular layers of the inner bark" were removed. Still, it may admit of another explanation. That familiar plant, the Potato, presents features worthy of consideration in discussing this subject. Is the tuber generated by direct root-action, or is it the result of sap that has been assimilated in the leaves, and has returned to build up the substance of the tuber? Does the tuber contain constituents other than those abstracted from the soil through the agency of the roots? If it be shown that portions of these constituents consist of substances that must have been the product of the leaves, the fact will be conclusive in favour of the return of the sap theory. The size and consistence of the tuber of the Potato depends chiefly upon the growth of haulm and development of leafage, and where the latter is abundant the tubers are proportionately large. The connection between the size of tuber and the strength of the haulm is so absolute that Potato growers have held invariably that the latter tended to elaborate the former. I believe this notion is held by cultivators of all root crops on the assumption that the more leaf surface the more completely was the ascending sap assimilated to the building up of the root bulb or tuber on its return. The Potato specially differs from most other roots in the fact that the tubers do not lie in the plant in the position of intermediaries between the rootlets and the leaves. That such is the case with all bulbous-rooted plants we know, but an examination of the root of the Potato shows the roots are independent of the tubers, the latter being found at the extremity of separate branches. The first rooting of a cutting appears to present an illustration against Mr. Murray's theory. Out of what are the rootlets formed if not out of stored-up sap, and if to form these roots there must be a downward attraction in the cutting, why may it not also exist in the plant? A cutting has from the first to depend upon what moisture it is capable of extracting from the soil, but this without roots cannot prolong life indefinitely. Are the roots the product of the moisture as extracted from the soil, or exuded from the base of the wound by the force of a downward pressure on the sap exercised by the atmospheric conditions of light, air, and warmth upon the leaves? At all events, it would seem conclusive that, in the case of cuttings, rootlets must first be formed from out of the sap in the branch before the branch can extract nutriment from the soil; and if this be so, then the downward flow of the sap is proved. *D.*

Fig. 19.—Phylloxera vastatrix.

THE PHYLLOXERA.

Grape growers are as much interested in the Phylloxera as are the Potato growers with the Colorado beetle, on which account we think it well to give an illustration of the manner in which the Grape louse (fig. 19) affects the leaves of the Vine. Many specimens of "warts" are sent to us under the impression that the leaves so affected are attacked with Phylloxera. The illustration (fig 20), taken from a specimen recently sent to us, will show better than words how the Phylloxera attacks the leaves, while the smaller cut is Professor Westwood's original illustration of the insect. We may say that we have received many more specimens of the roots infected with the insect than of leaves.

GLEANINGS FROM THE ROSE SHOWS.

(*Concluded from p. 75.*)

The readers of my paper in the last number of the *Gardeners' Chronicle* (July 21) are requested to note two or three little errors, arising, probably, from illegible copy. "Vallombrosa" should have been "Vallambrosa" [Valombrosa is the more correct. Eds.]; the second, "Baron Bonstettin," "Baron Chaurand;" a comma should be between "the Gloire" and La France, and Marie Cointet—only an exhibitor's Rose. By the way, upon an inspection, since my last remarks were written, of several specimens at some large nurseries, the colour of this Rose, when in character, struck me as closely resembling that of the flower of the Oleander. This view was assented to by the friend to whom I communicated it, and, further, that the precise tint is unique amongst Roses. On the same occasion I also noted instances of the injurious propensity that Captain Christy has to grow out from the stock, after the manner of Maréchal Niel—not a common idiosyncrasy amongst H.P.'s.

In the course of note-taking, besides varieties already remarked upon, the writer singled out certain kinds for notice other than from the mere exhibition

point of view—that is, as to their character and uses under actual cultivation. At the shows blooms are presented in the state of full expansion, or nearly so, while many kinds really display their highest beauty when in the bud. At this stage they are particularly suited for the "button-hole," a mode of using flowers which has hitherto received little artistic consideration, and for bouquets when small, and Roses form their chief constituents. For such purposes Teas and the less exaggerated show monstrosities amongst the hybrid perpetuals are in admirable keeping. What can be more charming than the contrast afforded by a half-opened bud of Maréchal Niel or Madame Falcot against one of Prince Camille de Rohan, Louis van Houtte, or Xavier Olibo, or Niphetos and Madame Knorr, one of the loveliest Roses in bud we have? Illustrations might be multiplied *ad infinitum*, but the suggestion is sufficient for rosarians with an eye for colour harmonies and contrasts. The kinds with long buds should be selected as the best.

The Roses most remarkable for evenness of form were, first, Félix Genero, the finest model perhaps we have—would that in shape we had examples resembling it in every line of colour; Edward Morren, Alfred Colomb, Etienne Levet, Marie Rady, Marie Baumann, Princess Beatrice, globular; Chabrilland, Baroness Rothschild, unhappily so little fragrant; Madame Charles Wood, even though flat; Charles Lefebvre, John Hopper, sometimes quartered; Gloire de Dijon and Malmaison, globular in bud but expanded when full blown; Triomphe de France, flattish but with closely imbricated petals, and plenty of them; Maréchal Niel, model of the deep petalled Teas; La France, almost *sui generis*, in form perhaps is an improved Cloth of Gold, that most capricious of flowerers. Madame Vidot and Madame Victor Verdier and Beauty of Waltham are also shapely Roses. We purposely omit the Paul Néron class, because, like Mantilini's Countess, they have "no outline," or like that of the "Duchess," for the full description of whose outline we must refer the reader to the pages of the immortal "Nickleby."

A question of serious import to the future of the Rose is suggested by any critical inspection of Roses in large numbers, whether at shows or in the Rose grounds. It is, what is to be the style of our future flowers? Every year we appear to be tending more and more towards roughness of petal and raggedness of circumference, and fewer petals relatively to size. Let any one take half a dozen representatives of certain much-puffed novelties, and having picked them to pieces, count the petals, and compare them in number with the old Cabbage Rose. The lesson will be startling. Again, as to the colours of Roses. Purity seems to be a point almost ignored, especially in the tinted approximations towards white. In many cases, too, there is a distinction without a difference, so many are alike. If any rosarian wishes to realise this fact, let him, as the writer has often done, go on a tour of inspection through fifty or a hundred thousand Rose trees. If, before half his promenade is over, he is able to distinguish any individual Rose from another, his powers of vision must be of an entirely exceptional order.

At every successive show the question involuntarily arises in the mind—Can no more elegant mode be invented or contrived for displaying Roses on the stands? Are the green tray-like boxes at present in use the limit of the artistic resources of exhibitors, or is (too often) half-dry and dingy moss the only medium that can be discovered as a surfacing to set off the blooms? Finally, should Roses, which are not pipped flowers like Pansies or Picotees, be set out flat and singly?—a mode which necessarily circumscribes the display of foliage, not the least adornment which Nature has provided for setting off all flowers. Granted that the horticultural mind is difficult to move in new directions, yet there are not wanting pioneers—witness Mr. W. Paul's extemporised Rose garden at the Botanic not so very long ago.

W. D. Prior.

Fig. 20.—Leaf-galls produced by the grape-louse (phylloxera). Nat. size.

NOTES ON BANYAN FIG TREES.

A question has arisen whether there are other species of Figs which send down adventitious roots in a similar manner to those known as Banyan trees, found in India and elsewhere, and which become gradually elongated, increasing in firmness and strength, until reaching the ground they take a firm root, and become distinct trunks or supports to the parent tree. Baron von Mueller, of Melbourne, directed my attention to this fact by inquiring if I had observed this peculiarity of growth in the common New South Wales Fig, Ficus australis or rubiginosa. It has, however, often been seen in the Moreton Bay Fig (Ficus macrophylla). Baron von Mueller says:—"Is there any state of the Ficus australis in Illawarra or elsewhere in New South Wales producing a Banyan-like growth such as occurs in the Ficus columnaris of Howe's Island?"

My attention was directed to a tree of Ficus australis growing in the Sydney Botanic Gardens close to the fence, which had sent down firm trunks, and several of the roots of various sizes were advancing. There are also some old trees at Watson's Bay, near the South Head, Port Jackson, which have also sent down large and firm roots, so, as far as regards this tree, it may be considered as an established fact. At Howe's Island there is a noble Banyan tree, Ficus columnaris, but which was supposed, but erroneously, to be identical with our Ficus rubiginosa. The late Mr. Carron, who had visited Howe's Island, and was well acquainted with its vegetation, gave me the following account of this remarkable tree, as follows:—

"Amongst the many plants peculiar to Lord Howe's Island is a very remarkable Fig tree, which the inhabitants call the Banyan from its mode of growth so much resembling that of the Banyan of India (Ficus indica), although in the colour, size, and form of the foliage, as well as the fruit, it is very different, and more resembles in these respects Ficus macrophylla, a noble tree found in the dense jungles of the coast districts in the northern parts of New South Wales and Queensland.

"This tree covers a great deal of the flat land on the lower parts of the island, and is a very striking and picturesque object from the numerous columnar stems supporting the large branches, one tree forming quite a grove of fine glossy dark green foliage, the branches throwing out their adventitious roots in all directions, and which may be seen of all sizes, from that of a stout cord swinging in the air from 15 to 20 feet long till they touch the ground, when they immediately attach themselves, tightening and swelling rapidly, drawing nourishment from the earth towards the support of the whole tree or family of trees, for they are all attached unless a large branch is injured and becomes decayed through, when the detached portion forms a fresh grove on its own account, as it were. So quickly do these stems, formed from the aërial roots, increase in size, that it is sometimes difficult to tell which was the original trunk. In some instances they are very numerous, and as various in size from the recently attached root just beginning to increase in size on to 2 inches and up to 2 or 3 feet in diameter, and seldom much more, as the trunks never attain the size of those of Ficus macrophylla on the east

coast of Australia, but these latter never form the columnar stems from the aërial roots like the Howe's Island plant.

"By some error in the *Flora Australiensis* this Fig, which has been correctly described by Baron von Mueller, Government botanist, Victoria, under the name of Ficus columnaris, is confused with F. rubiginosa, quite a different plant in appearance, and found much further south.

"It may be that the specimens furnished to Mr. Bentham were without fruit, and the leaves below the average size, for the leaves very much resemble those of F. macrophylla, being often 6 to 9 inches long and 3 to 4 inches broad, with stipules 3 to 4 inches long, the fruit receptacles roundish or somewhat Pear-shaped and ¾ inch in diameter, while the leaves of F. rubiginosa are always much smaller, more ferrugineous beneath, and the stipules are of a dull rusty colour and not more than half the length. The fruit receptacles also are very much smaller, scarcely ½ inch in diameter, and of a different appearance; in fact, the whole plant, whether young or old, has a very different aspect from that of F. rubiginosa, and certainly more resembles F. macrophylla than any other Fig that I am acquainted with."

We remark in the Banyan tree that the inferior surface of the branches, which always show a disposition to extend in a horizontal direction, sends down a number of fibrous roots, which sometimes become fixed in the ground, and serve as props or vicarious trunks. This is by some considered a mode of propagation, and by it an endless succession of trees are produced; but this is not the precise fact, they may rather be considered as a provision for the adequate support, both mechanical and nutrimental, of the heavy and extensive branches of the parent tree. When these branch roots are implanted in the soil they resemble the trunk of a young tree, but have never I believe in any instance been seen to produce branches or foliage; they appear only to serve as props to the parent tree. This is exemplified in the account of a Weeping Willow in the kitchen garden of the old castle of Ettlingen (*Gardeners' Magazine* for June, 1833), in which it is said that "the greatest curiosity in this garden is a Weeping Willow, planted in 1787, which was nearly thrown down by a storm in 1816. One branch was cut off, and an oaken prop was put under the other. The Willow sent down a root under the decayed bark of this Oak prop, which, in 1829, being increased to about the thickness of a man's arm, burst from the bark; and it is supposed that in a few years it will render the oaken prop superfluous." The Banyan of the Society Islands, named by the natives Oró, Orá, Aóa, has small, narrow, and lanceolate leaves, with a smooth or polished surface, while those of the Banyan of India are broad, ovate, and rough, green on the upper surface and downy beneath. *George Bennett, F.L.S.*

NOTES ON JAPANESE TREES AND SHRUBS.

Professor Rein, who has travelled widely in Japan, recently delivered a lecture on the vegetation of Japan before the Horticultural Society of Berlin, and we are indebted to the *Monatsschrift* of that society for the following extracts.

Of all the species of Hydrangea H. paniculata is the most widely dispersed in a wild state, ascending to an altitude of 5000 feet, where it forms large bushes. In many places it is used for paper making. The genus Actinidia comprises four or five species, all of which inhabit the mountain forests, climbing from tree to tree, to a height of 65 feet or more. The fruit of A. rufa and arguta is edible and eaten, being of a bitter-sweet taste, and by no means disagreeable. The fruit of A. polygama is not edible, but it possesses in a remarkable degree the power of attracting cats, and this property is common to the whole plant. This peculiarity is so marked that it has given birth to the proverb: "He sticks to it like a cat to a Matatabi." Schizophragma hydrangeoides, a shrub of climbing habit closely allied to Hydrangea, is also found in the mountains up to 5000 feet, and on account of its beautiful pure white flowers is highly esteemed.

To illustrate his remarks on the timber trees of Japan, Professor Rein exhibited a collection, of Japanese preparation, of 100 vertical and horizontal sections of Japanese woods, mounted in a kind of album on paper. The method of mounting is European, which the Japanese saw in the Exhibition at Vienna in 1873, and the collection was made at the expense of the Government. The most noteworthy among these specimens is a number of differently coloured varieties of the wood of Cryptomeria japonica, the largest tree in Japan. This sometimes attains quite extraordinary dimensions; Professor Rein measured the trunk of one breast-high which was nearly 35 feet in circumference. Retinospora pisifera and obtusa, and Thujopsis dolabrata are trees of moderate size, occasionally with a trunk a yard in diameter. Professor Rein thinks there are only three species of Pinus native of Japan, namely, P. densiflora, P. Massoniana, and P. parviflora. The two first are favourite trees of the Japanese, and are represented in lacquer and on porcelain ware, and living specimens are found in nearly all gardens. Some of the latter are curiously distorted, and from 200 to 500 years old, and they are regarded with an amount of veneration bordering on worship. Some of them have very long horizontal branches resting on the ground. P. Massoniana loves a sandy soil, is hardier and perhaps rather larger than P. densiflora, and consequently more generally cultivated. It forms magnificent avenues, its rich dark green long leaves being very beautiful. It attains a height of 100 feet, with a diameter of 6 feet. P. parviflora belongs to the group with five leaves in each sheath. It is widely dispersed in Japan, and reaches an altitude of 9000 feet, where it becomes shrubby. P. koraiensis is only cultivated in Japan. Abies Tsuga is extremely common in mountain forests up to from 5000 feet to 6000 feet, as also A. polita, A. firma, and A. Alcoquiana. Salisburia adiantifolia is not wild in any part of Japan, and is exclusively planted near the temples. The largest specimen seen by Professor Rein, which is regarded by the Japanese as the largest in the empire, measured nearly 23 feet in circumference, but it was scarcely 50 feet high. Juglans mandschurica and Pterocarya sorbifolia are the only Juglandeæ. Among the Cupuliferæ Oaks are represented by twenty-two species, about one-third of which are evergreen. The latter are mainly confined to the southern parts, and probably do not extend further north than the Bay of Yeddo. About the town of Yeddo they are very much cultivated.

Forests of evergreen Oaks were only seen in the southernmost island, Kiouson. One species, Quercus cuspidata, has edible acorns, which, boiled or roasted, are offered for sale in the streets in winter. The wood of the evergreen species is regarded as better and tougher than that of the deciduous species, and is preferred for many purposes. Castanea vesca is wild throughout Japan; Professor Rein observed it in sixty districts. Beeches are abundant, and are of two species, F. sylvatica and F. Seiboldii. Planera japonica (P. Kaki) furnishes a most valuable wood, for cabinet furniture and turnery, of all the deciduous trees of the country. The wooden plates and dishes generally used are made of this wood, and it is universally affirmed that it never cracks. This tree, Laurus Cinnamomum and L. Camphora are the largest of Japanese trees, occasionally as much as 20 feet in circumference. Buxus sempervirens is exceedingly common in the south, and its wood is almost exclusively used for making combs. Distylium racemosum occurs only in the southern districts; it has a very hard wood, which is likewise used for making combs, and the bark is burnt and the ashes sent to the different porcelain districts, where mixed with the earth it is used as a glaze.

There are two species of Ilex, I. crenata and I. integrifolia. Magnolia hypoleuca furnishes a most important wood, and the ashes serve for rubbing down lacquered work. From the extremely fine-grained flexible wood the familiar elliptical bread baskets are made, and all sorts of thin lacquered ware. This Magnolia is a stately tree, with leaves about 10 inches long, arranged in whorls, giving the tree at a distance the appearance of a Horse Chestnut. It grows in the mountain forests associated with Beeches and Æsculus turbinata, and trunks more than a foot in diameter are not uncommon. Paulownia imperialis is another example of a tree commonly cultivated which is not indigenous to Japan. The soft wood is employed in making shoes, and for making light boxes, in which the more fragile articles of lacquered ware are packed. Erodia glauca is rapidly disappearing from the forests, and is not yet cultivated. The inner bark is eagerly sought for dyeing silk of a yellow colour.

Six species of Rhus have been observed in Japan, though two of them, R. succedanea and R. vernicifera, are only cultivated, and originally introduced from China. The cultivation of R. vernicifera and the collection of the lacquer is one of the principal industries of Japan. Some of the villages are completely surrounded by forests of this small tree. Like R. Toxicodendron and some other species, this is venomous to some, in fact, to most persons on first touching it; but it is averred that the same person suffers only once. Contact with the plant, or the lacquer it produces, or even inhalation of the vapour, causes the softer parts of the hands between the fingers, the tips of the ears, margins of the eyes, cheeks, scrotum, &c., to swell and inflame, and during four or five days the effects are very painful. The Camellia occurs wild as a shrub on the eastern side northwards to the Bay of Yeddo (36° N. lat.), and, strange to say, up to nearly 39° on the colder western side, where Professor Rein found it as underwood, rarely exceeding a yard high in hill forests up to an elevation of 800 to 1000 feet. Advancing southwards it is gradually larger, and in the southernmost island it is quite arborescent, though never so large as the largest cultivated specimens seen.

It is a noteworthy fact that Professor Rein found Camellias growing and flowering under Beech trees, with Asperula odorata carpeting the ground beneath. Many large cultivated specimens were measured, and some were found with a trunk 4½ feet in girth, and over 30 feet high. Though not found wild so far north it succeeds up to 40° N. lat. on the western coast, where it is cultivated mainly for the oil furnished by the seeds, which is used for anointing the hair. With regard to Broussonetia papyrifera, Professor Rein mentioned that attempts were being made to cultivate this useful tree in Germany, on account of the dearth of material for the manufacture of paper. At his instigation 10,000 seedlings have been procured from France, and planted on the railroad banks near Frankfort-on-Main and Wiesbaden, besides 1000 young trees.

Other plants used for paper-making in Japan are Edgworthia papyrifera, Wickstrœmia canescens, Aphananthe aspera, and Morus alba. Paper from Aralia papyrifera is only made in Formosa. In answer to some enquiries, Professor Rein stated that Wistaria sinensis is wild throughout Japan, and not introduced, as Siebold affirmed, from China; it fruits freely. W. brachystachys, which was not found growing wild, may be a variety of W. sinensis. Miniature varieties of native trees were not observed, though artificially dwarfed specimens of numerous species are so largely cultivated.

CONCERNING PEAS.

There are so many new Peas, or at least assumed new varieties of Peas, putting in an appearance from time to time, that it is well some general conclusions can be periodically drawn concerning them in order that the horticultural body may know something of the character of the novelties so constantly being brought before them. I have just had an opportunity of inspecting a comprehensive proof of Peas at the trial grounds of Messrs. Hurst & Son, 6, Leadenhall Street, E.C., at Croydon, a trial so successful as to warrant fair average deductions being made as to the distinctness and worth of the newer introductions. The grounds are remarkably well managed; all new things are tested without favour or prejudice, and as something like 2500 trials of Peas, Cabbages, Kales, Carrots, Onions, Leeks, Lettuces, Beans, &c., have been made this season with the greatest care and attention, the comprehensiveness and thoroughness of the work is thereby demonstrated. Seldom has a trial ground appeared so clean, neat, and well ordered as this one at Croydon.

The wholesale seed trade is sometimes accused of carelessness in the matter of the quality of its stocks of vegetable seeds. This is not true of the firm of Messrs. Hurst & Son, for a sample of every bulk that comes to the warehouse is carefully tested, and its quality determined. All inferior stocks are at once rejected. These trials are calculated to inspire confidence, for the very best stocks are selected for seed purposes to grow from to supply customers. When trial samples are of good quality they are rigidly selected, and only the finest types saved. This is done year after year, and increasing business transactions attest to the confidence thereby inspired.

Of early Peas a fine stock of Improved Sangster's No. 1 was well ahead in point of precocity. It

flowered at the same time as Dillestone's, but beat it by three or four days in maturing its pods. Taber's Perfection has a darker green pod and haulm than Improved Sangster's, but proved as early. William the First must be set down as a remarkably fine early Pea, as early as Improved Sangster's, with a dark green pod and excellent flavour. Kentish Invicta proved early and good; the pod the same size and shape as Improved Sangster's, but of a darker green. Emerald Gem is early and a good cropper, with a taking bright shining green pod. First-crop Blue is a capital dwarf early Pea, producing good pods, and finding much favour among market gardeners.

Prizetaker has long been a good standard Pea because of its productive quality and handsome pods. Hundredfold, which much resembles a round form of Champion of England, is very like it in growth and general appearance, but rather more pointed and shorter in the pod. Laxton's Supreme beats both—a variety that is now generally cultivated.

Fillbasket is a very fine Pea, with large, bold, green, slightly incurved pods, and a great cropper; it grows to the height of 2½ feet, and is a first-rate main crop variety. Laxton's Prolific Longpod, the first of Mr. Laxton's seedlings put into commerce, is a somewhat puzzling Pea. When first grown after being distributed a mixed sample resulted, there were green pods of the Prizetaker type, and long white pods of the Dickson's Favourite type. Some selected the green form, and others the white form, which was the type Mr. Laxton intended, namely, an improved Dickson's Favourite. The green form reverted to Prizetaker. The samples at Croydon all represented the Favourite type, and very fine it was—the pods long and well filled.

Two new varieties, received under the names of Balmoral Castle and Market Garden Favourite, could not be distinguished from Supreme. Market Favourite is a great improvement on the old Ringwood Marrow, and makes an excellent market variety; it is a great cropper, the pods fine and well filled, growing about 4 feet in height. Allen's Champion, a new variety of the past year, is simply a good stock of Dickson's Favourite, and a second early.

The old Victoria Marrow, or Thurston's Reliance, is yet a good Pea, a great cropper, bearing well-filled pods. Berkshire Challenge appears to be a fine type of the foregoing. Young's Nonsuch is a large late Pea, perhaps one of the latest in cultivation; in a dry state the seed resembles that of Supreme, but is larger; it is so robust in growth as to appear a variety that will resist mildew. In general appearance and quality it comes very near to Ne Plus Ultra.

The Sugar Peas were here both tall and short, and there was Blue Prussian, Bedman's Imperial, and the old Scimetar—sorts that are now only partially grown but required in certain districts. Supplanter has large green pods when in true character, but shows a tendency to revert to a small green form, and will have to be rigidly selected. It grows about 2½ feet. A dwarf Pea, named Bijou, appears to be the same as Little Gem. The Shah is very similar in appearance to Alpha, but barely so full in the pod; the seed is white wrinkled, while that of Alpha is green indented. The last-named is a good early Pea, with small green but well-filled pods, a good cropper, and turns in quickly.

Advancer still holds a leading position as one of the very best early wrinkled varieties; and thoroughly the late Dr. Maclean must have done his work in that his seedlings maintain their character so constantly and continuously. Dr. Hogg has fine pods, but both light and dark in colour, the former prevailing, and something after Dickson's Favourite in appearance; it is however a wrinkled Pea. Wonderful was here a remarkably good variety, beating Climax hollow, 2 feet in height, and bearing large well-filled pods. Dr. Maclean is like Wonderful in appearance, but with a larger and more pointed pod. Here it appeared delicate, and was much affected with blight. Omega is a good late dwarf Ne Plus Ultra, fine pods and an excellent cropper. Premier is a remarkably good Pea, fine, well-filled pods, and crops well. East Anglian is very like Premier, but more robust in habit, and a great cropper. It is represented to be a dwarf Ne Plus Ultra, but lacks the characteristics of that variety; it will do well on moist soils. Standard is like Dickson's Favourite, but with a broader pod and dwarf in growth, about 2 feet. Best of All is very like Premier in appearance, but earlier and dwarfer and an excellent cropper.

Veitch's Perfection still remains as a fine type of Pea; a pure stock of it, such as could be seen at Croydon, represents an almost perfect garden Pea. Hairs' Mammoth—the old type of it grown for so many years—is earlier, a good cropper, with fine well-filled pods. G. F. Wilson is a remarkably good Pea of this class, but it must be well selected, as it betrays a tendency to run out. Prince of Wales is a good white wrinkled variety, bearing plenty of well-filled pods. James' Prolific is a fine early variety in this class, the pods large and well-filled—a good exhibition variety. Popular and Quality will have to be discarded; under the most favourable conditions the pods are small. Huntingdonian is an Early Champion of England, the pod a little whiter, and fit to gather sooner. Commander-in-Chief appears an inferior form of Champion of England.

The old tall Green Marrow is yet a very prolific and good variety, and it is not to be wondered at that many of the old school of gardeners are unwilling to give up its cultivation. Prince Leopold is a fine large type of Pea, with large, round, white seed in a dry state, but not sufficiently distinct from Veitch's Perfection in growth. Magnum Bonum is a fine Ne Plus Ultra, the latter being seen here in admirable condition. Giant Emerald Pea has large, shining, bright green pods, and will be found very useful for exhibition purposes. It is of a tall growth, like Ne Plus Ultra. Lastly, Laxton's Connoisseur greatly resembles Ne Plus Ultra in appearance, without being so good.

A few varieties suitable for exhibition purposes will be found in William the First, Fillbasket, Supreme, Market Favourite, Dr. Hogg, Dr. Maclean, Veitch's Perfection, James' Prolific, Ne Plus Ultra, Prince Leopold, and Giant Emerald. *R. D.*

THE ROYAL GARDENS, KEW.

(*Continued from p. 77.*)

IPECACUANHA.—Dr. King reports that he fears this drug cannot be grown profitably so far north in India as Bengal, but that the secret of its successful propagation being now perfectly understood any quantity of seeds can be sent out. A quantity of the dried root has been prepared by Dr. King for use in the Medical College Hospital of Calcutta, and found to be quite as efficient as the best South American drug. The disadvantage attributable to the extreme slowness of the growth of this plant, and hence small annual return of root wherever it has been cultivated, must be met by a greater extension of the cultivation, as to which there should be no difficulty, seeing that the plant is increased with astonishing facility by ordinary cuttings, root division, or by merely pegging a leaf to the earth.

LIBERIAN COFFEE.—The demands for this plant (first grown in this country at Kew in 1872), which has excited the expectations of Coffee planters in all parts of the world to the highest degree, far exceed our means of supply. Now, however, that the function of this establishment in introducing the plant into the Coffee-growing districts of India and our colonies is amply fulfilled, and both the seed and plants are to be had from Mr. Bull, of Chelsea, and Messrs. James Irvine & Co., of Liverpool, as well of other firms, no further supply will be kept in Kew than suffices for exchange of specimens with other botanic gardens and correspondents. Mr. Hiern has examined the African species of the genus Coffea in preparing the Rubiaceæ for the forthcoming third volume of the *Flora of Tropical Africa*. He has determined the claims of the Liberian Coffee to be regarded as a distinct species, as was indeed the opinion of its scientific discoverer, Afzelius, and he has described it in the *Transactions of the Linnean Society* (second series, "Botany," i., p. 171, tab. xxiv.), under the name of Coffea liberica.

Amongst the numerous favourable notices of the plant which I have received I will content myself with quoting two from opposite sides of the world.

Dr. Thwaites (Ceylon) writes, under date August 29, 1876, "Some of the first plants of Liberian Coffee you sent to me have become large bushes, and are producing berries. These latter are of a large size, but they ripen very slowly, evidently from the want of a higher temperature, so I am distributing some plants in the low country and near the sea." In his report for 1875 he also expresses the opinion that though the plants have become affected with the leaf disease, "they do not apparently suffer here (Peradeniya) from the Hemileia so severely as our ordinary Coffee."

In the Malabar District of South India the Liberian Coffee has also disappointed the expectations which its large and leathery foliage seemed to encourage of its capacity for resisting the Hemileia. Its more vigorous habit of growth may, however, enable it to bear without succumbing the ravages of this insidious parasitic mould.

Dr. Imray (Dominica) writes while this report is in preparation, "I am thoroughly convinced that the Liberian Coffee will in time take the place of our native Coffee, if I may so call it. I think you would be pleased were you to see my Liberian trees with their healthy vigorous branches and large dark green bright shining leaves. Many of the trees have blossomed and are still flowering, and a small crop of berries is coming on. The plant must evidently be very prolific. I count as many as fifteen or twenty berries, even more, in the axils of the two opposite leaves. . . . It appears to me that the new species of Coffee is peculiarly adapted to this island. So far as the temperature and rainfall are concerned, the climate approximates very closely to that of Liberia, from whence the plant comes. If the cultivation of Liberian Coffee is generally taken up in Dominica, as I think it will be, there is a future for this little country. There are thousands of acres of splendid Coffee land that might be cultivated in this island, with no fear of the 'white fly' before the eyes of the planter, for the Liberian tree bids defiance to its attacks. Indeed there is a very eligible field for settlers here with a little money in their pockets who wish to cultivate Coffee. It might be pleasanter and more profitable in the long run to set their faces towards the west, instead of the 'far east.'"

The suppression of this product generally in Dominica, which island once yielded the finest West India Beans, has been the subject of correspondence with the Colonial Office. This led to the mission of Mr. Prestoe, the Government botanist of Trinidad, to Dominica, with a view of reporting on the subject. Mr. Prestoe's report, which is in every way an admirable one, deals with all the vegetable products of the island in an exhaustive and most instructive manner, and in respect of Coffee it shows that the cessation of its cultivation was not due to the larva of a small moth (Cemiostoma coffeellum), which can be extirpated from a plantation with great ease, but to causes which are far more general, affecting the well-being of the whole island, and especially to mismanagement on the part both of the Government and the colonists.

MAHOGANY.—Dr. King reports that the demand in India for seedlings of this timber-tree continues to be larger than he can meet. Supplies of seed have been procured from Jamaica and forwarded to Calcutta.

MONSTERA DELICIOSA.—Mr. Bernays, Vice-President of the Queensland Acclimatisation Society, writes to me, under date April 27:—"I am sure you will be gratified to learn that Monstera deliciosa, the first and only plant of which (as I believe) received in Australia was sent by you to this Society, has proved itself to be well adapted to our climate. It has fruited this year with great success at Bowen Park, and is pronounced by the most competent judges to be, as its specific name indicates, a really delicious fruit."

The following is a statement of the packets of seeds and plants sent out during the past year, and included in 342 consignments:—

	Ward's Cases.	Seeds (Packets of).	Stove and Greenhouse Plants.	Herbaceous Plants.	Trees and Shrubs.	Recipients.
Britain	..	950	6815	1091	822	93
Continent	..	391	683	85	..	17
Asia	80	244	2702	..	..	14
Africa	7	198	264	..	133	10
America	10	876	636	..	27	19
Australia and New Zealand	5	695	670	3	6498	11
	72	3354	11,770	1179	7480	164

TEA.—The establishment of Tea plantations in Ceylon, which date from about 1868, and to which I alluded in my report for 1873, is now a proved success. Samples communicated to Kew have been pronounced by experienced brokers as of very excellent quality.

OFFICIAL CORRESPONDENCE.—The communica-

tions, letters, and enquiries addressed to this establishment during the past year from Government offices at home, in India, and the Colonies, as well as from private individuals in all parts of the world, have been unusually numerous. This part of the work of Kew is fast becoming a distinct department, and already absorbs a large part of the time of the Assistant Director in giving it attention. I select from an immense list of topics which have come under our attention during the past year the following as of some general interest :—

African Oil Palm for Labuan.—A correspondence has taken place with the Colonial Office on the subject of the introduction of the Elæis guineensis from the west coast of Africa into the Island of Labuan. The great simplicity in the extraction of the oil, whether by mere expression (as in Old Calabar) or by boiling, and the value of the kernels as a further source of oil and feeding stuff when imported into this country, appears to make this an industry extremely well adapted for Labuan and adjacent islands. I have taken steps to obtain seeds from Africa and also detailed information as to the method of preparation.

Balsamocarpon brevifolium.—Our attention having been drawn to a new tanning material known as the Algarrobo of Chili, which appears to be of very high commercial value and far superior to Divi-Divi, a quantity of the pods (the part of the plant used) was obtained from Chili by the intervention of H.E. H. Rumbold, Her Majesty's Minister at Santiago. It was distributed immediately to the following places as likely to prove suitable for its growth :—Adelaide, Bahamas, Barbadoes, Bermuda, Brisbane, Cape of Good Hope, Gunesh Khind (Bombay), Lahore, Melbourne, Natal, W. Australia.

Burmese Cardamoms.—A sample of these seeds was sent to Kew by the India Office for identification. Burmese Cardamoms fetch a low price in the market compared with Malabar Cardamoms, and it was supposed that this might be due to the intermixture of the seeds of this plant with those of a spurious kind. It was, however, quite certain from their microscopic structure that the seeds sent were not those of Elettaria Cardamomum, and it was not improbable that they might belong to Amomum xanthioides, the wild Cardamom of Siam, but about which scarcely anything is known.

In this, as in so many other cases, the materials sent to Kew for an opinion were from a botanical point of view lamentably insufficient, and this was in this particular instance the more to be regretted because a scientific department like the Indian Forest Service might easily obtain such a series of specimens for transmission to England as would enable the whole history of the Burmese Cardamom, which at present is very unsatisfactorily known, to be entirely cleared up.

Castor-oil in Bahamas. — A correspondence has taken place with the Colonial Office on the subject of the cultivation of the Castor-oil plant in the Bahamas. Governor Robinson states that "the Castor-oil plant grows here as a weed, but no endeavour yet has ever been made to express the oil. Thousands of gallons might be exported from here annually." A supply of the best Castor-oil seed was obtained from Calcutta and forwarded to the Bahamas. Governor Robinson now reports : "The yield of this variety of the Castor-oil plant is, we should say, fully three times greater than that commonly found amongst us, the heads and the Beans themselves being very much larger than those produced by the native variety. As the East India plant can be cultivated quite as easily and readily as our own, and as it possesses such a marked superiority in the matter of yield, we hope to see it speedily and widely introduced into the colony, so as to supersede the indigenous kind altogether."

(*To be continued.*)

DESIGNS FOR CONSERVATORIES.

Horticultural builders have to study not only the requirements of plant growers but of architects. Conservatories intended to form part of the features of a mansion should obviously be in accordance with the style of the building, and as these structures are primarily designed for show houses rather than for houses wherein to grow plants, their suitability to the latter purpose is for this point of view a matter of secondary consequence. The accompanying designs (figs. 21, 22), prepared by Messrs. Weeks & Co., show how well the horticultural builders can adapt their structures to architectural requirements. In the one case we have a conservatory in the style of Queen Anne (stupidly called the Early English style), while the other is a Gothic design of Middle Pointed style.

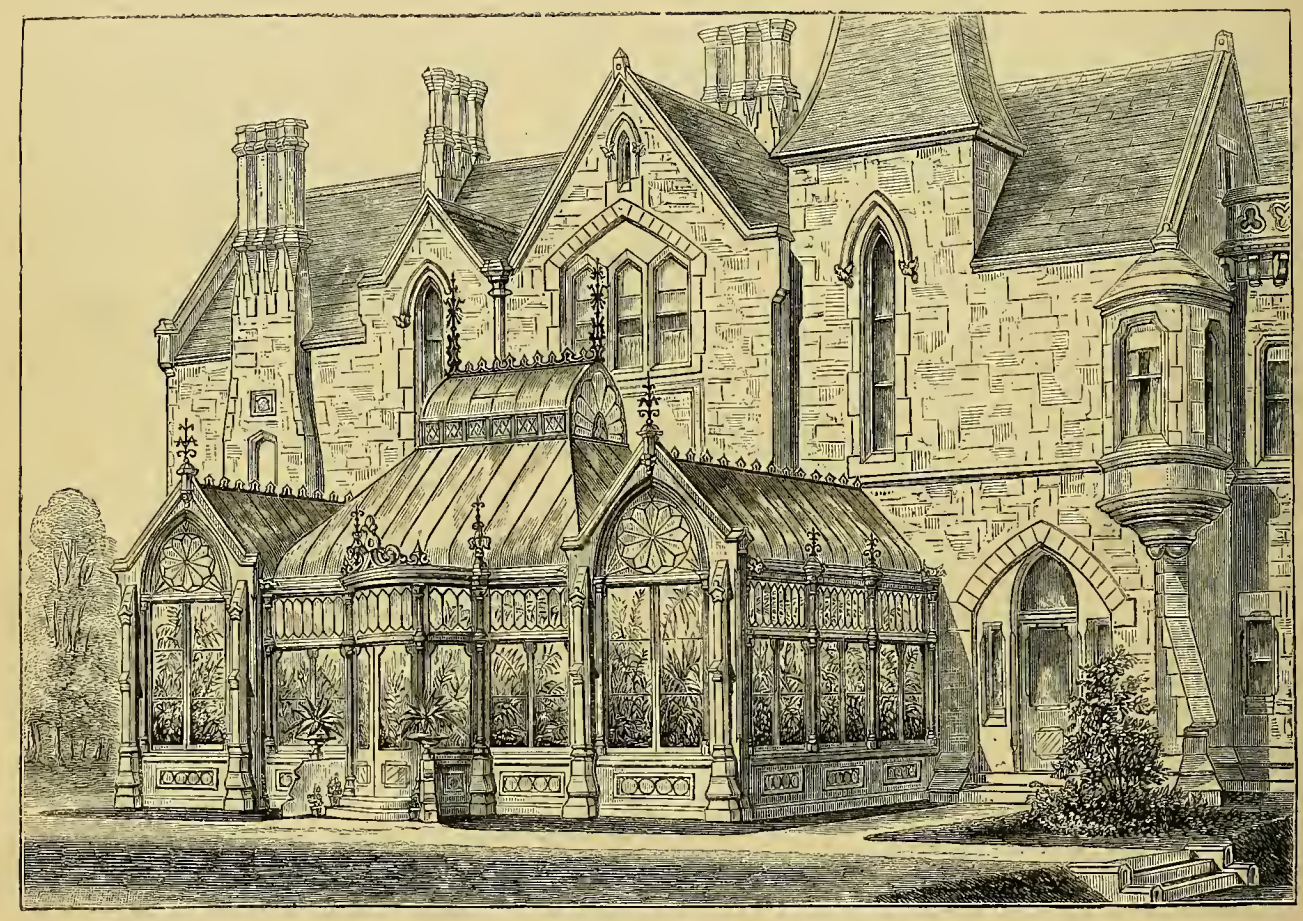


Fig. 21.—Conservatory in Middle Pointed Gothic Style.

Notices of Books.

Tropical Agriculture ; *a Treatise on the Culture, Preparation, Commerce, and Consumption of the Principal Products of the Vegetable Kingdom.* By P. L. Simmonds, F.R.C.I., &c. London : E. & F. N. Spon.

Upon opening this volume we are forcibly reminded of a work by the same author which appeared so long ago as 1854, under the title of *The Commercial Products of the Vegetable Kingdom.* This book, which contained an immense mass of valuable information on the cultivation of the principal useful plants, and of the preparation of the products derived from them, has long been out of print, and as no one in the meantime has taken the subject up, Mr. Simmonds has done well to prepare a new work of the same nature, though, as will be seen, under a different title. That there is great need for a book of this kind, even in a much more extended form, is evidenced by the fre-

quent and constantly increasing applications made to the Royal gardens at Kew for special information on the best modes of cultivation of valuable economic plants, together with the extended interest that is being taken in the acclimatisation of useful plants in different climates. A work that should include all that could be said, or, rather, all that is worth saying, on each product of the vegetable kingdom, would indeed be a ponderous volume, and, moreover, a very great undertaking nevertheless, such a volume, if carefully done, would be one of real value. What Hanbury has done for drugs in the *Pharmacographia* some other competent person ought to do for the other products of the vegetable world, and no doubt this would be done were it not for the one prevailing obstacle, namely, the expense incurred in publishing such a work, or the difficulty in finding a publisher who would undertake it. *Tropical Agriculture* is certainly an improvement as a work on *The Commercial Products of the Vegetable Kingdom*, though the title does not commend itself to us so favourably as that of the older book. The plan is in most respects similar. Thus, under "plants yielding seeds, leaves, and other substances employed in domestic use for the preparation of dietetic beverages," &c., are included cocoa, coffee, tea, and sugar, the latter from all sources, namely, cane, Beetroot, Maple, Palm, &c. Under the head of "Useful Palms and their Economic Products" is brought together much information on the varied products of a most important natural order. Section 3 is devoted to "Tropical Cereals and Starch-producing Plants." The importance of the cultivation in Queensland of Maranta arundinacea, Canna edulis, and Manihot utilissima is pointed out from the fact that the plants appear peculiarly suited for growth in the colony, and are "gradually supplanting the imported West Indian product in the Australian market; a very small price — about 3*d*. per lb.—remunerates the grower, who manufactures on a large scale." With regard to Tapioca, the fecula from the roots of Manihot utilissima and M. Aipi—the first known as the bitter and the second as the sweet Cassava, Mr. Simmonds says that of all the crops grown in Brazil it is the one that gives the best return and the least trouble. It is computed that at the lowest valuation the revenue derived from this culture would give a result superior to that derived from Coffee, Sugar or Cotton. Though a native of Brazil the Cassava or Tapioca plant has been introduced and largely cultivated in India and the Straits Settlements, besides being grown in considerable quantities in Guiana, the West Indies, and in some parts of Africa. From the fact that we get very large supplies of Tapioca, in the various granulated forms known in commerce, from Singapore, we can readily believe Mr. Simmonds that in Singapore the Tapioca manufacture has been very successful. The crop, however, is said to entirely exhaust the soil in five years. It is, moreover, startling to learn that as many as 10,000 cwts. of Tapioca and Arrowroot are shipped annually from Penang to Great Britain and the United States. A good deal of interest has been evinced of late regarding Japanese products, more particularly those used for food, we therefore quote the following paragraph relating to Japanese starches:—

"These are the 'Kudzu,' or starch made from the root of Pueraria Thunbergiana; the 'Kata-kuri,' made of the root of a kind of Dog's-tooth Violet (Erythronium dens-canis); and, finally, the starch prepared from the root of the Fern, Pteris aquilina. All these three plants grow wild, and the Kudzu, which yields the best starch, is very abundant in certain places. It belongs to the Papilionaceous family, grows very rapidly, and in a short time its creepers cover the ground, spreading over the neighbouring bushes and trees their luxuriant foliage. The root is frequently over 5 feet in length, and as thick as a man's arm. For the manufacture of starch by the ordinary process of crushing the root, washing the starch out, and decanting it, moderate-sized roots 1 foot in length and 1 inch in diameter are mostly used. The starch is of a fine colour, and has a most agreeable flavour; mixed with warm water it produces a fine transparent paste. The method of preparing the two other kinds of starch from the roots of the Dog's-tooth Violet and the Fern—the former of which merits special mention for its qualities—does not present any peculiarity. Both form articles of food, but the Fern starch is also used in various industries, as it produces a very strong paste, called 'shibu,' on being carefully mixed with the sap of unripe Persimmons. The fibres of the Fern root, after the starch has been washed out, are made into ropes, which are used in the mud walls of the buildings, so as to afford a better hold for the loam. It may be added that the manufacture of starch-sugar has long been known in Japan. Millet and Rice are used for this purpose, and after being steamed they are mixed with a certain quantity of malt or ferment, and kept for several hours at a fixed temperature in close vessels, after which the liquid portion is strained and concentrated by evaporation to a strong syrup or a solid mass, which is formed into bars while hot. Vendors of this starch-sugar are often to be met with in the streets, when, to the great enjoyment of children, they manufacture all sorts of animals and figures with this material by a process quite similar to that of glass-blowing."

FIG. 22.—CONSERVATORY IN QUEEN ANNE STYLE.

The foregoing extract will serve to show the character of the book, and it will suffice to say that the principal commercial dye stuffs of vegetable origin, the oil seeds and oils and the chief commercial fruits and spices, are subsequently treated of in like manner. With regard to botanical nomenclature we think the author would have done well if he had simply given the most recent or the generally adopted name of each plant without the synonyms: with the name once given the synonymy is easily traced back by a scientific man or one who has access to a good botanical library; and as the work is intended more for the use of planters and commercial men—amongst whom it will

no doubt circulate largely—simplicity and brevity in the botanical portion are recommendations. The value of the book, of course, is for its practical nature as a handbook or guide to intending planters, and as such it will no doubt fulfil its mission.

Publications Received :—Revue Horticole—Le Moniteur Horticole Belge — Bulletin d'Arboriculture Belge — Revue de l'Horticulture Belge — Gartenflora—Villa Gardener — American Agriculturist—The Gardener—Bulletin de la Société Botanique de France—New Quarterly Magazine—Journal de la Société Centrale d'Horticulture de France — Journal of Forestry—Florist and Pomologist—Science Gossip —Frauendorfer Garten Schatz—Floral Magazine—Gardener's Monthly—Illustration Horticole—Proceedings Acad. Nat. Science, Philadelphia—Journal des Roses—Trade Marks—Le Vigneron Champenois.

Florists' Flowers.

Large-flowering Pelargoniums.—This is the time of year for cutting down plants to obtain cuttings. As soon as the plants have gone out of bloom they should be stood out-of-doors in a shady place to ripen their wood, and the plants should be kept tolerably dry for a time, both before and after the cutting down process. If the weather be fine, warm, and dry, the plants can remain out-of-doors till they are repotted ; if, on the other hand, it be wet and dull, the plants will be best in a cold frame, with the protection of glass and plenty of air. In cutting down plants it should be so performed as to lay the foundation of a good level bottom, likely to yield a symmetrical growth. The well-ripened growth of the current year makes the best cuttings. They strike well in a spent bed, which has been used for raising Dahlias from seed or Cucumbers, to put out in lines in some sandy soil ; in this they soon root, and should then be potted off singly into small 60-pots. Nurserymen who do a large trade with Pelargoniums send out the majority of their plants in the autumn, therefore there is urgent need for getting the cuttings rooted as quickly as possible. As soon as they are established in the 60-pots, and commence to grow, the leading shoot should be pinched out rather low down, which causes the plant to break into side growths from the lowermost eyes ; in this way young plants with good bottoms are formed. At this stage the plants do best on a high shelf in an airy position, near the glass.

When they again start freely into growth a shift will be required into 48-pots, and in these the plants can be distributed when fully established, or wintered for sale in spring. By judicious stopping young plants with four and six, and even more leading branches can be obtained, and these, if kept in 48-pots, make excellent decorative plants when in bloom.

Cuttings can also be readily struck in well-drained pots or in shallow boxes, placed on a warm shelf in a greenhouse ; but in all cases they prefer warmth to cold. They may be struck all through the winter if put singly into small pots as fast as cuttings can be obtained of any choice or scarce varieties.

The cut-down plants should not be repotted till they commence to break forth into fresh growth ; and when the shoots are an inch long, the plants require to be turned out of the pots, all the soil shaken from the roots, which should be reduced by trimming away the long main ones, and then repotted in smaller sized pots, and placed in a frame or greenhouse and kept close for a few days till established in the soil, and then they may have an abundance of air to induce a sturdy growth. The final repotting into the flowering pots should be made at the end of September or early in October. *R. D.*

Apiary.

Massacre of Drones.—May I now remind bee-keepers that the time has come round when the question which I mooted last autumn—whether the bees really did massacre the drones or not—can be authoritatively settled? Within ten days or so the so-called massacre will take place. If any one with an empty observation hive will now put food in it, then sweep into it a good supply of drones without any workers, and keep them prisoners there for a month, the question may be put at rest. If they die off of themselves, then the massacre is a fable. If they live, then it is probably true. *Andrew Murray.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—Gardenias will furnish flowers for many months where a sufficient number of plants are grown, and these receive treatment such as necessary to bring them into bloom in succession. Where they are so required, it is well to propagate some young stock every spring, as also to employ some that are older and larger. From their natural free habit of growth, when kept for any length of time, unless freely cut back after flowering, they soon acquire a size that renders them not nearly so convenient to manage as when smaller. The latest flowered old plants, now cut-in, have yet plenty of time before the end of the year to make enough growth, after which they will again come into bloom the latest next summer. Immediately they are cut back, give them a thorough cleaning with insecticide, stand them in a brisk heat, and when they have broken into growth turn them out of the pots, remove a portion of the surface soil without mutilating the roots more than can be avoided, and put them in others a size or two larger. There are those who advocate planting out Gardenias and some other subjects of a similar nature in preference to pot culture. This system may answer with those who grow for market, and do not object to having a whole houseful of any one thing blooming at the same time, but in private establishments this planting out with anything but Camellias is a very great mistake, as under the system there is no chance of varying the treatment so as to give a succession of flowers ; and with growers for sale as well as private places there is a very important matter lost sight of, that is, the facility for cleaning them from insect pests, which with these in common with most stove plants involves a serious amount of labour. When such things are planted out, there is no chance of keeping down scale, or mealy-bug where it exists, without a continuous use of sponge and brush, whereas a plant in a pot can be taken and either dipped in insecticide, or laid on its side and syringed, by both of which methods as much work can be done in an hour, and far more effectually, than can be got through in six by hand-sponging. Those who advocate planting out, say the plants grow quicker than in pots, but if stove subjects are well managed there is no difficulty in inducing them to make as much or generally more growth than is needed. Euphorbia jacquiniæflora, especially the latest struck plants, will often run away with a single shoot if not stopped, but shoot-pinching, with this plant, must not be continued too long, or it will interfere with its blooming capabilities : the beginning of August is as late as the operation should be performed. A few more plants of Eucharis amazonica that have fully matured their growth should be subjected to a resting process, by withholding water till the leaves flag slightly, after which give a little, and again let them get dry, repeating this for a few weeks, which will prepare them for flowering when submitted to a little more heat with the full quantity of root moisture. This easily managed plant will afford almost a continuous supply of flowers where a sufficient number are grown and induced to make growth at different periods, and then subjected to the above treatment at intervals. The last sowing of Celosias should be pricked off in small pots and encouraged to grow. The natural disposition of the plant to spire up tall and thin may to a considerable extent be corrected by growing them near the glass, with abundance of light and sufficient air. They will also bear stopping whilst in a young state, which will cause them to assume a more bushy form. I have no doubt the tall habit of growth possessed by these Celosias might in time be corrected by selecting seeds from any that showed a dwarfer disposition. For some purposes, such as conservatory decoration in summer, tall plants can be used with advantage, as they relieve the even surface of lower growing things, and although most useful as late autumn-flowering subjects, yet their distinct habit, and the extremely bright tints of the higher-coloured examples render them most serviceable summer decorative plants. Successionally flowered Amaryllis that have now completed their growth must be fully exposed to sun and light, and have water gradually withheld with the deciduous kinds. This on no account must be done until the leaves are thoroughly matured, or they will flower unsatisfactorily, or not at all. The evergreen section ought also to be kept much drier, but water must not be withheld, so as to cause the leaves to flag. Plants of Clerodendron fallax and C. Kæmpferi are more useful as decorative subjects in a small state than when large. There is no better method of securing them in this way than from seeds. Such as flowered early, and were allowed to mature seed, will by this time have them ripened, in which condition they are easily distinguishable by turning quite black, and parting from the capsules with a slight touch. They should at once be sown singly in small pots in sandy loam, placed in heat, and kept slightly moist. So treated they will very soon vegetate, when they should at once be stood close to the glass, to prevent their being drawn up weakly. In the autumn they should be shifted into 5-inch pots, and kept growing slowly in the stove during the winter. If moved in February into 9 or 10-inch pots they will make nice blooming plants next summer. Ardisia crenulata, the berries of which are now swelling, should have plenty of light and enough warmth to keep them growing freely. Syringe the plants overhead to keep them clean. They look much the best when grown in pots small in proportion to the size of the plant ; but when so treated, to insure the leaves having the dark green glossy appearance without which, however well furnished with berries, they possess little beauty, they ought to have weak liquid manure given them once a fortnight or so. Of Æschynanthus grown in baskets—than which there are few more appropriate or effective plants when fairly treated—autumn blooming kinds, such as Æ. grandiflorus, must have their requirements as to water sufficiently attended to or the flowers will fall off before they expand. Suspended plants of this description are much more liable to get neglected than such as are more immediately under the eye. Where Palms, the most elegant of all subjects for table decoration, are grown, a continuous supply of small stock should be yearly added, as they soon get too large for the purpose. Some of the more beautiful kinds, such as Cocos Weddelliana, are now plentiful and cheap. This, with Chamædorea graminifolia and Areca lutescens, are, from their natural habit, particularly adapted for employing in this way.

Hard-wooded Greenhouse Plants.—Heaths. —Any of the early spring-flowering varieties that after blooming have now made some growth and are wanted to flower early the ensuing spring, say in March or April, may be stood out-of-doors at once, but where not required in bloom until May their full exposure should be a little longer deferred, as the earlier they are turned out the earlier they will flower. Autumn blooming sorts—the best of which for either general decorative or exhibition purposes are, Marnockiana, Austiniana, Irbyana, retorta major Jacksoni, and Turnbullii—may now where desirable have their time of flowering considerably retarded by standing them in a north house where they will get plenty of light but which by its position, through being less exposed to the action of the sun, is much cooler. Such a house not being available, they will do on the north side of a wall in an open situation, with lights temporarily fixed over them. Any retarding operations of this kind are much more effectual, and less calculated to injure the plants when carried out thus early, than when an attempt is made to keep them back when the flowers are further developed. Camellias will now require attention. Where a sufficient number of plants are grown to afford a succession of flowers, from October or November, until late in the spring, it is essential to look well ahead during the growing season. Plants that bloomed about the above time last autumn, and were after flowering placed in a little warmth to encourage growth, will by now have their buds in a forward state, and should the weather continue very hot it will be necessary to see that they do not come too early. Where there is any danger of this and the plants are planted out in beds, there is no resource but keeping the house wide open night and day with all the air possible, and shading with mats, which will have a deal of influence in keeping down the temperature. Plants grown in pots and in a similar condition, should at once be moved to a north house, or stood on the north side of a wall, with temporary lights overhead to guard against heavy rains, or with a canvas covering attached to a roller and supported by a light frame-work that admits of its being let down when there is an appearance of thunderstorms. The framework in question carrying a blind of this description should be fixed at an angle of not less than 45°, otherwise the water will drip through the canvas instead of running down to the eave. With Camellias that, on the other hand, are required to bloom earlier than they have hitherto done, the present is the time to regulate this, as by keeping them in a house or pit that is directly under the influence of the sun with only slight shading to prevent their leaves scorching, and partially or wholly closing in the evenings, the flower-buds will now fast increase in size, and the time of their expansion be much accelerated. Any that are at all affected with either brown or white scale, but especially the latter, even if well cleaned before growth commenced, should again be gone over, removing it from the buds and all round their base, where this pest generally establishes itself ; but in doing this care must be taken not to subject them to any rough usage. *T. Baines.*

Orchids.—In some cases Dendrobium nobile may be so managed as to bloom in the winter and spring on growths made during the summer previous ; the more natural and regular course, however, is for the blooms to appear on the bulbs that are two seasons old. D. chrysotis is in many respects very different to the foregoing, and flowers on spikes from the bulbs, whilst the growths have the leaves fresh and green, and the

young shoots still growing vigorously. When the plants of this are resting during the winter months the growths retain their leaves, and the points of the bulbs indicate a growing tendency, so that when the growing season commences the shoots start away again from the top, as well as start new breaks from the base of the bulbs. The flower-spikes, to the number of from three to six, appear along that part of the bulb formed during the previous summer. This is one rather more difficult to grow than many of the others, but in the Dendrobium-house, with the temperature regularly kept as advised, it will generally grow very freely and satisfactorily. It may be grown both in pots or in baskets; in the latter the blooms appear more regular and numerous, which perhaps may be accounted for by the fact that the plants receive more light than those grown on the stage. Being naturally of a straggling habit it should have several sticks fixed in the pot or basket, and as the young breaks start away tie them round, and continue to tie them round as they increase in length. By this means the plants are more compact, have a more pleasing appearance, and when in flower the mass is much more effective than the spikes would be if the bulbs were hanging about in a loose and straggling manner. Dendrobiums on blocks must now have an abundance of water; if they are hanging in such positions that the syringe can be used without the fear of drip endangering those that are under or about them on the stage, let them be sprinkled twice a day—this will help to keep them clean, as well also as being a watering for them. If, however, they cannot be treated in such a manner with safety look them carefully over, and dip them as often as they are in any way dry, which will with many necessitate their being taken down every morning.

Cypripediums, whether of the barbatum or the Lowii or Stonei type, almost invariably flower in the spring, and few plants retain their blooms in a state of freshness and beauty for such a length of time as these. Blooming generally very freely, and at the same time producing such singular forms and pleasing contrasts of colour, they are always attractive and objects of peculiar interest. The remaining flowers of these must now be all taken off, and if placed in water they will last as long as if they were on the plants. Any that have got green or sour on the top of the soil must have the sour part picked out, and the plants surfaced with a mixture of peat and moss and a few broken crocks. The new roots now starting away will readily take to the new soil, and materially assist the new growths that are now or that will shortly be pushing up. Whilst in flower these make little or no growth, but that period being over the plants start growing, and continue so doing the whole of the season until the time of the flower-spikes showing again. A good share of water must at all times be given, the greater quantity, of course, when the roots are in a healthy condition, and whilst they are growing vigorously a sprinkling overhead in the afternoon will be found to be very beneficial. C. Schlimii, caudatum, and Sedeni must be grown in the Cattleya-house, requiring less heat than many of the others, but on no account must the supply of water be lessened. *W. Swan.*

FLOWER GARDEN, ETC.

Special attention is now required in the flower garden and pleasure ground, and now that the plants are advancing and filling up their places the regulating of their shoots must be carefully looked to. Most of the beds are very well filled, and the plants blooming nicely. The strong growers should be kept in their places should they show a tendency to extend beyond their proper limits, and weak growers that would be improved by a slight stimulant may have a little liquid manure to assist in making up lost ground. Keep all decayed flower-stems picked off, and remove all leaves as they become unsightly. Vase plants must not be neglected—give them a plentiful supply of water, and those that are blooming freely may have liquid manure twice a week: this treatment will soon have a visible effect. Roses had better be looked over frequently, as the showery weather spoils their flowers often before they expand; this is a good time for budding, which may be done at any leisure opportunity—the buds I find are in good condition. Pelargoniums are growing freely, and will soon require thinning-out; and the season for preparing a stock for next year is almost at hand. It would be advisable to get suitable soil in readiness for the occasion, light loam mixed with sand suits admirably. I find that rough boxes, about 30 inches long by 12 inches wide and 4 inches deep, which any handy garden labourer can make, are the most convenient for Pelargoniums; the boxes pack well together, and a large quantity of plants can be accommodated in less room than by any other mode that I am acquainted with. Pelargoniums are all struck in the open air. Attend to tying and training plants as they advance; those that require pegs must also be looked to. Take every opportunity after showers of having the walks well rolled. Keep weeds down by every possible means, and have the grass always in the best keeping. *T. Blair, Shrubland Park, July 24.*

HARDY FRUIT GARDEN.

The severe check Peaches and Nectarines received during the early stages of their growth has caused them to send forth many laterals, all the best situated of which it will be necessary to lay in, as little bloom can be expected from the main shoots, so gross and watery are they in their character. Even were it possible to get them ripened, of which there is little chance unless the autumn should prove unusually favourable, it is very rare that they are at all fruitful, and except for the purpose of filling vacant spaces or forming the foundation of a future tree they are seldom worth preserving, and should either be stopped back when they first show or removed altogether. In the case of young trees where the object is to get them thoroughly established and the wall covered as quickly as possible, such shoots are not objectionable, as they cause a rapid formation of roots, and by laying in any laterals they make on the upper side fruit may generally be obtained from them after having made one season's growth. I have adopted this practice for years both indoors and out, and never shorten back any shoot till the trees have furnished the allotted space, which I find they do in half the time it took under the old system, that still prevails in many places. As the season now left is but short every encouragement should be given to expedite growth, and make up for lost time, which may be done by plying the garden engine every evening after a dry hot day and keeping the borders mulched and duly watered, particularly where any trees have been recently transplanted, and have not, therefore, been able to penetrate far down in search of moisture. Want of this at the roots is one of the chief causes of the decrepid state Peaches and Nectarines often get into, especially when they have a little fruit to carry, as they soon become exhausted and a prey to red-spider, a pest that is sure to attack them should the flow of sap not be equal to the demand, as is the case whenever the borders become the least dry. Apricots are unfortunately in a very gappy condition, owing to the quantity of wood that has died out since the spring, and in regulating and thinning-out the growth of these due provision should be made by leaving such shoots as are well placed on the upper sides of the branches to get all vacant spaces properly filled in, which from the rapid progress most trees are now making there will not be much difficulty in accomplishing. In order to let in all the light and air possible to aid in the perfect maturation of these strong shoots and induce a free formation of flower-buds, all breast-wood should be kept closely stopped back, as after this there is no fear of them starting again. The same remark applies to both Pears and Apples, which will now require a final look over for the same purpose, for although fruit may be scarce it is necessary to render equal attention if a supply is to be looked forward to next season. Considering the deficiency of this useful commodity every effort should be made to preserve what we have to as late a period as possible, which in the case of Warrington Gooseberries, red and white Currants, may be done to at least the middle of October by securely netting them up, as from all appearances there will be no wasps to devour them. The best plan of keeping the above fruits is to plant at the foot of a low wall having a northern aspect, where they come later and keep in a fresh, plump condition longer than they do in a more sunny exposed position, and being all together they can be protected much easier than when bushes are standing about in isolated positions. The late rains have been very favourable for setting free the bark of all fruit stocks, which may now be budded with every prospect of success if the operation is carefully carried out. The principal thing is to see that the buds to be inserted are fully developed, and in taking them off and removing the wood cut away with them, the rind must not be turned back or bruised in any way, or failure is inevitable. Any shoots in which buds are inserted should be left to grow at full length, so as to draw the sap, but others may be cut away, which will force increased strength into those remaining, and thus render them better nurses to aid in effecting a union. *J. Sheppard, Woolverstone.*

FRUIT HOUSES.

FIGS.—The second crop of these will now be making rapid progress. If not already done, let the fruit be moderately well thinned before the ripening period; until this term arrives let the roots have copious supplies of moisture, and the tops likewise, by means of the syringe once or twice every day, and, moreover, keep up a brisk moist temperature in the house constantly afterwards. When indications of ripening are visible substitute for the foregoing conditions those of a drier and more airy nature. Give regular attention to the stopping, tying, &c., which is needful, and by all means avoid a crowding together of the growths, as every ray of sunshine and light is now indispensable to harden and consolidate vigorous shoots, the points of which should be permitted to crop up above the trellis, where more air, &c., will naturally abound. Where additional stock has been made by means of cuttings or layers such plants should be advanced by repotting, or as otherwise may be deemed best. In such cases, after the plants are first established in pots, we consider planting them out until they have made good-sized plants, and then taking them up and repotting them, preferable—inasmuch as a great saving of time and attention is effected, and satisfactory results are not thereby endangered. Give any trees which may be in pots liquid manure at least once or twice a week, and protect the surface roots of such trees by surface mulching. *G. T. Miles.*

THE CHERRY-HOUSE.—Cherry trees which are subjected to forcing operations annually are very apt to flower prematurely and make a corresponding growth—a fatal consequence as concerns the succeeding crop of fruit. To check any tendency in this way it is important that the leaves be kept on the trees as long as possible; for this end it will therefore be necessary to keep them free from all destructive pests, and to supply air most liberally constantly. If the structure consists of movable sashes remove these entirely, at once, and contrive even under these circumstances to ply the syringe or engine over the trees twice every day, and occasionally, if necessary for the purpose of destroying any insects which may abound, an application of strong quassia or tobacco-water should also be given. These means are likewise applicable to those trees in pots, which should now occupy an exposed place outdoors, where watering, &c., should be constantly seen to. If any doubt exists as to the condition of moisture about the roots, the fact should be ascertained and the means necessary used accordingly. Weak liquid manure or guano-water applied now will help to stimulate weakly trees or such as have borne heavy crops of fruit. Cease to syringe Plum trees when the fruit begins colouring, and give them plenty of air in order to gain colour and flavour. These can be kept on the trees for a considerable time in a fresh state if they can be removed to an airy and shady place and be kept free from damp. *G. T. Miles, Wycombe Abbey.*

KITCHEN GARDEN.

By the end of this month or early in the next a liberal sowing of Cabbages of favourite sorts to stand through the winter should be sown. Of these we use three sorts—Veitch's Improved Atkins' Matchless, Heartwell Early Marrow, and Cattell's Reliance, besides our own sort, which has been saved in these gardens for over forty years, and is still scarcely excelled by any of the newer varieties. A good breadth of June-sown Cabbages should also be got out at once for autumn use, also that delicious vegetable the Couve Tronchuda; this should during growth be treated to a little stimulation, as its great delicacy of flavour depends much on a free and succulent growth. Persevere in surface stirring with small narrow hoes amongst the advancing crops of Carrots, Onions, red Beet, and Parsnips. See that the late Peas are mulched with litter, to retain moisture; and bearing crops, both of Peas, Scarlet Runners, French and Broad Beans, should be kept well gathered as they become fit for use, as the perfecting of seed is a very exhaustive process and tends very much to reduce the amount of late crops. Capsicums and Chilies at the foot of south walls will need every encouragement to induce them to perfect fruit in time to ripen, and the foliage may be thinned out with advantage in order to assist the process. The same remark will apply with equal or greater force to Tomatos against walls, which should never be left overcrowded with foliage. *John Cox, Redleaf.*

PÆONIES FOR SUMMER BEDS.—There is a genus of ornamental plants belonging to the Ranunculaceæ that come in early and flower freely, especially in the southern and western counties, and which is famed for its intense blaze of bloom, which I succeeded so well with in Devonshire that I would fain see it more freely planted—I mean the Pæony. Most of the varieties grow a little over a yard in height, and may be confined by invisible wire, invisible only at a chain's length. Some of these Pæonies were highly fragrant, and all of them gaudy, surpassing the Hollyhock and Dahlia in intensity of colour. There were in my time some thirty or forty varieties, and since that time they have had many additions. A clump or bed of Pæonies requires to be made as deep and as rich as if it were a Vine border, for, owing to their tuberous roots, they cannot be regulated or manured easily after planting. *A. Forsyth in "Florist and Pomologist."*

"THERE'S a Rose looking in at the window,
In every condition of life—
In days of content and enjoyment,
In hours with bitterness rife.

"Where'er there's the smile of a woman,
As bright as a beam from above,
'Tis the Rose looking in at the window,
And filling the dwelling with love."

P. M. James.

THE

Gardeners' Chronicle.

SATURDAY, JULY 28, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

FRIDAY,	Aug. 3	Rossendale Floral and Horticultural Society's Show (two days).
SATURDAY,	Aug. 4	Southampton Horticultural Society's Show (two days).

THERE are flower shows at which the chief elements are the productions of wealth and professional skill, and there are FLOWER SHOWS where the exhibits are the products of poverty and perseverance under difficulties. In general character and in influence the results of these are widely dissimilar, as the former illustrate the enjoyment derivable by the wealthy from the pursuit of horticulture as a luxury, whilst the latter form the practical exponent of the struggles of the poor in their efforts to secure even but a small portion of that benefit that the pursuit of gardening invariably brings to all who follow it. We have often to listen to stale platitudes concerning the moral and social good that follows the spread of horticulture amongst the masses, but such platitudes, nevertheless, have the charm of truth. Horticulture is of all arts the one that admits of being reduced to a practical use most readily and generally, indeed thousands are as successful horticulturists, evidently devotees of art, without having the slightest knowledge that they are standing upon such elevated ground; the love for its practice is innate and is drawn out as by a process of evolution. Think as we may of the story of the old gardener ADAM, it is impossible not to feel that, whatever we may inherit from his failings, we at least, as human beings, never have and never shall fail to show that we inherit his love for horticulture, and taste for the useful and the beautiful in gardening.

Two exhibitions of horticultural produce held lately in diverse places, and under diverse conditions, afford evidence how strongly gardening has its hold upon the poor. In the one case a show of plants grown under the most adverse conditions by the humble denizens of narrow streets and crowded courts of the City; in the other a really remarkable display of what the industrious poor can produce from their allotments and cottage gardens in a suburban district where the surroundings are much more favourable to plant life than in the City, but yet scarcely so favourable as are to be found in the strictly rural districts. The City gathering, held in that most remarkable city garden of Finsbury Circus, shows in its broadest light the pursuit of horticulture under difficulties. The one, two, or three plants that represent the window-gardens of the poor exhibitors would hardly find a place in any ordinary greenhouse in any ordinary garden. They are clean at least, and indicate no lack of care, but they are mostly common, and where not so are scarcely so good as where the sorts are of the hardier, and therefore easier-grown species. What, however, most strikes the observer is the singular fondness—we might well say love—that appears to exist in the breasts of the owners for their humble exhibits. Shut up for weeks and months together in the middle of the great desert of bricks and mortar, and so far exiled from the charms and delights incidental to a rural life, these small plants of Musk, Stonecrop, Ferns, Fuchsias, Creeping Jenny, Orange tree, or sickly Myrtle, present to their owners the only tangible evidences and reminders of the great world of Nature outside — they keep alive in these pent-up bosoms thoughts of trees and grass and flowers — of parks, fields, and green leaves; and wherever this feeling is found — this hankering after the delights of a rural life—there is raised a barrier against vice and immorality, against hatred and malice, against drunkenness and crime, against an utter oblivion of all that is good. When at the presentation of the prizes to the delighted winners during the day the Duke of WESTMINSTER responded for his amiable and popular Duchess he laid much stress on the desirability of converting even the spare spaces in disused churchyards within the City precincts into gardens, in which even in a humble and necessarily restricted way the poor might find additional stimulus given them to seek for relaxation and elevation in the more frequent contemplation of the beauties presented in the growth of trees, plants, and flowers.

What is seen in the way of a beautiful city garden in Finsbury Circus—a garden, we are sorry to say, too seldom open to the poor—might be seen in many other spots did not the mammon of wealth insist upon the conversion of every available piece of land into building sites. The churchyard of St. Botolph in Bishopsgate Street is a powerful evidence of what can be done to convert city churchyards from dismal, ghostly enclosures, morally and socially plague spots in the midst of teeming life, into pretty and joyous gardens, where old and young love to linger and spend happy hours. A venerable clergyman, speaking to his neighbours at Ealing, alluded to the singular influence that horticulture was capable of exercising upon the social life and mental growth of the people, and said that, at least in that great parish, no such frightful examples of facial development could be met with there as the great painter, HOGARTH, had pourtrayed a century since. He attributed this change to the gradual influences being so beneficially exercised on social life by social improvements, and specially upon the elevating pursuit of gardening, holding, as he did, that none could continue to cultivate, in ever so small a degree, the plants and flowers which beautify this earth without being insensibly but surely cultivated also. This is no doubt true, for all who come within the charms of its influence feel that gardening makes none of us worse, and myriads better than they otherwise would be. The show of cottagers' produce displayed at Ealing, evidences the existence there of a strong utilitarian spirit amongst the poor in addition to the not less active feeling of an æsthetic kind. Profitable garden products, whether vegetables or fruits, are specially attractive in the home where there are mouths to feed and bodies to keep healthy, whilst labour in the garden or allotment in the spare hours not absorbed in the ordinary toils of life becomes, not labour or toil in its restricted sense, but rather recreation of the purest and most exalted kind, leading on to a feeling of ennobling independence, and serving the humbler purpose of assisting to promote materially the health and contentment of the family. Many years of continued stimulus and example have served to produce at Ealing the most successful results amongst its cottage poor in relation to their garden work. In addition to the prizes annually so liberally offered by wealthy ladies for the best gardens or allotments, the Society and its numerous friends present for the cottagers' competition, either in useful articles or sums of money, nearly 180 prizes, and the entries are so large that, as a rule, the prizes might be taken twice over. It is thus evident that the cottage element at Ealing is a singularly large one, and the spirit of emulation abroad amongst the poor is one productive of the happiest results. It is not the least excellent feature that not only are all the prizes largely contested but what will commend itself most favourably to the practical horticulturist is the undoubted fact that the produce shown is invariably amongst the best to be seen at any similar exhibition. It is good work well done when, in addition to elevating the moral faculties and improving the social *status* of the poor, it is also possible to make them, as cultivators of the soil, producers of vegetables, fruits, and flowers of the greatest excellence. The Ealing promoters of these results may well feel a pleasant glow of satisfaction, and thus realise a true reward for such well-meant, and, in this case, not valueless efforts.

Insensibly almost, but yet surely, gardening in its least technical features is exercising a marvellous influence for good. See on any public holiday, or on Sundays, when toil is no longer binding, how the people of all grades flock in myriads to the parks and public gardens that the first portion of the second half of the nineteenth century has brought into being. To take stock of what has been done by horticulture for the people in that short term of years would fill a volume—how many will be required when the century is counted out? It is with a feeling of profound satisfaction that gardeners survey the progress of their special art, and realise that amongst the many ennobling influences at work on the human family horticulture is playing a distinguished and a successful part.

—— IN reply to very numerous enquiries, we beg to repeat that the ROSE SUPPLEMENT, with the coloured plate, presented to our subscribers with the number for July 7, is out of print, and will not be reprinted. We shall shortly issue a coloured plate of fruit, of which due notice will be given.

—— In order the better to put our readers on their guard against the COLORADO POTATO BEETLE, we now give an illustration (fig. 23), from specimens kindly placed at our disposal by Mr. ANDREW MURRAY. We have nothing further to add to what we have repeatedly said as to the best means of coping with this new enemy.

—— A correspondent informs us that a most happy effect was produced at the Royal Italian Opera, Covent Garden, last Friday, by a SHOWER OF BOUQUETS in honour of Mdlle. ALBANI. The opera of "Lucia di Lammermoor" was selected for Mdlle. ALBANI's benefit; the "unhappy bride" sang and played her part with the consummate power and skill which never fails to enrapture her audience. A heavy fire of flowers was opened at the end of the first two acts, there was no lack of ammunition, and at the end of the mad scene a general bombardment of bouquets from the audience completely covered the stage. Mdlle. ALBANI was repeatedly recalled to receive this testimony of gratitude and good wishes, and the happy way in which she acknowledged her friends' compliments and gathered up her trophies was certainly not the least graceful part of the performance.

—— One of the most remarkable events in connection with the recent show of the Royal Agricultural Society of England at Liverpool was the editing, printing, and publishing of a daily newspaper in the open air. The special daily edition of the *Agricultural Gazette*, thus brought out, had each day, in addition to the ordinary daily news of the showyard, one or more descriptive articles on the progress of agriculture, in its various branches, since the last meeting of the Royal Agricultural Society at Liverpool in 1841. Of this paper, which consisted of thirty-two pages each day, 30,000 were sold at 2*d.* each in the showyard. We are pleased to state that the venture resulted in a great success for our enterprising contemporary and former yoke-mate.

—— The *Australasian* describes the following method of replanting the Government reserved land at the base of the Never-Never Range, which we borrow from the *Chronique de la Société d'Acclimatation de France*. Instead of sowing in drills or broadcast, as is usually done, pieces of Bamboo reed are employed. Thousands of pieces from 1 to 1½ inch in diameter are carefully cut to the uniform length of 4 inches. They are then stacked as closely as pos-

sible on end in square holes in the ground, their tops being on a level with the surface. A prepared sifted compost is thrown upon them, filling the tubes and the interstices. Two or three seeds are put into each tube by hand. This operation, although tedious at first, may be performed with great rapidity after a little practice. When the seeds have germinated and the young plants are sufficiently advanced, all except one, should there be more than one in a tube, are removed; and the tubes, plants and all, are set in their final destination. The tubes protect the young plants for a time, and, in decaying furnish food for the young plants. By the time that the tubes have completely decayed the plants need no further attention. It is stated that a thousand acres have been successfully and quickly planted in this way, with scarcely the failure of a plant. This method is practised on a large scale for raising the various species of Gum trees especially, but also for raising Pines, Oaks, Elms, Poplars, Willows, &c.

—— At one of the recent meetings of the Horticultural Society of France, it was stated by M. COURCIER that the application of nitre or saltpetre to the MUSHROOM BEDS was productive of the growth of very large Mushrooms, measuring as much as 8 inches across the cap. The flavour is described as excellent. No doubt the abundant supply of nitrogen in a soluble form is very advantageous to fungi.

—— Colonel CLARKE'S HYBRID PANCRATIOID AMARYLLID is now in full flower in the T-house in Kew Gardens. It shows very little of the Elisena strain, differing only from ordinary Ismene calathina in the shorter perianth tube and filaments about three times as long and not decurved. *J. G. B.*

—— Now is the time to test the value of SALUS, for the real, unmistakable POTATO DISEASE is amongst us, and may be rife throughout all Potato crops ere this. We have seen the black blotch with its white mould on the underside of the leaf amidst that earliest of all its victims—the white Regents—at Chiswick, and in several other places, the recent cold rains aiding its development, and inducing it to spread with rapidity. The premature decay found in the haulm of some plants, and especially in the American Rose varieties, although hitherto ascribed to an early development of the disease in some quarters, is now being regarded by growers as resulting from the severe check given to the young and tender shoots always found on early-sprouted sets by the cold soil, frosts and rains of spring. It should not be overlooked that this premature decay is nothing new, but has always been found more or less amongst Potato plants after cold springs.

—— The seed and florist business carried on by Messrs. BROOK & GALLOP at Brighton, will in future be conducted by Mr. GALLOP, who has lately purchased Mr. BROOK'S interest in the concern.

—— Among specialities in annuals one of the most charming and certainly novel is A NEW CANDYTUFT now in bloom at Chiswick. It has a close, neat, compact habit of growth, very erect, and producing large flat trusses of fine flowers of a distinct rosy salmon colour. Amidst a number of the same family this stands out specially noticeable as a very beautiful variety. It is one of the specialities sent by that enterprising firm, Messrs. VILMORIN & CO., of Paris, who term it Iberis coronata hybrida nana rosea, but it will be better appreciated by the public if simply described as a dwarf rose-coloured Candytuft.

—— A few months ago we reproduced some remarks from the *Bulletin* of the French Acclimatisation Society respecting the RAVAGES COMMITTED BY SPARROWS IN ALGERIA, where, it appears, they are excessively numerous. Nevertheless, it is illegal to destroy them, and they go on increasing at an alarming rate. In a recent number of the publication already named there is another letter on this subject, urging the necessity of authorising and even encouraging the destruction of these voracious and prolific birds. Wherever there are woods or plantations of trees there the sparrows assemble in incredible numbers. One writer goes so far as to deplore the introduction of Gum trees, because they barbour the sparrows, and it is difficult to dislodge their nests from these slender lofty trees. Now, it is stated that on one estate alone 200 acres of Rye were so completely devoured by the sparrows before it was ripe that not a single corn was harvested; and it was calculated that in a neighbouring wood, some 150 acres in extent, there were 284,000 nests. One colonist complained that the sparrows had carried away 2 tons of his hay; and from the average weight of the nests weighed it was estimated that 10 tons of hay were carried away to construct these 284,000 nests. Further, it is asserted that this same wood, which consists mainly of the Aleppo Pine, is annually infested with cater-

FIG. 23.—THE COLORADO POTATO BEETLE (NAT. SIZE).

pillars to such an extent that it is dangerous to go through it in the months of March and April, because the Pine caterpillar is venomous.

—— It is stated by M. Zoller, in a communication to the Austrian Academy of Sciences, that the Composition of Fungi is greatly modified by the duration of their growth, the proportion of carbon in them becoming greater, and that of the nitrogen less, with age, as shown below :—

	Carbon.	Hydrogen.	Nitrogen.
12 day's growth	16.11	24.26	38 91
24 ,, ,,	5.01	4 83	6.63
36 ,, ,,	2.40	3.35	0.4

—— *Dulce est desipere in loco* is a maxim to which all assent. The only difference of opinion that is likely to occur is as regards the "*loco*." Our friends in Canada, "The Fruit Growers' Association of Ontario," appear to interpret it somewhat liberally. We see that they relieve their more serious discussions by passing from "gay to grave, from lively to severe." In their annual report for 1876, lately received, we read that at their winter meeting, held on February 16, 1876—

"Mr. Dempsey said that he had found in his experiments on hybridisation that the female parent gave the constitution to the offspring He was experimenting with Apples and Pears, to see if he could effect a union by hybridisation of these fruits.

"Mr. J. McGill propounded to the meeting the following conundrum on the subject :—

"'Why is Mr. Dempsey not likely to succeed in producing good fruit from the union of Apple with Pear?

"'Answer.—In the garden of Eden it was shown to be impossible. The Apple turned the first Pear (pair) out of Eden.'"

—— Mr. Smith, late of Calderstone, Liverpool, is appointed gardener to Sir F. H. Goldsmid, Bart., M.P., Rendcombe Park, Cirencester, Gloucestershire. Mr. Smith is well known as a successful fruit grower and exhibitor at the Liverpool and Manchester shows.

—— It is worthy of record that the splendid new Eschscholtzia Mandarin, exhibited at a recent meeting of the Royal Horticultural Society by Messrs. James Carter, Dunnett & Beale, Holborn, W.C., and awarded a First-class Certificate, was derived from Eschscholtzia rosea, and not from E. crocea as many might have supposed. It originated at the St. Osyth seed grounds, and the well-informed foreman there, Mr. Robert Gardener, having detected on the exterior of the blossoms of a plant of E. rosea a tendency to come orange instead of merely rose, duly marked it in order to perpetuate this departure from the usual type. E. rosea is of Continental origin, of a delicate flesh-coloured exterior, and a pale rose reverse to the petals. The rosy character is most displayed when the flowers are almost wholly closed. In the case of the selected sport the rose colour had deepened to a reddish orange, and a few years of careful selection brought it to the form of the gorgeous Mandarin. While the colour without was intensifying to the splendid hue hitherto unknown in Eschscholtzias, a marked change was going on in the interior of the flower also; the glowing rosy tint gradually brightened into the golden radiance of E. crocea. A large mass of Mandarin, now in perfect bloom at St. Osyth, is indeed a fine sight, and it requires to be seen in the morning, or late in the afternoon, when the large showy blossoms are half expanded, to appreciate its superb floral expression. It is then of a rich blood-orange hue. It may be further remarked that in selecting the orange types the rose-coloured form has been considerably improved also. While the work of fixing the character of the Mandarin was in course of prosecution one or two rose-coloured forms appeared, showing not only a greater depth of rose, but with this colour more fully distributed over the exterior of the flowers. The latest selections show this colour to be almost wholly suffusing the exterior, and there is reason to hope it will be presently carried up over the upper portion of the petals and down into the pale-tinted fleshy interior. Then we shall have a truly rose-coloured Eschscholtzia. Already a very fine double white variety has put in appearance at St. Osyth. It is as white as the falling snow, and as fully double as an Eschscholtzia can well be, unless it is destined to rival the double Tulip in its compound character. It will be heard of by-and-bye, at present it is only permitted to gladden the eyes of a favoured few. And so, day by day, the commoner flowers are seen putting on new garbs of undreamed of beauty. So illimitable appear to be the manifestations of natural loveliness.

—— We have received a liberal schedule of prizes, amounting to about £350, to be competed for at an exhibition of fruits, vegetables, and cut flowers, to be held at the Alexandra Palace on September 13, 14, and 15. Entries close on September 6, and all communications with reference to the show should be sent to Mr. John A. McKenzie, 1 and 2, Great Winchester Street Buildings, E.C.

—— The Olive is now grown in France over 147,626 hectares of land, the average produce yearly being 5,500,000 hectolitres of fruit, the yield being thirty-one hectolitres per hectare. According to the official statistics for 1871, it was grown in twelve departments to the extent stated below :—

	Hectares.
Var and Alpes Maritimes	74,363
Vaucluse	27,322
Bouches du Rhone	12,000
Gard	6,115
Aude	2,416
Hérault	2,000
Corsi	1,500
Basses-Alpes	1,350
Pyrénées Orientales	1,200
Drome	600
Ardèche	277
	129,143

The average produce per hectare was 18.60 hectolitres of Olives. The total produce 2,402,610 hectolitres of fruit, at an average price of 17.84 fr. per hectolitre—the total value being 42,872,550 fr. The yield from the hectolitre of Olives is 13 kilos. of oil and 4.31 of *ressences* or second produce. The total yield of oil is officially estimated at 31,244,025 kilog. of oil, and 10,358,184 kilos. of *ressence*, worth together 44,422,014 fr. Deducting the Olives used fresh, the produce of Olive oil is stated at 26,000,000 kilos., worth with the *ressence* or secondary oil product about 37,000,000 fr. The aggregate value of the Olive in France may therefore be taken to be as follows :—

Value of the oil	37,000,000 francs.
Salaries paid to workmen in the manufacture	2,500,000 ,,
Salaries to those engaged in the production and sale	1,200,000 ,,
Value of the *marc* or cake	2,500,000 ,,
Olives locally used	7,000,000 ,,
	50,200,000 ,,

or over £2,000,000 sterling. This does not take into account the preserved Olives or pick Olives sent into commerce from St. Chamas, Nimes and Gignac yearly to the value of 1,000,000 fr., and the prunings and other parts of the wood. *P. L. S.*

—— We learn that the Testimonial to Mr. F. W. Wilson, late superintendent of the Natural History Department at the Crystal Palace, will be presented to that gentleman at a dinner to be held at the Crystal Palace on Saturday next. Tickets for the dinner and all further information may be had of Mr. C. E. Elliott, Ceramic Court, Crystal Palace, S.E.

BROWALLIAS.

For affording choice, neat sprays for bouquets during the winter and early spring months, or growing as pot plants to furnish warm greenhouses or sitting-room windows, Browallias stand unrivalled, affording as they do a great profusion of the most elegant pale blue flowers that are borne in constant succession for a considerable length of time if they are accorded a suitable temperature. The largest and most showy for pot culture is a new species recently introduced, and named after its discoverer, Roezl, the flowers of which are of a delicate azure-blue, and double the size of the old B. elata or those of any other known kind. The latter, however, is the best for mixing in bouquets, on account of its extreme lightness, and if used with Eucharis, Gardenias, or anything of that kind, the effect is most charming, almost equalling that produced by the lovely Myosotis dissitiflora, which is always a favourite for that kind of work, as, independent of the sentiment attached to it, there is a likewise a delicacy of colour and such grace and beauty of form that it never appears out of place. Unfortunately the Myosotis can only be had in spring and early summer, while the Browallias may be enjoyed during the whole year, and appear at their best during winter if sown in time and properly managed.

Used as we had it here at that season, slightly elevated above the heads of Eupatorium Weismannianum, white Chrysanthemums, Spiræas, &c., the effect was most pleasing, and it was at the same time in great request for cutting to use in vases, where I was glad to find it surpassed in lasting properties many other things of far greater substance, as at the end of a week they looked just as fresh as when severed from the plant. This enduring character is no doubt owing to the nature of the stems, which are somewhat soft, and take up water freely, and appear as if they would emit roots if the light and other conditions were favourable.

There is generally a difficulty during winter in getting a change of plants suitable for table decoration; but with a few Browallias in 6-inch pots to fall back on nothing better can be desired, for except under artificial light there is no colour that shows up in more pleasing contrast with a white cloth and the other etceteras than a pretty shade of blue like that of the Browallias. Those who would have them strong and in bloom by Christmas and after should obtain seed and sow at once in pans or pots of light rich sandy soil, and place the same in any close frame or handlight where they can be shaded till germination takes place. As soon as they are large enough to handle they may either be pricked out to gain increased size, or at once potted three in a pot or singly, according to the specimens required. In the former way they form fine masses for conservatory or greenhouse decoration or to cut from, and in the latter they are the most suitable for window recesses or any purposes of that kind.

After the potting they should be stood in a pit or frame and kept syringed every morning and evening, to ward off the attacks of red-spider, to which they are very subject if a dry atmosphere be allowed to prevail or the plants at any time suffer from want of water at the roots. Browallias delight in a rich open soil and plenty of liquid manure after they begin to show bloom, and this should be administered freely, but in a properly dilute form, and such as is made from sheep or cow dung and a little soot in preference to any other, as that is always of a cooler nature and more suitable and less risky than what is obtained from any of the artificial compounds. To keep them dwarf and bushy it will be necessary to stop them two or three times during the remainder of the summer and autumn, and as they will not stand cold they should be housed by the end of September, or their leaves will begin to fall off.

A temperature ranging from 50° to 60° suits them best, as in that they continue to grow and flower in the freest manner possible, but if the atmosphere be dry and they are stood away from currents of air they will endure a few degrees lower without suffering any injury. If by chance this should happen they may soon be got round by placing them in a cool stove, which is the best situation for them when required for cutting, provided they are kept well up to the light, so as to get the flowers properly coloured and of good substance. By sowing again at the end of August or a little later on, a good supply of bloom may be had till quite the end of May, especially if the seed-pods are picked off as they form, as these tend more to the exhaustion of the plants than double the quantity of flowers would do. *J. S.*

CONFESSIONS.

We read in Holy Writ of the prodigal son confessing to his father that he was "no more worthy to be called his son." Augustine of the olden time, who to great learning added candour and humility, wrote his celebrated confessions, thereby rendering great service to society. David erred, but his repentance has been the pattern of a true penitent for all time—

"He is not free to keep the road who is not free to stray."

But we have in our own day, and apart from Holy Writ, the confession of a scientific author, who was so drugged with opium that his life was a hell upon earth, and he has in glowing terms given us his confession. Talk of "Blue Devils," he had them of all hues; they frothed up from the water, crawling and slimy, and they fell from above, disgusting monsters of enormous size. These confessions having gone the round of the papers will surely warn the unwary against the horrors of this deceitful drug, and those of its near ally, the abuse of ardent spirits. Now, I

believe that if the misery that is quite within the power of man to alleviate, were only confessed and known, were only once well told by a trustworthy narrator, "our tears of pity could not be suppressed." In the city of Manchester, where I now sit, there are hundreds of excellent carpenters hanging on all day about their rooms waiting for "the rare time coming, boys," of 9½*d.* an hour, but

"The strokes yet echo of contending powers,
Want thunders at the door and curses idle hours."

The labourer who cultivates the soil sees all this, and hardly believes that there is such a charmed life to be led in this world of woe: he prays "Oh, that for me such luck as half the 9*d.* would arise." The case of the agricultural labourer has been taken up by able hands. One of the staff of a London contemporary herded with Hodge for a time, and gave, in glowing terms, the true state of matters in that cabin, showing beyond all question that "hard is the fate of the infirm and poor." My business is not, however, with the agricultural labourer, but with the wages of young gardeners, and labourers who, from long experience and good behaviour, are more or less skilled in horticulture. The rate of wages in the London nurseries in 1832, when I bought my information in that quarter, was 12*s.*; it was the same in the Royal Gardens at Kew and elsewhere, and at Kenwood, the residence of the Earl of Mansfield, it was the same, with 6*d.* a day added to each of the two foremen. The bricklayer's labourer gets 18*s.* a week, for his "superior" sees that his satellite's interest is attended to, he himself having been rewarded with the 9½*d.* for some time. The carpenters and bricklayers have their clubs and their organisation, and the farm labourers have an apostle in the person of Mr. Arch to look after their fortunes, but the proportion of garden workmen to agricultural workmen would be only about one in 100. They are, therefore, not the bundle of rods bound together by strong ties of any kind, but rather the single twigs that an opponent of any kind might easily bend or break. I, the writer of this, did the honours of gardener in chief for a titled family for £60 a year. This was settled before leaving London, but the board wage was not, and I was allowed 9*s.* a week. It was my first situation, and I confess that I bowed my pride rather than mar my prospects. Dr. Lindley asked a friend of mine who was similarly situated, "Why did not you leave, and let him serve himself?"

It may not be out of place here to name some items of London life enjoyed by young Scotchmen when they turn their faces southward. The miserable lodgings—for want of means—makes home a nickname. The life in some of the Scotch bothies, where they are well ordered, has many redeeming qualities, and the peace and retirement for reading and study are worth a good deal; whereas the noise and bustle of a cheap lodging-house bars that kind of progress, for poverty pervades every part. As an example to the point, I was asked by a Scotch farmer to let him know the prices of beef, butter, eggs, &c.; I told him what I saw on every butcher's stall marked, but I confess that I could not tell the price of butter, simply because I had not bought any for a year or more. Little did my kind mother think that I was living on little better than bread and water, using a 2 lb. loaf daily. Mutton broth was a standing dish, the dietary being three meals, supper not being indulged in for weighty reasons, for in the London nurseries the beggarly pittance of even 12*s.* a week could not be relied on, since foul weather would occasionally lessen that sum, or stop it altogether—for who has not heard of the London frozen-out gardeners—and, although I never saw the Cabbage on the pole during the seven years that I lived in and near London, I can easily guess how the drunken idlers would raise the wind in that way. Many of the London labourers had come to work in gardens as a last resort, as they needed no recommendation from their last service. We had a dancing master on our staff, delving for the bare life; and when his relations got him an invitation to do the light fantastic toe he had to do his own washing and clear starching—for he was a single gentleman—and had to hail a cab to carry him across the street to the club house for 6*d.*, it being imperative to come in state, and to do this on 12*s.* required some scheming. What a blessing paper collars would have been to our James II—— in those days! Moreover, his confession of being a dock labourer, where they stood like slaves to be hired, and were searched like thieves on leaving, showed that bad as work in the nurseries was, it was better than the dock work.

Young men from Scotland and Ireland, accustomed to garden work, and in some cases regularly apprenticed to it, seeing the small chance that they had of bettering their condition in the gardening way, got better wages as letter carriers, and so took to the livery for a livelihood, and left their first attachment. One promising young gardener, who had lived under several masters, had landed in the nursery to wait for hiring, and led a charmed life; being an excellent fiddler, and having some abilities as a poet, he had spent a good deal of valuable time amusing others but not benefiting himself, and had to take to the police force for employment, and when the writer saw him last he described his service as "crawling like a toad on a ruin."

I must give one more illustration of life in the London nurseries. Our subject was by trade a hairdresser, with what is called in gardeners' advertisements "encumbrances," for he had three unchristened children, besides an infant just born. The mother was anxious to get her family baptised, but they had no clothes to appear decently in, for the furniture had been pawned to buy bread. I have never forgotten the supper of that family, for each child got a halfpenny cake and was sent to bed, but I did not see anything forthcoming for either the husband or the wife. The wife eked out the husband's 12*s.* by taking in two lodgers, of whom the writer was one, and now relates what he saw. We got the hairdresser into the Metropolitan police, where, besides his wages, he got business as barber in the force, and from that time he was a made man. I mean to show that the mere labourer in those days had a miserable time, and was glad to turn a mangle in his spare hours, or carry a sedan chair for some elderly lady who still preferred that ancient mode of travel.

In order to give young men some idea of what they may expect to find in London, I may remark that wages have risen a little during the last forty years, but some of the necessaries of life have risen also. The Scottish schools once gave young men from that country an advantage which they do not now enjoy. On this head I may as well state that the young man who has not been well educated, or has not had a good moral training, had better stay at home than compete with the southern natives on their own soil. No one can make much way with botanical names who has not been well grounded in Latin, but there is another qualification which must be kept in view, and that is to keep some hard cash always in hand. I might confess how useful I have found this article, and what pains it has cost me to hoard it against sickness, which, thank God, I have never suffered. I may as well confess that the "rust" of ardent spirits, and the "moth" of tobacco, have never eaten into my purse. The man of fortune may use these, or even abuse them, with comparative impunity; but the number of gardeners that have died rich out of all my acquaintance I could count on my fingers. Still, there is a fair field for good men, for the late Dr. Lindley said if he wanted a trustworthy man, well up in horticulture, he hardly knew where to find one.

A thrifty Scot of my acquaintance, with praiseworthy forethought, bought some oatmeal, with the idea that with living as in Aberdeenshire, his 12*s.* would do wonders; the landlady of the lodging-house cooked the brose according to his instructions, but it could not be used as food. Ridicule is a great power, for when you are in Rome you must do as Rome does, and it may save others some trouble to know that this experiment has been tried. There is a limit to saving and low living, for I could point to two powerful men in the prime of life who sacrificed too much; one died a lingering death, and the other from nervous debility lost his sight, and when too late both confessed that they had starved themselves.

Let no young gardener deceive himself in his business, it is not to be learnt at a cheap rate, and when it is attained the remuneration in good places is but very moderate. Our only means of improving our condition is by good conduct, which every generous employer will see and appreciate when the matter is honestly set forth. It is quite a marvel how the writer has lived through all the long years of suffering, low wages, early and late hours, and hopelessness as to bettering his condition, which have marked his gardening career—

"Happy whom none of these befal,
But this old gardener knew them all."

A. F.

ANATOMY AND FUNCTIONS OF THE LEAVES OF DIONÆA MUSCIPULA.

WE have already noticed Mr. Casimir De Candolle's paper on the anatomy, &c., of Venus' Fly-trap (Dionæa muscipula). The following, which agrees with it in the main points, is a summary of a more exhaustive article on the same subject, by Dr. Franstadt, which appeared in Cohn's *Beiträge* (*zweiter band, erstes heft*, pp. 27 to 64, plates 1 to 3). The most important fact established by both observers is the nature of the bristles or excitable hairs on the face of the blade of the leaf; these differ from the epidermal productions (glands and stellate hairs) in having their seat in the fundamental tissue of the leaf, and from the marginal bristles in having no vascular bundle. Dr. Franstadt appears to have had only very small plants for his experiments, and he expresses a doubt concerning the much larger dimensions recorded by other writers, but we are able to verify them up to the largest size he mentions.

Each half of the blade of the leaf is somewhat S-shaped, forming a hollow for any animal that is trapped; the broadly winged petiole is flat. The cells of the epidermis, as well as those of the fundamental tissue, are elongated in the petiole and midrib in the longitudinal direction of the leaf, whilst in the two valves of the blade they are lengthened at right angles to the midrib. The cells of the epidermis also contain chlorophyll. They produce numerous stomates on the upper and lower surfaces of the petiole, and on the lower surfaces of the blade; but on the upper surface of the blade, glands only. The glands stand in depressions of the epidermis, and are formed of a two-celled basal portion, a two-celled short stalk, and the convex glandular body itself, which consists of two layers of cells. The stellate hairs are of analogous structure, save that the upper layer of cells grow out into long radiating tubes. The stellate hairs appear much earlier than the glands, being fully formed before the latter are begun. The toothed blade bears a number of prickles on its upper surface, usually six. The teeth or marginal bristles are slender three-sided pyramids, but with stellate hairs and stomates on all sides, and containing one vascular bundle nearer the upper than the lower surface of the leaf. A stellate hair is seated in each of the bags formed by the marginal bristles, sometimes on the summit of a blunt pyramidal elevation, which however contains no vascular bundle—the prickles or central bristles, of which there are usually three on each half of the blade, arranged in a triangular manner, the apex of the triangle next the midrib. They consist of two parts; the basal portion acts as a joint or hinge, and contains an axile strand of cells; the upper cone-shaped portion is constricted at the base, and wants the axile strand of narrow cells. The cells of the central bristles, as well as those of the glands, have a tendency to aggregation. In the above-ground green parts of the petiole, and in the midrib, the cell cavities of the fundamental tissue increase in size, both in length and breadth, from without inwards. The more superficial cells and those contiguous to the vascular bundles are green, the other (inner ones) are colourless. The cells of the blade of the leaf, with the exception of the midrib, form a sponge-like tissue of very large colourless cells with wavy walls, and a few small intercellular spaces. The cells of the epidermis of the upper surface of the leaf, as well as the cells of the fundamental tissue underlying them, are larger than those of the under surface. The grains of chlorophyll contain abundance of starch granules before the leaf has absorbed any animal food. The starch decreases with the absorption of substances through the leaves, and finally disappears completely from the parts above-ground. The basal portion of the petiole is expanded, forming together a kind of bulb. Their fundamental tissue contains only cells of uniform length and breadth, which are completely and exclusively filled with starch both before and after the absorption of organic substances. The starch granules in the blade and the part of the petiole above-ground are oval, whilst those in the underground sheathing part of the petiole are cylindrical. The living cells of the leaf contain a colourless substance in solution in the cell, which is precipitated by bases in the form of dark-coloured granules, and again dissolved by acids. The glands contain no starch. The red colouring matter of the glands is changed green

by strong bases, and reproduced by acids. Colourless glands were reddened after absorption of albumen and dyed red, as well as the vascular bundles, even in the petiole, which constitutes the actual proof of absorption. In decaying black granules are formed in the tissue of the leaf, which produce black spots on the leaf. In the midrib of the petiole is a very thick axial vascular bundle branching off into the wing in curves, each branch forking again and again in successively thinner branchlets, but without symmetry. The midrib of the leaf is only traversed by the large axial vascular bundle, which branches to the right and left at right angles, each branch forking near the margin of the blade and uniting again, and running into the marginal bristles. The phloem of the vascular bundle consists of soft bast, the xylem in those of the blade exclusively of spiral vessels, associated with other vessels in the petiole. In the young state the blade and petiole of the leaf are undistinguishable, and the blade is much behind the petiole in its development. In the young state the valves of the blade are rolled inwards. The stem is short and thick, with a ring of wood, and obliquely pierced by vascular bundles, one entering each leaf and each root. The secondary roots are long and strong, and never branched. The cells of the tip of the root are coloured red, and the bark cells in a centripetal direction brown, dying off up to the sheaths of the vascular; the vessels arise in the periphery of the axial vascular bundle, increase in a centripetal direction, and form an eight-rayed star.

QUEEN MARY'S BOX BOWER.

Mary Queen of Scots was a constrained inmate of several gardening places in an age when gardening was as yet but rudely practised. A garden of her later years may still be seen at Chatsworth, an unattractive raised platform, moated and walled round, where she was permitted, as a prisoner, to walk without her guard. Some rather touching verses are inscribed on the flight of steps by which the unhappy queen ascended to her promenade. They are as follows:—

"The moated bower is wild and drear,
And sad the dark Yew's shade;
The flowers which bloom in silence here
In silence also fade.

The Woodbine and the light wild Rose
Float o'er the broken wall;
And here the mournful Nightshade blows
To note the garden's pall.

Where once a princess wept her woes
The bird of night complains;
And sighing trees the tale disclose
They learnt from Mary's woes."—*A. H.*

There could not be a more fitting memorial than a garden of one who stirred so many hearts when living and still moves them in memory. And in Mary Stuart's own country we find another fit memorial of her on one of the islets on the Lake of Menteith.

After the battle of Pinkie in 1547, Mary, a mere child, was removed for safety to the Priory of Inchmahome, and here for a few months she remained attended by those four other Marys, her maids of honour and playmates, whose names are so familiar to all who have read the story of her life, especially as written by Sir Walter Scott.

Landing now on this lovely islet, where the little playful Mary cared as little for the English invasion as a goldfinch in its cage, the beautiful ruins of the Priory are close at hand, half buried among trees. You approach and admire the graceful arches of the ruined nave, the deeply recessed entrance and its exquisite mouldings, the tomb of the Earls of Menteith and the groups of tufted Chestnuts which nobly typify the earls whose dust has sustained their growth. The trees are of great size, measuring 16 feet in the circumference of the trunks. A small rookery now holds noisy possession of these trees, and lords it over the roofless church. You find the rooks holding council here, sole inhabitants in succession to the monks, and on your near approach they tamely fly to other trees on the island which, at the widest part, is but a stone's-throw over. A few steps brings you to Mary's Bower on the opposite coast. In the guide-books generally nine Box trees are noticed as remaining of those which formerly composed the Bower, and we read in Dr. John Brown's *Horæ Subsecivæ* of 1861—the second series and not the best—"there are the remains of a double row of Boxwood all round, the plants of Box being about 14 feet high, and 8 or 9 inches in diameter, healthy, but plainly of great age."

That seems to have been the state of the Box Bower in 1861, at present we only find one poor straggler remaining of the original plants, a naked pole with a single bunch of leaves at the top. The Bower in which the Marys played—Mary Stuart, Mary Bethune, Mary Fleming, Mary Livingston, and Mary Seton—now consists of an outer hedge of Box, young, green, and healthy, and enclosing the space which the older trees roofed in. And where are the descendants of the Marys? They left the Priory when Mary Stuart was six years old, to embark at Dumbarton, on the Clyde, for France, and to acquire polite accomplishments and poisoned manners. And to this day fashion and poison are occasionally administered in one dose, as in the sixteenth century. *E.*

Home Correspondence.

Roses at Cheshunt.—The old adage of "all is not lost that is in danger" has, in the matter of Roses this year, been verified. The unseasonably mild winter started them into growth sooner than is their wont, and the subsequent scathing eastern winds and nipping frosts, that continued almost without intermission through April and the beginning of May, caused gloomy forebodings amongst growers that Roses would be a complete failure; yet such has by no means been the case, for although the general bloom has not this season been equal to that of some past years, still some of the leading growers have shown them very fine. Cheshunt has held the most prominent position at most of the leading exhibitions, such as the Alexandra Park and St. James' Hall, at both of which Messrs. Paul & Son were 1st in the large classes of seventy-two as well as forty-eight varieties, in addition to holding a similar position in many of the smaller classes. About the middle of July I took a run over to Cheshunt to see the newer kinds growing, for seeing a Rose on the exhibition stage does not tell all about it to the full extent as when seen in quantity on the plant. Of last year's new Roses that have here proved well, and which I saw in fine condition, especially may be named Mrs. Baker, much brighter than Victor Verdier, from which it was raised; a strong grower. Miss Hassard has fully realised all that was expected of it. Madame Prosper Langier really fine; Avocat Duvivier, fine; Abel Carrière, a grand dark rose, which may be described as a large Prince Camille de Rohan; Duchesse de Valombrosa—imagine an almost white Jules Margottin, and then its character will be understood; Marguérite Brassac, a more vigorous growing, lighter coloured Charles Lefebvre. Duke of Connaught was in splendid condition—a Rose for everyone who grows Roses. Sultan of Zanzibar, another of what may be termed real garden Roses to prolong the season of blooming profusely right through the autumn, at the time of my visit was not fully in flower. Of this year's new English Roses, Emily Laxton and Marchioness of Exeter both promise well. Of the new Roses for next year Robert Marnock may be described as a rich brownish crimson, very distinct in colour and very fine; Mrs. Laxton, a light crimson, intermediate in colour betwixt Marie Baumann and Sénateur Vaisse—a finely formed flower; Climbing Bessie Johnson, identical in colour with Bessie Johnson, from which it is a sport, with a decided climbing habit; John Bright—this Rose improved very much as the season advanced, it is a rich, glowing, very dark, bold, imbricated flower. Totally apart from what it may turn out to be as an exhibition variety, it is unmistakably one of the very finest garden Roses ever raised; in the whole of the Roses here, comprising many acres and every proved kind worth growing, I saw nothing amongst dark kinds equal to it for general effect. It cannot fail to become a universal favourite. *T. Baines.*

Lilium cordifolium.—Of course I do not wish to contradict the statement of so experienced a cultivator of Lilies as Mr. Krelage, but besides the change in constitution in Lilium cordifolium it appears to me that much of the apparent change is due to natural variation. I very well remember the large bulbs of the L. cordifolium introduced by Mr. Fortune to the Sunningdale Nursery, now twenty-four years ago, which were of a much stronger strain than any cordifolium I have since met with, but I am of opinion that those which we now cultivate are derived from a race naturally inferior to those I saw twenty-four years ago, and that their flowering earlier is not so much attributable to accommodation as to natural inferiority. I have plants of giganteum which horticulturally are very distinct from each other, at least as regards development of leafage and in general outline, and I am convinced that some of them will be larger in any way than others. L. giganteum grows in its natural habitat even with the surface of soil; L. cordifolium is sometimes found 1 foot deep, imbedded in the soil of forests of Japan. *Max Leichtlin, Baden-Baden.*

Tuberous-rooted Begonias.—The garden here has lately had many visitors, some of them having good gardens—a few having great gardens—of their own. All fasten on the bulbous Begonias planted out in the rootwork, and express great admiration of them. It therefore seems that though these Begonias have often been recommended for planting out, the use of them for this purpose is yet but little known. Here we have four beds, principally of seedlings, of B. Sedeni. These are beautiful in colour, and constantly improve in effect as they grow up; but the flowers do not show up as well as in the rootwork, and, being in a more exposed place, are more damaged and splashed by wind and rain. The dark old roots, and the green of the dwarf shrubs, too, make a telling background for the rich scarlet. Among our most effective are Veitch's Vesuvius, Lemoine's Corail Rose, and Wm. Leibrecht—these two last showing the blood of Veitchii. Sedeni, Corsair and Maritana are also very handsome. The colour of Froebelii, beautiful as it is, is less rich than in a plant in the greenhouse; perhaps it had a check. Near them is a rather happy combination of two Lilies—L. testaceum and L. Martagon dalmaticum, whose heads nod together, the buff of the first harmonising well with the rich purple of the second. *A propos* of this last, when at the last South Kensington show, speaking to some Lily growers of the strength it had shown with us, being 5 feet 8 inches high, with twenty flowers to a stem, this was considered a very great success; but on Saturday Mr. Ellacombe, of Bitton, who was here, told me that he has a plant much finer—taller, and with twenty-five blooms to a stem. *George F. Wilson, Weybridge.*

Crocuses.—I can substantiate the remark of a correspondent of *Nature*, noticed at p. 82, that sparrows eat yellow Crocuses in preference to those of other colours, but I cannot make out clearly the reason. The first year that I had many thousands planted in a town square they never seemed to touch them, but the second year, and many years after, as the signs of the golden flowers appeared, they cut them off as if they had been clipped with scissors, the birds running along the ground by dozens and seizing the flowers on their first peeping forth. *J. F. Johnson, Belfast.* [The fact is notorious. Eds.]

Ginger Injured by Insects.—With this I send you a sample of East India ginger. Please say what the two devouring elements are. You will find the small Coleopterous borer in all stages of development amongst the *débris*. It is well known in the trade as the ginger beetle, and its ravages are recognised by an average percentage, from which there is not often any serious departure. But what is the beast that has been doing the greater damage by shelling the rhizomes? The gentleman who brought it to me has been growing, curing, packing, and shipping ginger for nearly twenty years, and he never saw the like of this before. I suggest Blatta. He says that he never knew cockroaches guilty of such a thing. Has the famine reduced them to such straits? But this damage must have been done on board ship, as the landing weight is so much less than the shipping weight of the parcel. I should like to know the proper name of the beetle; and my friend would like to know the name of the creature that has cleaned out the inside of his ginger. *W. T. T.* [I do not think there are two "devouring elements" here. I imagine that the small borer has done the whole mischief, and my reason is that I have seen the same thing in the food collection of the South Kensington Museum, where the little borer is a great trouble to the attendants. When it has only bored a little, the borings seem trifling, but as it goes on the whole interior is reduced to powder, and nothing but the skin is left. The name of the borer is Xyletinus pectinicornis. As to cure, I should say alter a letter and make it *care* in packing, in clean boxes not filled in infected storehouses. *A. M.*]

Fruit Gossip.—To-day (July 18) we had an excellent dish of cooked Pears, consisting of those of 1876 and of those of 1877. I merely mention this as "gossip," but, with others, I think this kind of detail is often instructive, or, at least, suggestive. At any rate, after long experience, I never did this before without any trouble whatever. It is an abnormal fruit season, there is now no doubt of it; generally bad, however. Indeed, here, out of the six vineries of my own mildew suddenly appeared in one—a rather out-of-the-way structure, sixty years old, and so uncared for—and thence it reached an adjacent vinery, the "villa vinery" of my own invention, and which is thought well of by many, which is quite new. In the first it soon became general, even to the leaves; in the second case only a few isolated berries

showed signs of Vine mildew, evidently carried to it by the wind. So we cut these out at once; but, in the case of the old vinery, after sulphuring once or twice, we proceeded to take soft cloths, and, wetting them slightly, to powder them with sulphur, and then softly wipe away the net-like poison, which would have prevented the berries from swelling; already, after a second wiping, the berries look better. It is true that the bloom is gone, but experience has before this shown us that berries wiped even six or eight times are saleable, and not much smaller in size than usual. Indeed, I have no faith in sulphur as an absorbent of mildew. In itself it is worse than a wiped berry, and must be syringed off carefully, thus removing the bloom. I only use it as a material which, like emery powder, aids to "polish" the berries clean. It is sad to think of those who will eventually consume these Grapes thus "polished," but it is the only way I know. Personally I should object to eat them, although their appearance is not at all irregular, nor worse than the average look of Grapes cut by careless and dirty men, and thrown, like common vineyard Grapes, into a basket, as is often done. In other respects the orchard-house fruit is very good here, and large, but then I employed in the spring a discharged prisoner (being a prison chaplain myself)—a strong fellow—and made him deluge the borders for weeks. Since then, my servants have, as usual, cut off this supply, but they have been unable to undo the excellent effects of my "discharged" friend's efforts. If any amateurs, then, desire fine Peaches, let them employ similar means. Three hours a day at the pump during the growing season is a healthy and fruit producing process. We never had finer Peaches: others complain of small fruit, and even of hardly any. *Thos. C. Bréhaut.*

Garden Design.—I wish to draw attention to one particular in your excellent article on "Cliveden" last week that appears questionable. I do this for the advancement of the art of garden design, not to find fault. Much may be forgiven at Cliveden, where so much has been successfully accomplished; for to attempt great works in art great comprehension is required to bring the resulting effect into its proper time and place. Thus the failing effort of great attempts is often superior to the success of puny desires, as the aim at greatness shows the road to excellence, whereas puny efforts breed but contempt. It is the account of the flower garden at Cliveden in your last issue that is likely to do harm (particularly to young students) by the character of excellence attributed to it above "a variety of designs by various landscape gardeners." I have given many years of study to such-like designs without gaining much knowledge from them of the principles of landscape which teach how to produce the charm which high art should impart to cultivated minds. In studying to work out any feature of beauty, harmony seems to be the focus-point on which the many particular powers of effect should converge. Such are the various parts of a design, its outlines, lines of sight, distances, and character, all of which must have their time and place in order to realise the beautiful; but if harmony is necessary to the beautiful in landscape, the design of the flower-garden at Cliveden is greatly wanting, for it is but patchwork, and the lovely landscape surrounding—divinely lovely, if you like—is cut in pieces (when this garden is the foreground to the views) by the lines of the design being false to its surroundings by giving an impression of equality—good, bad, and indifferent, all being of equal importance; it has no point of excellence, but equality instead. I went to see this garden some time ago, and confessed that I could not see its beauties. My conductor replied, "Oh, but you should see the spring flowers!" No doubt the spring flowers of themselves are beautiful, but the design is, in my opinion, "unsuitable" for its object. *Joseph Forsyth Johnson, Belfast.*

Strawberry Anna de Rothschild. — This fine late Strawberry deserves to be more generally known. In the neighbourhood of London, grown among the largest collection in the country, it is just beginning to come in, all the others are nearly quite over. It is very large, bright scarlet, sweet, and well-flavoured. *E.*

Abies Engelmanni.—I endorse the remarks of Mr. Barron in the number of July 14, as to the question of Abies Engelmanni; until now I thought I had the true one, but which of the two now come in controversy is the real Engelmanni is a question which must be settled by competent men. I am quite sure that different parties must have different plants under the same name, and only from this point of view can I understand how it is possible that A. Menziesii is mixed up in this question. I quite agree with Mr. Barron, and protest with him in bringing A. Menziesii on the stage, this species having in fact as little to do with the A. Engelmanni as the A. Nordmanniana or any other coniferous plant. Follow the advice of Mr. André and let a branch of A. Menziesii go through your hand and you will be severely hurt, whereas A. Engelmanni is quite smooth. (This is also quite characteristic between A. Menziesii and A. sitchensis, the latter showing a great difference in this respect.) My original plant of Abies Engelmanni came from Orleans, is splendidly glaucous and quite hardy. I hope this question may soon be settled, that we know what we have. *John Booth, Flossbeck, Hamburg.*

Sports from Gloire de Dijon Rose.—In last week's *Gardeners' Chronicle* you take notice of a pink sport on the Gloire de Dijon Rose, and also of the same thing having been obseved in Norway. I send you a flower, which I presume is darker than those formerly described [Yes], which has been produced here on a young shoot springing from the old hard wood, 1½ inch in diameter. The plant has been a good number years in its present position, and covers a wall 12 feet by 8 feet, and the sport has pushed out from where the wood has got bare and hard,

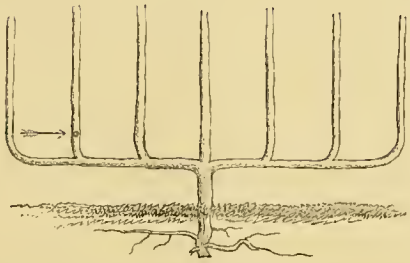


Fig. 24.—Sport on Gloire de Dijon.

and could not have been budded. The smell is that of a Perpetual instead of a Tea Rose, and quite double, and as far as I can recollect it was worked upon a Brier stock. On other side I give you a sketch of the position of the sport (fig. 24), showing it to be far removed from the junction of bud and stock. The arrow points to the exact spot where the branch of young wood springs from, no other young wood or leaves being near it. The plant is vigorous, and produces annually large crops of flowers of the largest size. I mean to retain the shoot in order to prove if it will be permanent. Should this be of any interest to you it is at your service. *A. Anderson, Oxenford Castle, July 17.*

Ashantee Hammocks.—Among garden sundries this may advantageously be included. It is a great luxury in a garden, and may be used in or out-of-doors for a great variety of purposes. We once saw a young

Ashantee Hammock on Slinging Apparatus.

Fig. 25.—Ashantee Hammocks.

maiden learning her lessons under the greenwood tree in one of these hammocks. Indeed, their handiness is such that we may safely recommend them to those who have not yet tried them. Messrs. Seydell, of Birmingham, are the makers.

The Potato Disease: Harvesting.—After the perusal of Mr. Worthington Smith's very valuable and interesting articles on this disease in the *Gardeners' Chronicle* of July, 1875, it struck me it would be desirable that some growers of the Potato should, in the autumn of the following year, adopt various modes of harvesting that crop, and carefully register the results, and report them in the *Gardeners' Chronicle* prior to the maturity of the crop of 1876. This suggestion, with my intention of acting on it, appeared in the *Gardeners' Chronicle* in August of that year. The details of my treatment of my crop in that season having being reported in the *Gardeners' Chronicle* it is unnecessary to repeat them. I have not seen such report from any other grower. I have deferred my report of my treatment in harvesting my crop of last year until this critical period for action in reference to the harvesting the crop of the present year. My beds are thrown up in the autumn 12 feet wide, leaving alleys between about 12 inches in width and depth. I never use any manure for this crop. The Potatos were planted entire, with few exceptions, 2 feet apart in the rows, which are 3 feet apart in March and 5 inches deep, to retard their too early appearance above ground in the spring. At the end of July, 1876, on a careful examination of the crop, I found the haulm and leaves in a green, vigorous state, without the usual indications of disease on either. On inquiry amongst my neighbours I received the same encouraging reports; indeed, such were the reports given in the *Gardeners' Chronicle* in the month of August from Scotland and various English counties. About the middle of August occurred some heavy rains after some very hot sunshine, and the haulm still appearing green I apprehended sprouting of the tubers under ground, and bearing in mind the success of an experiment on a small scale under similar circumstances at a former period of drawing off the haulm by the roots, I resolved on adopting that course throughout my entire crop. The Potatos were formed in point of size, but as yet unripe, the skin not being set firm. At that date I desired my gardener and his assistants would, placing one foot on each side the plants, carefully draw the haulm by the roots without disturbing the tubers. The last week in September, having found them thoroughly ripe, the Potatos were forked up on the surface to dry, and were then wheeled for storing. On a casual inspection while lying on the surface the crop appeared free from disease. The men were directed to examine carefully every Potato before it was stored, and to set aside all in any respect unsound for my inspection. A piece of ground was set apart for this purpose, 6 feet wide, and the Potatos were placed on this in the shape of a cone, carried as high as they would remain, leaving a foot margin of the earth around it. The heap was lightly covered over for a week, preserving a free circulation of air through it. The outer soil was then thrown on the margin left, and over the heap about 8 inches thick, thus leaving a hollow space all round to carry away any drippings from the thatched roof over all. My gardener sent in to me the unsound tubers which were found on storing the crop—four in number only, three of which had clearly been partially eaten, the remaining portion when cut through being quite sound. I enjoyed the notion that I had at last secured a sound crop of this useful esculent, until I was alarmed on reading in the *Gardeners' Chronicle* of October 28 as follows:—"The Potato disease is reported to be very bad in the neighbourhood of Cirencester." On inquiry I found such to be the result on digging crops which had appeared in as safe a state as my own the beginning of August. Soon afterwards I saw a report of a case in which it was stated that on opening a store of Potatos (whether pitted or otherwise did not appear) quite free from disease apparently when stored a large proportion was found diseased. It was not without some fears that I determined on uncovering my heap and removing the contents into my cellars the last week in December. Being confined within at the time, I desired the men would measure the sound Potatos sent into the house, having carefully examined the store, and laid aside for my inspection every questionable tuber. The basket brought to me contained nineteen tubers only, making, with those four previously stated, twenty-three faulty tubers out of a crop which filled seventy-two bushels. A large proportion of the nineteen were particularly eaten or bored, the remainder were not examined. This crop more than supplied my family in sound condition to the beginning of this month, when the young Potatos of the season were ripe for table. Such is a mere statement of facts on the accuracy of which your readers may rely. I may add the variety I have described is Paterson's Victoria, which I obtained from the late Mr. Paterson within a year or two after its introduction, now some fifteen or sixteen years ago. The perfection of this variety in my soil has induced me to rely on it solely up to the present time as my annual crop. I have this day gone very carefully over this year's crop from the last year's seed, and I could not find the brown spot on the leaves or stem of a single plant. *Charles Lawrence, The Querns, Cirencester.*

Early Lettuce constitutes one of the principal crops grown in the Fulham district for the London and large provincial markets, and they are produced in great perfection. The London White Cos is considered the best, as it commands the best prices, and when seen well done may be called a "giant," or "magnum bonum," liberal treatment and a fair allowance of room being the essential points to obtain them large and crisp. The principal crop is sown in frames as near the middle of October as possible. The ground is marked off for the frames, and the soil is thrown out of the intervening spaces, on to the top of these, till they are raised about 18 inches at the back and 1 foot at front, above the level of the surrounding ground. These ridges are nicely levelled over, and the frames arranged on them. They are sown with

the Early Dutch Horn Carrot, the seed is covered with a good sifting of dry soil. The Lettuce is then sown on the top of this, and covered with a sifting of dry soil. "Carrots require deeper sowing than Lettuce." The glass is put on, and a person appointed to attend to the airing and scaring of the sparrows. As soon as well vegetated they are gently thinned to about half an inch apart and the glass taken off on all favourable occasions, and tilted on damp days—keeping them thoroughly dry over the winter, and well protected from severe frost, being the chief points during the winter months. About the end of February or beginning of March, according to the weather, they are planted out on well-prepared ground in rows from 14 to 16 inches apart, and from 9 to 12 inches in the row, according to the intended intervening crops, which are generally spring-sown Cauliflowers, Kidney Beans, Scarlet Runner Beans and Seakale. Kidney Beans are sown between every other row of Lettuce, and Scarlet Runners between every second row; as the Lettuces are cleared off their space is planted with Coleworts or Lettuce. There is no restriction or rotation of crops in market gardening as in farming. As soon as they are large enough they are gone over, and the best tied up; one tie is sufficient, and this is once all the season. It keeps them clean, and saves them from breakage in their transit to distant markets. They are always packed and sent to market as drawn. They keep longer fresh with the roots left on. A second sowing is made the beginning of February on a slight hotbed under glass. As soon as they are well hardened off and large enough they are planted out as above, and come into use in the later part of June and over July. The following sowings are made out-of-doors. Many remark that there is always a good stock of Lettuce and Coleworts for any vacant ground that turns in. The Early Dutch Horn Carrots that were sown with the Lettuce are considered the best for early forcing. When the Lettuce plants are removed they are nicely aboveground, and are thinned to about 2 inches apart and receive no more protection, the frames being removed for other purposes. They come into use early in June, and are in great demand at very remunerative prices. The Lettuce plants are all gently pulled, so as not to disturb the Carrot crop. *E. W.*

Rose Letty Coles.—Mr. Prior's estimate of this charming Rose must surely have been formed hastily and without having seen it growing. Here it is beautiful, a Madame Willermoz flushed all over with rosy lake, and everything our good friend Mr. Keynes described it to be. So long as Madame Willermoz is grown Letty Coles will be also. *Paul & Son.*

Butcher's Broom (Ruscus aculeatus).—In answer to your inquiry (page 82) relative to the use of this plant, I think it highly probable that it is employed for the purpose indicated—in tobacco factories—inasmuch as some few years since a leather tanner in this neighbourhood occasionally asked me for a small bundle of its branches to sprinkle the leather with, and he asserted that nothing else, either in the shape of plant or brush, could so equally sprinkle the water. It may be interesting to add, that although there are several hundreds of this plant growing in the shrubberies here in varied aspects it very rarely fruits, and then only have two or three isolated berries been found, and yet the plants flower profusely. Possibly artificial impregnation might prove potent in the freer production of its fruit. This I purpose trying, and hope to apprize you of successful results. It may also not be generally known that the stiff Rush-shaped stems of this plant afford excellent supports for plant-tying, whether in pots or in borders, and are much superior to deal or other kinds of stakes, one reason being that as the bark retains its primitive green colour no paint is required. For the sweeping out of flues and chimneys a bundle of its branches forms a most efficient brush, and its matured stalks cut into suitable lengths and twisted and bent into shape like hairpins form excellent plant pegs. *William Gardiner, Eatington Park Gardens, Warwickshire.*

Anona Cherimolia.—I am trying to grow as a fruit tree (under glass, of course) the delicious Anona Cherimolia of Loxa (Ecuador). I have this spring for the first time got flowers (five) upon my plant, but they did not set. Has it been tried in England, and with what success? What should I do to make them set next year? The blossoms last only a few hours. *T. v. V., an Old South American Traveller.* [Impregnate them with pollen by means of a feather or camel's-hair pencil. Eds.]

Irish Yew.—Has any of your readers ever met with a male individual of the Irish Yew? I never did. Two large female specimens I have bear every year numerous seeds, although they can be fertilised only by some male common Yews growing a few hundred yards off. These give birth to a numerous progeny, very constant in their habit, which partakes of both parents. Less fastigiated than their mothers, they make beautiful specimens, very symmetrical, compact, neither so stiff as their mothers nor so straggling as their fathers. Would not the absence of male plants of the Irish Yew prove that it is a mere variety of the Taxus baccata, which some authors doubt? *T. v. V., Perck Nursery, near Vilvorde, Belgium.*

Ants in Meadows.—Coal though coming under the head of a mineral, is, as is well known, of vegetable origin, and therefore having some affinity to vegetation; and petroleum and its products though called minerals oils are also of the same parentage, but having a most peculiar strong odour, any of these oils are splendid remedies against all descriptions of vermin which infest vegetation and the ground. The thing to be guarded against is, not to use it of too great a strength, for even strong manures will kill plants. I would recommend a mixture, say, two wineglasses of the oil to the bucketful of water, and well sprinkled over the meadow, when I have no doubt whatever a perfect stampede would take place without injuring the grass, and after the first shower of rain all would be sweet again for cattle. This remedy will be found not only the cheapest in prime cost but the most economical in application. *J. F. D.*

The New Strawberry Loxford Hall Seedling.—This is a great improvement on British Queen. It is hardier, very sturdy, and a very free cropper. Fruit large, handsome and highly flavoured; has only to be known to be highly appreciated. *E.*

Naming of Orchids at Sales.—I am sure the remarks made by Sergeant Cox in your paper of Saturday last must have been read by many with great interest and keen feelings of sympathy with the writer. I can fully bear out the statements therein made as to the frequent misrepresentations that are made regarding the plants that are sold at auctions; I could mention several instances where I have been deceived in this way, and many of my friends have had the like unpleasant experience. I know of several cases where persons have bought what they believed to be the valuable Odontoglossum Alexandræ, which however has turned out to be the worthless O. Lindleyanum; and again, I have bought Rodriguezia secunda as Barlingtonia fragrans. Now I should like to know on whose authority these names are given? If the importers name them on speculation, giving them the names of the more rare and valuable Orchids, as far as their characters will allow, then I say it is a wilful fraud on the public, and the sooner some means are adopted to alter the system the better for the credit of importers. It is a pity that they do not all adopt the course pursued by certain firms, who will at once replace any plant that has been sold by them, by auction or otherwise, turning out to be different or inferior to the species for which it was sold. Trusting you will use your powerful interest to bring about a better state of things. *G. E. Cox, Leyton, Essex.*

Annuals in Pots.—It may be thought by some a kind of horticultural anachronism to advocate the cultivation of annuals in pots for decorative purposes, but the recent exhibition of annuals at the Royal Botanic Gardens, Regent's Park, by Messrs. James Carter, Dannett & Beale, serves to illustrate the beauty and usefulness of many of these when properly grown and cared for. Therein lies the secret of so much success, for if the commonest flowers be only carefully tended they will bloom much finer and more effectively than when these attentions are not forthcoming. If any one wished to realise the difference in appearance between annuals properly cultivated and those as usually seen in gardens, they should see them at the flower farms at Dedham or St. Osyth, where they are sown in manured and deeply dug ground, which is kept clean and well hoed during the blooming time. Annuals in ordinary gardens are rarely cared for; they are sown in poor soil, they are invariably left too thickly in groups, and the plants choke each other, so that there is no free development. It is by reason of such neglect that many pretty things have come to be so much neglected. The annuals shown by Messrs. Carter & Co. were sown in pots in early spring in good soil; they were thinned out when requisite, and watered as required, and this is how it was they were so charmingly developed, and so effective when attractively arranged. A selection of those best adapted for growing in pots includes Acroclinium roseum and album, the blue and white forms of Brachycome iberidifolia, which are dwarf in growth and singularly free of bloom; Cacalia aurea and C. coccinea, very showy; the red, white, and pink Catchflies, most profuse bloomers; Centranthus macrosiphon, rose, and the white variety; the annual Chrysanthemum—all of which have a branching habit of growth, and form excellent heads of bloom; the dwarf Clarkias, Collinsias corymbosa grandifolia, bicolor, bartsiæfolia, and violacea; Gilia laciniata, mauve; and G. liniflora, pure white; the red, white, yellow, and silvery Hawkweeds, charming annuals, that deserve to be much more generally grown; the Kaulfussias, of which there are four or five pretty varieties; Limnanthes grandiflora and Douglasii; the very dwarf Marigolds, of which aurea floribunda is such an excellent type; Mimulus cupreus Brilliant, a very effective pot and border plant; all the Rhodanthes, the value of which is recognised by their being grown for market purposes; Sphenogyne speciosa, the dwarf forms of Silene pendula, and the charming varieties of Viscaria oculata. Some of the latter are peculiarly striking. Some may be disposed to take exception to this list on the ground that it is wanting in many annuals equally suitable for pot culture; this is quite true, but it must be remembered that the selection simply comprises the best found in the collection seen at the Regent's Park. *R. D.*

Roses Duke of Edinburgh, Lord Clyde, and Beauty of Waltham.—Mr. Wm. Paul should rather "have permitted himself" to say, these Roses were raised by my brother, the late Mr. Paul of Cheshunt, and myself, when in partnership as Adam Paul & Son, the said partnership expiring in 1860. This discussion was raised and decided in your columns long ago, and really these old Roses are not worth further fighting about. Rather let the public compare the Roses "raised" by either firm since 1860. *Paul & Son, The Old Nurseries, Cheshunt, N.* [We hope to hear no more of this. Eds.]

The Varieties of Calochortus.—The two varieties of Calochortus venustus named by Mr. Baker in your last week's number are, I believe, only a small proportion of the varieties which exist, for on picking a few this morning at hazard from different plants I found no two were quite alike, and five or six were quite as different from Lindley's figure as those named by Mr. Baker. I believe that, in a wild state, these plants are reproduced almost entirely from seed, and that the varieties of this species, as well as of Cyclobothra elegans, are far too numerous to mention. Several varieties of the latter species have been named by Dr. Regel and others, but out of a great number of bulbs received from many different parts of the Western States I can only find the following, which I think good and distinct species:—

Calochortus venustus	Calochortus Leichtlini, Hook., *B. M.*, 5862
,, splendens = C. Roezli	,, Gunnisoni
,, luteus	Cyclobothra alba = glaucus
,, macrocarpus, a very distinct species, with sepals as long as or longer than the narrow petals	,, pulchella
	,, elegans, Pursh. = cœrulea, Kell. = Maweana, *B. M.*, 5976
,, citrinus	,, Benthami, perhaps only a yellow var. of the last
,, lilacinus, Kell. = umbellatus, Wood = uniflorus, *B. M.*, 5809	,, flava

These plants, though able to resist a greater degree of cold than they are likely to get in England, require the protection of a frame to bring them to perfection, as the leaves are produced in winter or very early spring, and if exposed to the weather get much injured. They grow more robustly and more freely if planted out than in pots, and, unless the soil is very warm and dry, they are best taken up about the end of July and kept dry till October before replanting. They seem to make few or no offsets, but in the axils of the branches small bulbs are often formed, and if the weather is hot seed is produced in abundance. A more beautiful class of plants I do not know, and, though the individual flowers do not last long, a great succession is kept up on one plant, and by having a good number of species the bloom is protracted from May till August. I should be glad to know if any other species besides those I have named are in cultivation. *H. J. Elwes, Preston House, Cirencester.*

Phœnix rupicola.—Mr. Thiselton Dyer truly remarks that this is a most interesting plant, but it is something more, for it is so graceful and handsome that it occupies a similar place among Phœnices to that of Cocos Weddelliana among Cocos. A few seedlings of it were indeed raised at Kew some time ago, yet it had never been introduced in any quantity so as to be offered in the trade, or to the public generally, until last spring, when I was able to offer seedlings of it at a moderate price. These were raised from seed which I received from India at the end of last year, direct from the district of the River Teesta; and coming from so great an elevation as 1400 feet, it is a most valuable addition to our greenhouse Palms. Besides these seeds from Northern India, I last year received a large supply of seed of this Palm from Calcutta, through the kindness of Dr. King, though probably this seed had been received in Calcutta from the district above alluded to. The illustration in my catalogue, of which a copy was given in your pages, was, as Mr. Dyer states, made from a plant I obtained in exchange from Kew in March last. I thought so highly of this Palm that I was anxious to illustrate it, but my seedlings not being large enough for that purpose I was glad to effect the exchange alluded to, and especially as the plant was one of the

only two good specimens then existing in Kew Gardens. Under these circumstances the reclamation claimed by Mr. Dyer I make with the greatest pleasure. *William Bull.*

The Rose Caddice Fly.—At page ix. of the Supplement to the *Gardeners' Chronicle* for July 7, among other insect enemies there is a notice and figure of the Rose Caddice fly, which, it is there stated, is rare in Britain. I exhibited a specimen at the last meeting of the Scientific Committee at Kensington, but there were so many other things before the committee that I had no opportunity to say much about it, and therefore it may be of interest to put what I know on record here. Like many other rare plants and animals, the Rose Caddice fly, Lyda inanita, may be locally abundant, as the ravages it has committed in my garden this season testify. Knowing next to nothing about insects I destroyed a considerable number of the caterpillars, together with their curiously constructed shelters, before I was aware that this insect was supposed to be rare. But on looking more closely at these "cigar-like rolls" I was so struck with their ingenious structure, that the desire to learn something respecting the insect became very strong. Presently I bethought myself of the Rose Supplement, and I at once referred to it for information. But there, with the exception of the figures, I found little, and that little unintelligible, because it runs thus:—"He (Professor Westwood) called it the Rose Caddice fly, from the curious cigar-like rolls, composed of leaves, that it makes for its offspring." As the figures and the score of specimens on my table show, it is the caterpillar that makes it for itself by going round the circumference of the leaflet, so that the toothed edge comes downwards; and the whole is held together and fixed to some part of the leaf by means of delicate silk threads. Unfortunately before I detected them the caterpillars had nearly or quite finished their dwellings, and completely stripped some of my Rose bushes of their leaves. I may explain that I was absent from home during the whole of the month of June, otherwise they would not have remained undisturbed until they had made cigars of all my Rose-leaves. My neighbours on both sides have suffered, but not to the same extent, as they used the syringe in time to destroy the interesting but destructive caterpillars. *W. B. Hemsley, Turnham Green.*

Mrs. Mappin Pelargonium.—Having seen in the *Gardeners' Chronicle* of July 7 an enquiry respecting the origin of the Mrs. Mappin Pelargonium I beg to say that it is not a sport, but a genuine seedling raised by me while living with J. C. Mappin, Esq., Clapham Park, and sent out by Mr. Cannell, of Woolwich. *W. H. Townsend.*

Foreign Correspondence.

Trees and Shrubs that are Deciduous at Bangalore.—The following is a list of some trees and shrubs that are deciduous at Bangalore, prepared by Mr. Cameron, Superintendent of the Lál Bágh at Bangalore, with added notes by Colonel Puckle, late Director of the Government Garden there:—

Bignonia xylocarpa (Tamil, Vandencarni).—A handsome tree. The flowers are produced before the young leaves at the ends of the branches, and are slightly fragrant. This species is remarkable for the length of the seed-pod. (The young foliage is very graceful.) At rest: December, January, February.

Tecoma stans.—A large shrub, pretty while in flower, but becoming very unsightly in a deciduous state. (It is very hardy, and flowers long and profusely; the seed-pods in an advanced stage render the last unsightly.) At rest: February, April.

Shorea robusta (Tamil, Talura).—The timber which this tree yields is very durable, and is much used for making articles of furniture. At rest: January, February.

Spathodeas (Tamil, Vanga or Panawoodachie Marum).—Large, handsome, ornamental trees. They produce four successions of flowers at Bangalore within the period of twelve months. At rest: February, March, April.

Erythrina indica var. *alba* (Tamil, Muratra Marum).—Produce their flowers before the leaves. These are bright scarlet and white, and are very conspicuous in January and February. (The wood is very soft and light.) At rest: November, December.

Cochlospermum Gossypium (Telugu, Buruga).—This tree is sometimes called Bombyx gossypium. The capsules contain a woolly substance like cotton, but of a silky quality. The flowers appear in advance of the leaves in the month of January. (The yellow flowers made an effective contrast to the masses of the Bougainvillea spectabilis grown over the Lál Bágh wall. There is a row of them behind it that produces the effect.) At rest: November, December.

Poinciana regia.—The compound bipinnate leaves of this graceful tree are so finely divided that the foliage presents the appearance of a huge and well-clothed Tree Fern. The species was first introduced from the West Indies, and has become naturalised to India. The flowers, which are very showy and sportive, precede the leaves. (See separate memorandum.) At rest: January, February, March.

P. pulcherrima (Tamil, Mylehonney).—Is a large shrub, which keeps flowering in succession for six or eight months in the year. At rest: December, January, February.

Ficus religiosa (Telugu, Raghie).—The Peepul is too well-known to need a decription. (The Peepul and the Neem are planted in marriage with certain ceremonies in connection with serpent worship.) At rest: February, March.

Michelia Champaca (Tamil, Sinnpungie Marum).—This tree is figured in Loudon's *Encyclopædia of Plants* and other books as being evergreen, but it is not so here at Bangalore. (The flowers are very sweet, sometimes overpowering in their fragrance.) At rest: November.

Trewia nudiflora (Mal., Canchi).—A large tree. The round fruit or berries, which are very plentiful, are continually falling from the trees for six weeks or more in April and May. (The pollen from the numerous flowers is profusely shed.) At rest: November, December.

Ægle Marmelos (Tam., Vilva Marum).—A tall thorny tree, commonly called the Bael of India. The fruit is large and somewhat Pear-shaped, and adheres to the tree during the absence of its leaves. (The pulp of the fruit is accounted a remedy for dysentery.) At rest: March.

Pongamia glabra (Can., Hoongay).—A middling-sized tree, with a smooth shining foliage, somewhat resembling the Beech. An economic plant. (The dullish purple flowers are produced in great numbers in April, and have a pleasing effect. The young foliage is of an exquisite delicate Apple-green, and brightens up the landscape charmingly.) At rest: January, February.

Tectona grandis (Can., Thayacatha Mara).—The Teakwood is generally admitted to be the best, or most durable, in India. The foliage also supplies a red dye. (It produces masses of sober-tinted flowers in May or June.) At rest: February, March.

Anona Cherimolia (Tam., Ram sita Marum).—This is a species of the Custard-Apple, which has been introduced from South America; the tree thrives exceedingly well at Bangalore, but does not bear fruit. At rest: April, May.

Cedrela Toona (Tam., Toon Marum.)—A handsome tree, the timber is used for making articles of furniture. It has the appearance of inferior Mahogany. At rest: November, December.

Poinsettia pulcherrima.—This shrub has also been introduced from Mexico, but has become quite acclimatised to this country. The crimson terminal bracteas and yellow flowers are very showy, and generally appear before the young leaves. (There is also a white or straw coloured variety. Both are profuse bloomers, the first-named the more so, and very hardy. They will stand any amount of hacking about or rough treatment. On a well-kept lawn the effect of the crimson bracts is very striking.) At rest: January, February, March.

Bignonia suberosa (Can., Cork Mara).—A tall, straight-growing tree; the bark is soft and spongy, which may account for the erroneous name of Cork tree, commonly applied in this district. The flowers, which are numerous and very fragrant, appear before the leaves. (The young foliage is very graceful.) At rest: January, February.

Cassia Fistula (Tamil, Ronnay).—A small tree with pretty yellow flowers, disposed on terminal racemes, drooping like the Laburnum. (The flowers are in much larger racemes than in the Laburnum, some fragrant. They appear before the foliage, and present a general mass of colour, which if properly disposed is most effective.) At rest: December, January, February.

Azadirachta indica (Can., Ravena Mara).—The Neem tree is valuable for medicinal use, and also for economic purposes. The bark is sometimes used as a substitute for Cinchona. The timber is very durable, and will resist the attacks of insects on account of its bitter taste. (The flowers in the hot weather in March are abundant, lilac-coloured in two tints, and have the fragrance in the early morning like those of the European Lilac.) At rest: January, February.

Plumeria acuminata (Can., Shavuganul Mara).—A soft-wooded small tree, spreading habit, having blunt truncate branches and white and yellow flowers, very fragrant, often overpoweringly so. They precede the leaves. A native of the East Islands. At rest: December, January, February.

Ochroma Lagopus (Can., Burugatha Mara).—This is a West Indian tree, the branches divaricate, from the summit. The wood is very soft and tender, so much so that it is sometimes used instead of corks to nets, &c. At rest: January, February.

Bignonia chelonoides (Can., Padrie Mara).—A large tree, generally figured as being evergreen; the timber is very hard. It is called Ironwood. Flowers profusely in March. At rest: February.

Lagerstrœmia reginæ (Mal., Adamboe).—A very handsome tree. The flowers are disposed in large terminal panicles, purple, very showy. The wood is valuable for its durability. (The tree in April appears covered with these delicately coloured blooms, which make an impressive display. There are several varieties.) At rest: January, February.

Holmskioldia sanguinea.—An attractive shrub, with bright scarlet flowers, in a membranaceous round spread calyx, of a dim red colour. (A free flowerer, but the colour is dingy.) At rest: December, January.

Bauhinia elata (Can., Ranchvalada Mara).—A small tree, the flowers are large, streaked purple and white alternately. At rest: December, January.

Brassia longifolia (Can., Ippé Mara).—Is locally called the "Ippé," or "Elopie;" is a valuable economic plant, as almost every part is used for some medicinal or economic purpose. (The flowers are very numerous in February, and of a very strong scent, so much so that even their shade at that time of the year is avoided as camping ground. A spirit is distilled from them.) At rest: December, January.

Erythrina glauca (Can., Marjeep Mara).—A small tree, stem and branches prickly, flowers copper coloured; introduced from South America. At rest: February.

Wrightia antidysenterica (Can., Beppaulay Mara).—A small tree, with white flowers; the (follicles) fruits are formed in pairs, and adhere together at the apex. This plant furnishes the officinal Connessi bark, used in fever and diarrhœa. (The wood is hard and white, and used for inlaying work.) At rest: December, January.

Meyenia erecta.—A very pretty shrub, which thrives well at Bangalore; the flowers are blue, and produced freely four and five times in the year. (It can be kept trimmed to almost any shape in single specimens, or pruned into a low ornamental hedge. There is a white variety, M. alba.) At rest: February, March.

Cassia florida (Can., Tagasi Mara).—An introduced species. (The flowers are a dull yellow. It is a very quick grower, but rather a sombre looking tree. It is locally said to be only of twenty-one years' duration of growth.) At rest: February.

Tamarindus indica (Can., Hoonesey Mara).—The Tamarind is deciduous only for a very short time, but that it is so is quite perceptible. (The branches, however, are rarely, if ever, bare of leaves, for the young ones vigorously push forward, and the bright green foliage, of a very delicate colour, is very striking, even before the last year's growth has fallen.) At rest: March.

Reports of Societies.

Ipswich and East Suffolk Horticultural: *July* 5.—This Society held its first annual meeting on the 5th, in the small but picturesque grounds of the Lower Arboretum, which from their close proximity to the town are well adapted for purposes of this kind. The weather, as usual, although favourable in the morning, turned out adverse during the afternoon, when several peals of thunder broke forth and rain descended heavily just at the time shops were closing and an influx of visitors was expected to see the show or attend the promenade concert to be held in the evening. Such a run of ill-luck as that which this Society has met with for years past appears to have had a most discouraging effect, as the show and wet days have become so associated that few from a distance venture to attend, and exhibitors, too, from some cause or other, are dropping off to such an extent as to render the meetings much less attractive than formerly. This is to be regretted in a large thriving place like Ipswich, with a population of over 50,000, and surrounded as it is by large gardening establishments, besides those of well-to-do tradesmen, who, to their credit, are now its principal patrons and supporters, and to whom therefore the greater share of the prizes fell. In the plant department the contest all through laid between the gardeners of E. Packard, Esq., F. Fish, Esq., F. Limmer, Esq., and Messrs. Gilbert, of St. Margaret's Nursery, who all showed some excellent specimens in the several classes to which they contributed. For six stove and greenhouse plants, E. Packard, Esq. (Mr. Payne, gr.), was 1st, with a fine collection containing two grand Allamandas, Stephaootis floribunda, Bougainvillea glabra, Trachelospermum jasminoides, and Clerodendron fallax. The 2d prize fell to Messrs. Gilbert, who had a fine plant of Erica Parmentieri rosea, and some well grown Vincas. For eight fine-foliaged plants, F. Fish, Esq. (Mr. Carey, gr.), took 1st honours with a highly meritorious lot, the finest of which were two huge well-coloured Caladiums, Prince Albert Edward and bicolor splendens, two Crotons, and a fine specimen of Adiantum Farleyense. Messrs. Gilbert came 2d with a nice clean collection, containing Alsophila excelsa, Areca lutescens, Euterpe edulis, Maranta zebrina, and Pandanus Veitchii and utilis. In the class for six exotic Ferns, Messrs. Gilbert were 1st

with a superior-looking lot, having a fine plant of Gymnogramma chrysophylla, Davallia pyxidata, Cibotium regale, and Alsophila excelsa. The 2d prize six were contributed by F. Fish, Esq. (Mr. Carey, gr.), who showed all Adiantums of choice kinds, such as Farleyense, scutum, concinnum latum, and trapeziforme. For the best specimen plant, E. Packard, Esq. (Mr. Payne, gr.), was 1st with a huge, clean, well-flowered Trachelospermum jasminoides; and F. Fish, Esq., 2d, with a good Clerodendron Balfourianum. Among plants for table decoration the 3d prize lot were the most attractive, but they lacked size, or they would have stood in a different position, on account of the choice things the collection contained, such as Cocos Weddelliana, Aralia Veitchii and elegantissima, and Reidia glaucescens, all of which are perfection for that kind of work. These were contributed by the Messrs. Gilbert, and the 1st prize lot, by F. Fish, Esq. (Mr. Carey, gr.), who showed highly coloured Dracænas and Crotons. F. Limmer, Esq. (Mr. Latter, gr.), a new exhibitor, staged some good Coleus, and some seedling Gloxinias of extraordinary size and merit, having erect flowers of great substance that measured from 3 to 3½ inches across, obtained from Veitch's celebrated strain.

The above contains all that is noteworty in the plant department. In that of cut flowers the Roses, as usual at this time of year, formed the principal feature, although these were not nearly so fine as we are accustomed to see them from the growers who contributed on this occasion. Mr. B. R. Cant, of Colchester, showed the best twenty-four, the most attractive among them being Miss Hassard, of Jules Margottin type and form, but of a lovely bright flesh colour; and in those of older kinds Xavier Olibo, with its rich dark tint and shell-like petals, was most conspicuous; the Baroness Rothschild, Edward Morren, and Marquis de Castellane likewise figured well, as they always do in a stand of cut flowers. Mr. Mill, gr. to Lord Rendlesham, came 2d in this class, and Mr. Lavely, of Whitton, 3d. In twelves the Rev. Hugh Berners, of Harksead, was 1st, and Mr. R. Keen, gr. to J. G. Shepherd, Esq., of Campsey Ashe, 2d. As usual the Messrs. Gilbert were 1st for herbaceous cut flowers, and carried all before them for table decorations and bouquets, each of which contained choice things, and showed great taste in their arrangement. Mr. Mill, gr. to Lord Rendlesham, was invincible in the class for button-hole bouquets, which were made up of choice Orchids that beggared those beside them.

Fruit, as might have been expected, made but a poor show, but what there was was good, especially the Grapes contributed by Mr. Mill, which were highly coloured, well finished, large bunches of Black Hamburgh; and Mr. Blair, of Shrubland, showed Duke of Buccleuch from pot plants, rather small in berry for that kind, but of a rich amber tint, and to which the 1st prize was awarded, as was also that for the collection of fruit, and the best Pine, a fine, well-swelled Queen, weighing 5 lb. Mr. P. Boreham, gr. to — Skinner, Esq., at The Chantry, showed a fine dish of Lord Napier Nectarine, a most valuable early kind, large in size and highly coloured; and Mr. Blair the finest Peaches, Royal George, still one of the very best for forcing. Bush fruit is very backward, and only a few dishes were shown, but Strawberries were well represented, with British Queen, as usual, taking the lead for flavour. *J. S.*

Tunbridge Wells Horticultural: *July* 6.—As usual, this exhibition was held in the grounds at the rear of the new public hall, while the table decorations, fruit, and cut flowers found a lodgment in the hall. The productions staged in its exterior made a show of themselves. Foremost was the fruit, which was admirably represented, especially in the class for three bunches of black Grapes. The best, and very finely finished examples of Black Hamburgh they were, came from J. Deacon, Esq., Mabledon Hall (Mr. A. Henderson, gr.), while R. Gostling, Esq., Bishops Stortford (Mr. C. Tyler, gr.), and P. C. Hardwick, Esq., Hollanden Park, were placed equal 2d, the former with remarkably fine Black Prince, the latter with Black Hamburgh. There were something like sixteen exhibitors. In the class for three bunches of white Grapes G. Sanders, Esq., Beechwood (Mr. J. C. Mundell, gr.), was 1st, with fine Muscat of Alexandria; T. Holman, Esq., Hawkhurst (Mr. H. Blundell, gr.), being 2d with the same variety. Foster's Seedling was well shown by Mr. A. Henderson. With three varieties of Grapes other than Black Hamburgh and Muscat, Mr. J. Staples, The Gardens, Chepstead Place, was 1st with Gros Colman, very fine; Lady Downe's and Buckland Sweetwater; Mr. C. Tyler was 2d, with Trentham Black, Black Prince, and Buckland Sweetwater. Royal Muscadine, Muscat Hamburgh, Black Alicante, and Golden Champion, were also shown in this class. Plnes, Peaches, and Nectarines were fairly well shown, and there was an abundance of Melons—one in particular, a green-fleshed variety, named Exquisite, appeared to have attained to perfection in Melons. Strawberries and Cherries were very good, and the former numerously represented—the best was James Veitch, from Mr. T. Worfold, Colhurst Gardens, Horsham. Sir J. Paxton, Dr. Hogg, Keens' Seedling, Empress Eugénie, and Sir C. Napier, were very good. Cucumbers were numerous and good, and baskets of vegetables also. The best collection of fruit came from J. Goldsmid, Esq., M.P., Tunbridge (Mr. H. Hopgood, gr).

Roses were numerously shown. In the open classes Messrs. J. Mitchell & Sons, Piltdown Nurseries, took the lead with some fine flowers. In the amateur classes fine blooms came from F. B. B. Atkins, Esq., Capt. Christy, J. Ridout, Esq., and H. Benstead, Esq. Cut blooms of stove and greenhouse plants were good: the stands of wild flowers charmingly set up, and the table decorations as usual very good indeed. Mrs. Seale, Sevenoaks, was again to the fore with some light and elegant designs of great merit. A collection of named wild flowers from Miss Cox, Redleaf, was an admirable production, as instructive as it was good.

Space will not admit of doing full justice to a provincial show that comes near to rivalling York, Leeds, Manchester, &c. Plants are invariably a great attraction at Tunbridge Wells, though this season they fell a little short of their average merit. The best group of eight came from Messrs. Balchill & Nell, Brighton, and comprised a magnificent Bougainvillea glabra, Allamanda Hendersoni, Dipladenia amabilis, finely coloured; Erica Paxtoniana, E. ampullacea Barnesi, and Statice imbricata. 2d, W. Spottiswoode, Esq., Coombe Bank (J. Bolton, gr.), who had some good plants. The best six came from Messrs. Golding & Co., Hastings. Fuchsias might have been better; Pelargoniums of all classes were scarcely up to the usual mark; Gloxinias and Achimenes were unusually fine.

Of foliage plants there was a good display, and a fine effect might have been secured in the big tent had the exhibits been arranged with judgment and taste. A very fine group of eight fine-foliaged plants came from Messrs. Balchin & Nell, consisting of Croton pictus, C. Weismanni, very fine; C. undulatus, Phormium tenax variegatum, Latania borbonica, Dion edule, Cycas revoluta, very fine; and Astrocarynm mexicanum. Mr. Johnstone, gr. to the Marchioness of Camden, was 2d, with some fine plants, including a magnificent Latania borbonica. Ferns, Begonias, Caladiums, Coleus, &c., were to the fore in good character. Would that space allowed of more minute details respecting so many good exhibits. (*From a Correspondent.*)

Enfield Horticultural: *July* 11.—The exhibition on this occasion was held in the park, Chase Side House, the residence of P. Twells, Esq., M.P., which, with the pleasant and neatly kept grounds adjoining, are in every way adapted for a floral gathering. The show may be said to consist wholly of the productions of local exhibitors, who came out in a way highly creditable to the gardening capabilities of the neighbourhood, not only in the plants, flowers, and fruit grown under glass, but also, considering the adverse season, in Roses and vegetables. Several special prizes were offered by gentlemen in the neighbourhood, which brought out the best plants. Special prizes given by F. C. Adams, Esq., and H. J. Adams, Esq., for a group of not less than twelve plants: 1st, Mr. Wilson, gr. to Mrs. Adams, showing a good dozen, in which a large specimen of Clerodendron fallax, Wooley's dwarf variety of Sobralia macrantha (finely flowered), Oncidium macranthum and Cattleya gigas were intermixed with variegated and other fine-leaved plants; Mr. Pratt, gr. to H. Barry, Esq., who was 2d, had a nice group, consisting of Palms, Dracænas, Ferns, and Crotons; 3d, Mr. Shaw, gr. to P. Twells, Esq., with about a score of nicely grown thriving young specimens of fine-leaved plants. The mistake here made of not limiting the plants in the class to a fixed number is a very common one at provincial shows, but it is very objectionable, as the awards of the judges cannot be based alone, as they always should be, on the quality of the competing collections, but numbers also have to be taken into account, which frequently makes the decisions difficult and unsatisfactory to all concerned.

Prizes given by F. S. Foley, Esq., for six stove and greenhouse plants, in flower—1st, Mr. Wilson, who had Ixora alba and Dipladenia amabilis in fine condition; 2d, Mr. Shaw, in whose group was a large and beautifully flowered Stephanotis floribunda. Prizes given by G. Batters, Esq., for three flowering and three fine-leaved plants—Mr. Wilson was also 1st, Mr. Gooderham, gr. to E. Ford, Esq., 2d. Prizes given by J. Collins, Esq., for twelve dinner-table plants, in 6-inch pots, shown in pairs—1st, Mr. Wilson, whose plants were just as they ought to be, neither too large nor too massive. Nothing but naturally slender, thin-habited subjects are fit for this purpose. Mr. Wilson's dozen was composed of pairs of Chamædorea graminifolia, Reedia glaucescens, Prenanthes hybrida, Abutilon vexillarium variegatum, small drooping standards, Dracæna Guilfoylei, and Adiantum gracillimum. We give the names, for, excepting the Fern, which is a little too formal in outline, these were a selection of the best plants for table decoration we have seen for some time. Mr. Pratt was 2d. In the class for four stove and greenhouse plants Mr. Wilson took the lead, showing amongst others a finely flowered Ixora amabilis; Mr. Pratt, 2d. Six stove and greenhouse Ferns.—1st Mr. Wollacott, gr. to F. S. Foley, Esq.; 2d, Mr. Farron, gr. to G. Batters, Esq. Achimenes were remarkably well done. Mr. Tonge, gr. to J. S. Law, Esq., who was 1st, had in an even profusely flowered lot beautiful examples of Mauve Queen, longiflora alba, and longiflora major; Mr. Wilson 2d.

Six fine-foliage plants.—1st, Mr. Wilson; 2d, Mr. Wollacott. Six Begonias.—1st, Mr. Tonge; 2d, Mr. Lowe. Six Caladiums.—These were well shown, stout and compact in growth, and the kinds sufficiently varied. 1st, Mr. Wilson; 2d, Mr. Wollacott. Cut Flowers: Roses.—For Mr. Rumsey's prize for twelve, Mr. Lowe was 1st. In the class for twenty-four, Mr. Cornish, gr. to J. Abbiss, Esq., 1st; Mr. Lowe, 2d. Twelve: 1st, Mr. J. Green, gr. to J. Warren, Esq.; 2d, Mr. Wilson. Six: 1st, Mr. Farron; 2d, Mr. Medcalf, gr. to Mrs. Harrison. Twelve bunches stove and greenhouse flowers.—1st, Mr. Wilson, showing in his box the singular Aristolochia ornithocephala; 2d, Mr. Gooderham. Twelve bunches hardy flowers.—1st, Mr. Cornish; 2d, Mr. Farrow. Device of cut flowers (competition confined to ladies).—1st, Mrs. Downing; 2d, Mrs. Stearns.

Fruit.—Eight dishes: 1st, Mr. Farrow, having amongst others nice Buckland Sweetwater and Black Hamburgh Grapes, Early Albert Peaches, and Murray Nectarines; 2d, Mr. Pratt. Two bunches Black Grapes: Mr. Wilson was 1st, showing well finished Hamburghs; Mr. Green 2d, with larger bunches a little deficient in colour. Two bunches white Grapes: Mr. Farrow, 1st; Mr. Green, 2d. Mr. Farrow was 1st for a dish of Peaches, for a dish of Nectarines, and also for a Melon. Mr. Shaw took 1st for Cherries, and likewise for two dishes of Strawberries.

Roses in considerable quantity and in fine condition were contributed by Messrs. Paul & Son, The Old Nurseries, Cheshunt; W. Paul & Son, Waltham Cross; Mr. John Fraser, Lea Bridge; and Mr. W. Rumsey, Waltham Cross.

Ealing, Acton, and Hanwell Horticultural: *July* 11.—Year by year this Society has steadily grown until it is now able to exhibit one of the best shows of cottagers' produce found within 50 miles of London. A great many special prizes are given by the residents and tradesmen, the latter generally in kind, ranging from a sewing machine to a mug. All these prizes are competed for most keenly, as well as the Baroness de Rothschild's and Mrs. Walpole's special prizes for the allotment and cottage gardens—these two ladies giving between them twenty prizes, ranging in value from 25*s.* to 5*s.* Prizes are also offered for the best kept flower garden.

The exhibition of cottagers' produce surpassed this season all expectations, so thoroughly good was it. In some of the classes for Potatos, Peas, Broad and Longpod Beans, autumn sown Onions, there are from twenty to thirty entries, and eight prizes are given in each, with the addition of extra prizes. Punnets are found for the exhibitors to stage their produce in, which gives the exhibition tables an orderly and neat appearance.

The open classes are confined to the residents of the districts, but some remarkably good plants are staged by H. J. Atkinson, Esq., Gunnersbury House (Mr. Hudson, gr.); J. S. Budgett, Esq., Ealing Park (Mr. Edwards, gr.); C. O. Ledward, Esq., The Elms, Acton (Mr. J. Hepper, gr.); E. M. Nelson, Esq., Hanger Hill House (Mr. W. Bunn, gr.); Miss Wood, Hanger Hill (Mr. Fountain, gr.); and T. Nye, Esq., Castle Hill (Mr. J. Hart, gr.). The prizes are not large, but they are well competed for. In Mr. Hudson's group of six foliage plants, to which the 1st prize was awarded, were splendid examples of Croton pictus, C. variegatus, Alocasia Lowii, and Areca lutescens. The best six flowering plants came from Ealing Park, the best six stove and greenhouse plants from Mr. Hudson. In the same classes fruit and cut flowers were well done, generally by the exhibitors above.

There were also divisions for amateurs, meaning thereby one who does not constantly, but only occasionally, employ a gardener, and single-handed gardeners, or those who have only occasional assistance. These divisions are necessary in order to put the many exhibitors on a footing of equality.

Considerable interest always attaches to the handsome special prizes offered by the committee for forty-eight varieties of Roses, three trusses of each. On this occasion there was a keen competition—Mr. C. Turner, Royal Nursery, Slough, being 1st, Mr. B. R. Cant, Colchester, 2d; and Messrs. Paul & Son, Cheshunt, 3d. An extra prize was awarded to Mr. G. W. Piper, nurseryman, Uckfield. The flowers were very good and fresh. The varieties were those which have already been given in connection with Rose shows Some special prizes were also offered for

amateurs' Roses, and a large number of blooms competed.

The show took place in the gardens of the Vicarage at Ealing, which contains some striking trees, among them a very fine example of Ailantus glandulosa.

Woodbridge Horticultural: *July* 12.—This Society held its annual meeting in the Abbey grounds, and, as usual, was well attended both by exhibitors and visitors, who came from afar, tempted by the fine day and the excellent displays of fruit and flowers that are always got together on these occasions. It would be well for the interests of horticulture did other towns carry it out in the same spirit as Woodbridge; for, although a small place, the exhibition is scarcely second to any in the provinces. This year it was more attractive than ever, as, in addition to the local exhibitors, the Messrs. Veitch sent a van-load of plants from London, most of which were rare and of great value. The collection contained many choice Orchids, new Crotons and Dracænas, that put all the older well-known kinds in the shade, C. Mortii and tortilis being especially remarkable for the rich colouring of their leaves. Two new Begonias of the tuberous-rooted section, named Acme and Vesuvius, were particularly showy, having very large brilliant flowers that would set a greenhouse quite aglow, as they did that part of the tent they were stood in. Besides the above there were many other plants too numerous to name or particularise, but all of such sterling worth and beauty as to set growers longing for their possession. None of these were for competition, but a special prize was awarded. Some good stove and greenhouse plants were shown, as also others of ornamental foliage, the prizes for which were awarded the same as at Ipswich. For Roses, Mr. Nichol, gr. at Drinkstone Park, outdistanced all competitors, taking 1st in all the classes, and thus beating Mr. Cant, of Colchester. The show of Grapes was better than is generally seen, Mr. Mill, gr. to Lord Rendlesham, contributing some well-finished bunches that placed him at the head of the list. Cherries, Currants, and Strawberries were plentiful, and remarkably fine. Among vegetables, Cullingford's Magnum Bonum Peas appeared the favourite, as, excepting one dish of Veitch's Dwarf Marrow, they were all of that variety. *J. S.*

Tunbridge Horticultural: *July* 18.—This exhibition took place in the grounds of Tunbridge Castle, the residence of Mrs. Senior, which is quite in the heart of the town. The Castle itself, or so much of it as now remains, is full of historical associations, and the grand old keep, with its massive gateway, still forms a wing of the residence.

The show formed another of the series for which the county of Kent is so famous. On the whole the productions were good, and it was said to have been the best exhibition ever held in Tunbridge. The staging was somewhat roughly done in the plant tent, a better plan of general arrangement would have greatly enhanced the appearance of the plants, and a better system of staging the groups.

Stove and greenhouse plants were shown in classes of eight and six. In the former W. Spottiswoode, Esq., Tunbridge (Mr. J. Bolton, gr.), had examples of Clerodendron Balfourianum, Anthurium Scherzerianum, Erythrina crista-galli, Stephanotis floribunda, Clerodendron fallax, Allamanda Hendersoni, Dipladenia amabilis, and Franciscea calycina major; 2d, H. B. Mildmay, Esq., Shoreham Place (Mr. J. Burt, gr.). The best six came from E. Cazalet, Esq., Fairlawn (Mr. G. Fennell, gr.), who had Allamanda Hendersoni, Bougainvillea glabra, Stephanotis floribunda, Anthurium Scherzerianum, Kalosanthes coccinea, and Begonia Vesuvius. Mr. Bolton was 2d, his best plants being Cassia corymbosa, Allamanda grandiflora, and Clerodendron fallax.

The leading exhibitor of foliaged plants was J. Deacon, Esq., Tunbridge (Mr. A. Henderson, gr.), who had the best six, consisting of Pritchardia pacifica, Dasylirion longifolium, Croton angustifolius, Dion edulis, Pandanus ornatus, and a fine piece of Cocos Weddelliana. Mr. J. Bolton was 2d. The best four also came from Mr. A. Henderson. Mr. Bolton had the best six exotic Ferns, and Mr. J. Burt the same number of Caladiums—Albert Edward, Meyerbeer, Langri, Donizetti, and bicolor splendens were in good condition. P. C. Hardwick, Esq., Tunbridge (Mr. G. Goldsmith, gr.), also had some nice plants. Begonias in flower, being somewhat unusual, had something more than ordinary interest. The group of six shown by Mr. J. Bolton, to which the 1st prize was awarded, consisted of Chelsoni, intermedia, Royalty, very fine; Stella, Parviflora, and one other. B. weltoniensis and hybrids of this type were also shown. Fuchsias were well shown by Mr. T. Baker and other, and variegated Pelargoniums were finely grown and coloured. Prizes were also awarded for groups of plants arranged for effect. Cut flowers included Roses, and here Messrs. Mitchell & Sons and Mr. W. Seale were the principal exhibitors; and the table decorations were remarkably good.

The show of fruit, though not extensive, was decidedly good. The best collection of six dishes came from G. A. Dodd, Esq., Ashford (Mr. W. Wilson, gr.). Miss Bashford, Tenwell, and A. Henderson also exhibited, receiving prizes in the order in which their names are given. Some very fine Stanwick Elruge Nectarines were shown by Mr. J. Bashford. Vegetables were well shown, and the classes for nine and six kinds brought together some excellent kitchen garden produce. A tent was set apart for cottagers' produce, which was generally of a satisfactory character. A remarkably fine example of Hymenophyllum tunbridgense was shown by Dr. Angier, Tunbridge, growing under a glass shade, and in the best of health.

Law Notes.

Trapping Trespassing Dogs and Cats.—The case of *Daniel* (appellant) v. *Jones* (respondent), recently decided before Lord Coleridge and Mr. Justice Lindley, is of much importance to owners both of property and also of domestic animals that are inclined to stray and do mischief. Mr. Daniel is a member of the bar, and resides in a suburban house, with a garden at the back. He has a stable, which he did not use, and sublet as a carpenter's shop. The tenant, Jones the respondent, had a dog; this animal was in the habit of forcing his way through the hedge of Mr. Daniel's garden, which was fenced off from the path leading from the main road to the stables. The dog proved a great nuisance to Mr. Daniel, and did a good deal of harm to his garden. He accordingly gave notice to Mr. Jones that he contemplated laying poison in his garden, and that it would be unsafe for the dog to continue its habits of trespassing. Mr. Jones, however, took no steps to restrain the dog, and before long it again trespassed, and partaking of the poisoned delicacy came to an untimely end. Mr. Jones took criminal proceedings against Mr. Daniel, and summoned him under the "Malicious Injuries to Property Act" (24 & 25 Vict., cap. 97). The case was heard before Mr. Paget, the stipendiary magistrate, who, taking a strangely prejudicial view of the case, convicted Mr. Daniel in the full penalty of £20 and costs. From the decision Mr. Daniel appealed.

Now, the essence of a charge of this description should be, that the alleged act is in the first place unlawful, and in the second malicious. The statute is, as characterised by Lord Coleridge, a "highly penal" one, and is chiefly directed against arson, wilful damage to property, and such-like offences. In the opinion of the Court the mere facts that Mr. Daniel had been acting in defence of his own property, and that he had also given full notice of his intention to lay poison, were amply sufficient to dispel any theory of "malice;" and upon that ground, without going deeper into other aspects of the case, the Court at once quashed the conviction. For this there was ample precedent. It has been laid down, in the case of "Bryant *v.* Eaton," that if a landowner sets a trap upon his own premises, laying it upon a stone upon which cats are in the habit of alighting when trespassing upon his premises, he is not liable. So long as animals trespass spontaneously their owners must bear the blame. Also there are the cases of "Irving *v.* Crump" and "Deane *v.* Clayton," which show that if a dog-spear be set in a cover, and not in a regular path, and a dog stray and get impaled upon it, the landowner is not liable for damages.

On the opposite side of the question, it must be remembered, that while persons may protect their property, they must not expressly entice animals on to their premises for the purpose of destroying them. In "Townsend *v.* Wathen" it was laid down that where an owner of land lays "strong-scented" meats upon his own land within reach of a highway, or of any place upon which such domestic animals have a full right to be, and they are thereby enticed to traps baited with these meats, he is liable for damages; nor is it any adequate defence for him to plead that his traps were set solely for the purpose of destroying vermin (*ferœ naturæ*). It would be a case, of course, for a jury whether, upon the evidence adduced, the animals trespassed spontaneously or by reason of the allurements of the baits. If they trespassed spontaneously in the first instance, then the fact that they were enticed by a bait when once they came within range of it would not make the landowner liable. In Mr. Daniel's case it seems pretty clear that the dog was in the habit of trespassing spontaneously, and that the poisoned meat which was laid down was in no way the primary cause of its entering the garden.

The Court, in quashing the conviction, was content to confine itself to the question of malice, and carefully abstained from offering any opinion whether Mr. Daniel's act had been of itself "lawful," as regards the provisions of the "Poisoned Flesh" Act, for the summons had not been taken out under that statute. It is forbidden to lay poisoned meat in an exposed place, or, in fact, in any other than a building or "enclosed garden." Now, in one sense this garden was enclosed, for it was fenced all round; in another it was not enclosed (as against a dog), for the dog easily forced its way into it. All depends whether the Act is to be construed as meaning "enclosed" generally or specifically, so that no domestic animal can make its way into it. It would be very problematical whether a garden fenced in with iron hurdles could be called an "enclosed" garden; and if not, then how far is one enclosed that is protected by a fence with holes in it? In "Stansfield *v.* Bolling" a tradesman laid poison behind his counter, which was not shut entirely off from the customers' part of his shop. A dog entered with a customer, was attracted by the smell of the poisoned cheese, and got poisoned. It was held in this case that the tradesman was not responsible. At the same time, until a case shall have come before the superior courts upon the question, what is actually an enclosed garden in the meaning of this Act, owners of property will do well to confine the protection of their property to traps only, and not to run any risk of an infringement of the Poisoned Flesh Act. For it is obvious if no cat or dog can enter, the poison is not needed as protection as regards such animals, and if they can find access, it is possible that the existence of such access vitiates the conditions of "enclosure." The lesson to be learnt by owners of domestic animals is, that if their pets trespass spontaneously, and get trapped, they have no remedy. At the same time, no owner of property may, as explained above, go out of his way to entice on to his premises or property generally animals which otherwise would not have entered upon his lands, and then destroy them. Above all, till the law is more settled upon the question of "enclosure" of a garden, he will do well to abstain from laying poison and will confine himself to traps, if he has necessity for protecting his property. *Agricultural Gazette.*

A Disputed Salesman's Account.—*Hancock* v. *Arnold.*—This was an action brought in the Bloomsbury County Court, recently, before Mr. Judge Russell, in which the plaintiff, a salesman in Covent Garden, sued the defendant, a retail greengrocer and fruiterer, to recover the sum of £9 9*s.*, being the balance of account rendered for goods sold and delivered. Mr. M. Lewis appeared as solicitor for the plaintiff; Mr. Charles Williams, solicitor for the defence.

The plaintiff being called, said he had had several business transactions with the defendant, who was a fruiterer, carrying on business at Queen's Crescent, Haverstock Hill, and who had an open account in the market. On the 19th of last December the plaintiff ordered goods to the amount of £7 4*s.* 10*d.*, and on the following day he bought £9 9*s.* worth of goods, which he (the plaintiff) saw delivered into the defendant's van, and gave him the particulars of the purchases when they were loaded in the van, and the defendant appeared perfectly satisfied.

John McTurk, a collector in the market, said he had frequently applied for payment, when the defendant said it was inconvenient, but never denied his liability. The evidence as to the delivery of the goods having been proved, concluded the plaintiff's case.

Mr. C. Williams addressed the Court on the part of the defence, urging that his client was a very respectable man, and would not repudiate a just debt, but when he promised to pay the plaintiff's account, he was not aware of an inaccuracy in it, and that he had been overcharged, but this was the case, and he should call upon his client to prove it.

The defendant (called) said he always denied owing the amount sued for, although he was aware that he owed something. He had two accounts from the

plaintiff, and the last was much larger than the former one. He mentioned that fact to the plaintiff, and was solicited by him to look at his books and see his clerk on the subject.

Clifford Forbes (plaintiff's clerk) said he had made a clerical error in the account, which he had explained to the defendant, who had since promised to pay.

Mr. Williams said that after that evidence he could not carry his client's case further.

The learned Judge considered Mr. Williams perfectly right, as it was impossible to say that the defendant, from the evidence before the Court, had not acknowledged his indebtedness; therefore judgment would be in favour of the plaintiff for the full amount claimed, with costs of attorney and witnesses.

Time the Essence of Contract: *Davenport* v. *Rhodes*.—This, which was an adjourned case, came on for hearing in the Bloomsbury County Court recently, before Mr. Judge Russell. The plaintiff, described as a horticultural decorator of Edgware, sued the defendant, a private gentleman, residing at Highgate, to recover the sum of £20 odd for the erection of a small greenhouse on the defendant's premises.

Mr. M. Lewis (who appeared as solicitor for the plaintiff) said his client had received written instructions from the defendant to erect the greenhouse in question, and imagined that, from the letters he should produce in Court, the action was purely an undefended one.

The letters were put in and acknowledged by the defendant to be in his own handwriting, and subsequently the plaintiff's foreman was called, who proved that the glass and other materials were about to be delivered at the defendant's residence, but acceptance was refused.

The carman of the plaintiff proved the attempted delivery of the goods, when the defendant was most insolent, and ordered the witness to take the work away, but assigned no reason for doing so.—In cross-examination by Mr. Williams the witness said that he was told that the order was given in January last, and was to have been completed by the end of February, but it was in the middle of March that the framework was taken home.

The plaintiff having no further witnesses to call, his case was completed, upon which

Mr. Williams said that this was one of those innumerable cases with which his Honour had to be troubled, and especially so as in this instance he should prove, by the testimony of the defendant and of one or more independent witnesses, that in this case time was to be the *primâ facie* evidence of the contract.

The defendant being called, said he was fond of floriculture and horticulture, and, wishing to have a small greenhouse erected, he wrote to the plaintiff, who called and took the dimensions of the glass and work and frames, he (the defendant) agreeing to employ his own builder to do all necessary brickwork.

By the learned Judge.—There was an explicit verbal arrangement that the work was to be complete for stocking in the end of February. The letters produced in Court had no reference to time, but that was understood to be the case by the evidence of his wife and son, who were present when the plaintiff promised to have his work completed by the end of February.

Marian Rhodes, the defendant's wife, and Edward Rhodes, the defendant's son, said they were both in the library in January last, and recollected the defendant telling the plaintiff that the greenhouse must be finished in February, and the plaintiff said it should be done.

This being the case for the defendant, the learned Judge considered that the weight of evidence preponderated on the side of the defendant, who was corroborated by the evidence of his wife and son, whereas the plaintiff's witnesses only went to prove the delivery of the goods without reference to time. No doubt Mr. Williams was right, as in all transactions of this kind time was always considered the basis of a contract, and, therefore, the defendant, at any risk, was right in refusing goods delivered in March which ought to have been delivered in February. Judgment would, therefore, be in favour of the defendant, with costs of solicitor and witnesses.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, July 25, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
July	In.	In.	°	°	°	°	°				In.
19	29.65	−0.15	70.0	55.4	14.6	62.8	− 1.7	52.9	76	S.W.; S.S.W.	0.00
20	29.80	+0.01	67.6	54.0	13.6	58.9	− 3.5	41.7	53	W.; WSW	0.00
21	29.82	+0.03	72.9	49.3	23.6	59.1	− 3.2	48.5	68	WSW	0.00
22	29.63	−0.15	66.0	55.1	10.9	58.9	− 3.4	53.8	83	W.; S.S.W.	0.00
23	29.42	−0.35	70.2	58.0	12.2	62.0	− 0.2	58.7	89	S.; S.S.E.	0.27
24	29.49	−0.28	72.1	54.9	17.2	60.2	− 2.0	52.0	74	S.S.W.; S.W.	0.10
25	29.77	+0.01	71.6	53.6	18.0	60.1	− 2.1	50.1	69	S.W.; WSW.	0.00
Mean	29.65	−0.13	70.0	54.3	15.7	60.0	− 2.3	51.1	73	S.W.	sum 0.37

July 19.—A dull cloudy day, sunshine at times. Occasional slight rain. Cool.
— 20.—A fine day, partially cloudy. Cool breeze.
— 21.—A very fine bright day. Cool.
— 22.—Fine, but dull and very cloudy till evening, then clear.
— 23.—A dull, cloudy, wet day. Strong breeze.
— 24.—A fine day, partially cloudy. Rain fell in early morning.
— 25.—A fine day, but cloudy and cool. Few drops of rain at night.

London: *Barometer.*—During the week ending Saturday, July 21, in the neighbourhood of London the reading of the barometer at the level of the sea decreased from 29.29 inches at the beginning of the week to 29.25 inches by the morning of the 15th, increased to 29.91 inches by the afternoon of the 18th, decreased to 29.81 inches by the evening of the 19th, increased to 30.05 inches by the morning of the 21st, and was 29.97 inches at the end of the week. The mean reading for the week at sea level was 29.71 inches, being 0.29 inch below that of the preceding week, and 0.28 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 73° on the 21st to 61° on the 16th; the mean value for the week was 67°. The lowest temperatures of the air observed by night ranged from 49¼° on the 21st to 57° on the 15th; the mean value for the week was 53¾°. The mean daily range of temperature in the week was 13°, the greatest range in the day was 23½°, on the 21st, and the least 6¼°, on the 16th.

The mean daily temperatures of the air were as follows:—15th, 59°.3; 16th, 57°; 17th, 57°.1; 18th, 58°.8; 19th, 60°.8; 20th, 58°.9; 21st, 59°.1; and the departures in defect of their respective averages were:—3°.4, 5°.7, 5°.6, 3°.8, 1°.7, 3°.5, and 3°.2. The mean temperature of the air for the week was 58°.7, being 3°.8 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 141¾° on the 20th, 137½° on the 21st, 136¾° on the 18th, and 131½° on the 15th; on the 16th the reading did not rise above 68°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 41½° on the 21st and 44° on the 20th; the mean of the seven low readings was 49¼°.

Wind.—The direction of the wind was S.W., and its strength moderate. The weather during the week was generally dull, cool, and the sky cloudy.

Rain fell on three days during the week; the amount collected was 0.82 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 73½° at Norwich, 73° at both Blackheath and Cambridge, and 71° at both Hull and Sunderland; at Wolverhampton and Liverpool 65¼° was the highest temperature. The mean value from all stations was 69½°. The lowest temperatures of the air observed by night were 42° at Eccles, and 43° at Sheffield; at Portsmouth 54° was the lowest temperature: the mean from all stations was 48°. The range of temperature in the week was the greatest at Eccles, 27½°, and the least at Liverpool, 13¾°. The mean range of temperature from all stations was 21½°.

The mean of the seven high day temperatures was the highest at Cambridge, 69¾°, and the lowest at Liverpool, 61¾°; the mean value from all stations was 65¾°. The mean of the seven low night temperatures was the lowest at Eccles, 49°, and the highest at Portsmouth, 56°; the general mean from all stations was 52¾°. The mean daily range of temperature in the week was the least at Liverpool, 7¾°, and the greatest at Cambridge, 17½°; the mean daily range from all stations was 13°.

The mean temperature of the air for the week from all stations was 57½°, being 8° lower than the value for the corresponding week in 1876. The highest value was 59½°, at Norwich, and the lowest 54¼°, at Eccles.

Rain.—The fall of rain during the week was the heaviest in the northern counties. At Bradford it was 2.70 inches, at Eccles 2.39 inches, at Leeds 2.12 inches, and Sunderland 2.05 inches; at Sheffield and Hull three-tenths of an inch only were measured. On Sunday, the 15th, the fall was generally large. The average fall for the week over the country was 1.13 inch. The weather during the week was generally dull and showery, though fine at times.

Scotland: *Temperature.*—The highest temperatures of the air varied from 69° at Dundee to 65° at Aberdeen; the mean value from all stations was 67°. The lowest temperatures of the air ranged between 43° at Dundee and 47¾° at Leith; the mean value from all stations was 45¾°. The mean range of temperature in the week from all stations was 21¼°.

The mean temperature of the air for the week from all stations was 57¼°, being 4¾° lower than the value for the corresponding week in 1876. The highest was at Dundee and Perth, both 58°; and the lowest at Paisley, 56¼°.

Rain.—The fall of rain was generally large everywhere, and varied in amount from 2½ inches at Leith and 2¼ inches at Perth to 1 inch at Glasgow. The average fall over the country was somewhat more than 1¾ inch.

Dublin.—The highest temperature of the air was 68½°, the lowest 43°, the range 25½°, the mean 58½°, and the fall of rain 1.04 inch.

JAMES GLAISHER.

Variorum.

Fittonias as Wall Clothers.—While admitting to the full the beauty of Fittonias, as generally grown, yet the best place for the richest exhibition of the peculiar veining and rare colouring of their beautiful leaves is the surface of a rusticated or roughened wall, where they may be brought near the eye and looked at on a level with it downwards. The Fittonias are most effective when thus placed, though there are no objections to using them for the decoration of higher walls. But the upper surface of the leaf is the richest and best to look upon, and the leaf, unlike many others, grows in richness and beauty the more closely it is examined. The Fittonias also prefer the shady sides of walls. They are most beautiful and most at home on the north side of the walls, and plants if used on the south side or other sunny aspects, must be carefully and rather densely shaded, to bring out their peculiar beauty. It is a peculiarity of the Fittonias and many other variegated plants that their leaf-colouring can only be perfected in a very subdued light. Not only are the colours richer under shade, but the plants become far more robust and strong. The Fittonias also love moisture as much as shade. The roots cling to damp walls, and the branches root at any joint without being detached from the plants, and, altogether, no plant looks more at home on walls than Fittonias. Nor are the flowers to be despised in such positions. Though small and comparatively insignificant, some of the plants should be allowed to bloom, if only for the sake of gaining a little more diversity of stature and of form. The Fittonias are dwarf plants, and the more dwarf varieties are the best for wall-furnishing. Therefore, the best plants to use with them are the more dwarf varieties of Maidenhair or other Ferns, Lycopods of sorts, and Isolepis gracilis. The drooping beauty of the latter gives charming green verdure and variety, interspersed with the rich colouring of the Fittonias. But the latter are sufficiently rich and varied in themselves to furnish any amount of wall with green beauty, and an entire wall of Fittonias, in that luxuriance of health and richness of colour which is seldom seen off walls, furnishes one of the richest scenes of wall drapery within reach of cultivators. *D. T. Fish, in "Florist."*

Plagues of Summer.—When we talk about the many pleasures of the summer, there is one of its plagues I must say a few words about, for, tiresome as we all have experienced it to be every summer of our lives, it is a subject that is full of interest. What is more common than than to hear people complain of the "midges," that sting them whenever they mean to enjoy a long afternoon in the garden, or an evening

stroll by the river or pool? We all know the "midges" to our cost, but not all of us know much about them, or what strange lives they have led before their last change transformed them into our tormentors. What are called "midges" are the insects, chiefly living in the woods and watery places, which live by sucking the blood and juices of the larger animals. The common gnat is an insect we all know, and one that possesses a most interesting history. The female gnat lays her eggs on the water, placing them side by side, two or three hundred of them, in the shape of a little boat. As the eggs come to maturity they sink deeper; and the grub, when hatched, at last creeps at the bottom of the water. From the beginning of May innumerable larvæ of gnats may be seen in stagnant waters, head downwards, breathing near their tails, which are erected to the surface for this purpose. Their heads are armed with hooks, which enable them to seize on the insects and bits of grass on which they feed; and on their sides are four small fins, by the help of which they swim and crawl along. After a fortnight or three weeks, these grubs turn into chrysalids, and through their thin covering the different parts of the future winged insect can plainly be seen. They now breathe more like other creatures, the respiratory tube being altered in shape and placed near the head. These chrysalids do not eat, and are almost always at the top of the water; but on the least motion they unroll themselves from their spiral position, and by means of little paddles plunge to the bottom. After a few days the chrysalid swells at the head and the perfect gnat bursts from its protecting case. The robe which he so lately wore turns into a ship, of which he is the mast and sail. Good fun for him if the weather be still, for then he can soon disengage himself and fly away; if not, a drop of water would upset the little boat and drown the sailor before he could free himself. But once safe and free, off he flies to pursue his prey, both man and beast. The proboscis, or long nose, like the elephant's trunk, is very beautiful in the gnat. It is through this trunk, that it draws the juices on which it feeds. On it are five or six minute little spikes, some sharp-edged, like razors, others with heads like arrows. These little spikes, stuck into the flesh, act like the suckers of a pump. Into the wound caused by these spikes the insect injects a small quantity of liquor, which renders the blood more fluid, and causes irritation. *From "Little Folks" for July.*

ANNUAL WEEDS. — A curious subject for inquiry by the botanist might be found in the singular characteristic displayed by certain annual weeds in affecting some years more than others, and on the favoured occasions literally cropping the unclean soil with its growth. Thus last year Groundsel made a marvellous growth, and its abundance was generally remarked. On many pieces of ground that had remained uncultivated until late in the season the growth was so thick that the cutting it with a hook was found to be the most expeditious method of clearing it away. This year the same soil is producing but little Groundsel, and a great crop of the white Daisy flowered, well-known in country districts as Morgan. This is most abundant, and almost smothers other weeds with its thick growth. Sometimes we find the land smothered with Shepherd's Purse, at other times Chickweed, at others the red Mayweed, at others Charlock, and so on *ad infinitum*. It may perchance be the case that hitherto these curious facts have only been observed by the unscientific cultivators of the soil, who have mentally made their observations but have not allowed themselves to proceed on from effect to cause. It may be that the soil is full of seeds that lie dormant until some season better favouring the growth of certain kinds sets all within the reach of light and life into germination, but conjecture can hardly get beyond that. The marvellous sustaining power of seeds is evidenced when soil that has not perchance seen the light for thousands of years is brought to the surface and then found to be teeming with life and vegetation, and yet of plants probably identical with those then growing wild around. A field well worthy the scrutiny of an inquiring mind is here open. The subject has been under observation at Rothamsted for many years, and we trust the report on the subject may not long be delayed.

VITALITY OF SEEDS.—At the Middlesex Industrial Schools, Feltham, there may be seen growing a fine breadth of Cabbage raised from seed saved ten years previously. This is a pretty good proof of the vitality of seed of the Brassica family when it is carefully stored.. At the same place might be observed a useful illustration of how to make an ordinary greenhouse available for the summer growth of Cucumbers. The house has a span-roof, and has 20-inch shelves running round the sides, and a 3-feet flat stage in the centre. The house is chiefly used to winter bedding plants. As soon as these are cleared out in May, 9-inch boards are fixed round the sides of the stages, and the space inside filled with good soil. The plants have been previously raised in a small frame, and are then turned out—a row all round the house and two rows down the middle; these are trained to stakes, and soon produce an abundant crop of fruit. One seedling kind, the result of a cross between Telegraph and the Marquis of Lorne, was remarkably good.

A TRAVELLER, in passing through a country in Persia, chanced to take into his hand a piece of clay which lay by the wayside, and, to his surprise, he found it to exhale the most delightful fragrance. "Thou art but a poor piece of clay," said he; "an unsightly, unattractive, poor piece of clay; yet how fragrant art thou! how refreshing! Whence hast thou this fragrance?" The clay replied, "I have been dwelling with the Rose." *Shirley Hibberd, in the "Amateur's Rose Book."*

"THERE'S a bower of Roses by Bendemeer's stream,
And the nightingale sings to it all the day long;
In the time of my childhood 'twas like a sweet dream
To sit in the Roses and hear the bird's song.

"That bower and its music I never forget,
But oft when alone, in the bloom of the year,
I think, Is the nightingale singing there yet?
Are the Roses still bright by the calm Bendemeer?"
Moore.

Enquiries.

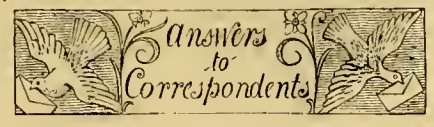
He that questioneth much shall learn much.—BACON.

197. PASSIFLORA GRACILIS.—Can any reader oblige the Editors with a few seeds of this Passion-flower?

198. ROSE.—Would any reader of the *Gardeners' Chronicle* recommend me a good, large, sweet-scented, red Rose to climb against a white house, with a south-eastern aspect, in the South of England? *Di.*

199. VEITCH'S SEEDLING PINE-APPLE.—Can you or any of your readers give me information concerning this Pine-apple, of which I have read in some of the gardening papers that it is a most useful variety for autumn and early winter use, second only to the Smooth Cayenne, while it is as free to increase as the Queen. The leaves are said to be tinged with dark red at the margin, and the fruit to be pyramidal, with broad flat dark yellow pips, tinged with red. *G. M.*

200. RECLAMATION OF LAND.—Some four years ago the sea overflowed one of my fields, and I have since been unable to cultivate anything on it with success. I shall feel greatly obliged if you or some of your practical readers will kindly offer suggestions as to the means of treating the soil. *Agricola.*



BLACK APHIS ON PEACH TREES.—These are, as you say, a fearful pest. There is no remedy so successful as fumigation. Fumigate—fumigate. It is almost impossible to destroy them by any washing or dressing, one is sure to escape somehow, and they breed so rapidly.

BOOKS ON ROSES: *Lieutenant. The Rose Garden*, by William Paul (Kent & Co.); *A Book About Roses*, by the Rev. Canon Hole (Blackwood & Co); Mr. Cranston's *Cultural Directions for the Rose;* Mr. Rivers' *Rose Amateur's Guide* (Longman), and Mr. Hibberd's *Amateur's Rose Book* (Groombridge). We cannot quote the prices.

EXHIBITING PELARGONIUMS: *Bull & Co. and F. Perkins.* Rule 17 decides the question. Though your schedule does not expressly stipulate that single plants should be shown, it is always understood that exhibition specimens such as these should not be "made up" plants. This is the rule of the Royal Horticultural Society as referred to in the rule above named, and also of common sense; and therefore we are of opinion that the compound plants were properly disqualified.

HOUSE PLANTS: *Green Leaves.* The Indiarubber, Ficus elastica, the Indian Fan-Palm, Latania borbonica, Aralia Sieboldi or japonica, and the variegated form of Aspidistra lurida. The Aralia is probably the plant you cannot remember the name of.

INSECTS: *C. W. S.* 1. The spotted weevil is a new species believed to be from Ecuador, which was unknown until two or three months ago, when two specimens were taken by Mr. Forbes, in his Orchid-house, feeding on Orchids, and it was then described by Mr. Pascoe, in the *Transactions of the Entomological Society of London*, 1877, under the name of Cholus Forbesii. Although found on a Dendrobe that does not at all imply that it is a native of India. The genus Cholus is a well-known South American form, confined to that continent. 2. The two caterpillars are the common surface grubs of the garden—larvæ of the Cabbage moth—Mamestra brassicæ.

NAMES OF PLANTS: *T. R.* 1, Pyrus nivalis, Austria; 2, Shepherdia canadensis, Canada.—*T. Lloyd.* 1, the Maidenhair tree, Salisburia adiantifolia; 2, the cut-leaved Alder.—*Philadelphus.* Philadelphus latifolius.—*C. R.* 1 and 2, garden varieties of Chrysanthemum frutescens.—*William Gray.* 1, Dictamnus fraxinella; 2, Hemerocallis minor gramineum; 3, Eranthemum Cooperi.—*J. G. W.* Moltkia petræa.—*G. Marshall*, 1, Valeriana Phu; 2, Dicentra formosa; 3, Polemonium cœruleum var.; 4, Clarkia pulchella flore-pleno; 5, Helianthemum mutabile; 6, H. apenninum.—*A. G. G.* Magnolia acuminata.—*L. Hartley.* 1, next week; 2, send fresh specimens and leaves of both.—*T. Wilkinson.* The Bougainvilleas both belong to the same species. It agrees very well with specimens collected by Tweedie in South Brazil, having the same small subglabrous leaves. There is also a specimen of it named B. braziliensis, but Chiosy sinks this under B. spectabilis. It seems to be intermediate between typical B. spectabilis and B. glabra.—*C. Harris.* Bromus racemosus. — *Johnson.* Verbascum nigrum. — *A. O. Walker* Humata (or Davallia) Tyermanni.

PITCHER ON CABBAGE-LEAF: *L. & S.* Not very rare. It has been frequently mentioned in the *Chronicle.*

ROSE PETALS: *A. S., Gravesend.*—Well dry the petals in a warm, well-ventilated room, not exposed to the sun, and subsequently turn them out of the jar occasionally.

SEEDLING PANSIES. *T. Kettle.* The white and yellow varieties are very poor. The others are pretty, but not novel in colour, of fair form, but deficient in size.

STERILE STRAWBERRIES: *H. S.* No! We cannot explain why your Strawberries have not set their fruit. Had frost anything to do with it? We have also seen the flowers scorched by the bright sun.

STRAWBERRIES: *J. Wilson.* We do not recognise them in the damaged condition in which they reached us. Ripe Strawberries are not fit subjects to send through the post to name.

VINES: *W. R. R.* The berries are not diseased, but what is generally termed "scalded"—an injury due to the action of bright sunlight on them while they have been bathed in dew. To prevent this give a little air earlier in the morning, so as to dry up any atmospheric moisture before the sun gets too powerful.

YAM: *E. W.* If you mean Dioscorea batatas, it may be cut into pieces and planted the same time as Potatos, or a little earlier.

COMMUNICATIONS RECEIVED.—W. Swan (very curious; we will examine and report. Meanwhile, if another specimen appears, please send it in a tin box. The specimen sent was smashed and withered).—C. P.—A P.—An Old Auctioneer (please oblige us with your name and address)—W. B. S.—C. H. (thanks).—J. D.—J. M., Bagshot.—W. E.—H. (under consideration).—A. D.—T. B.—J. G. & Co.—W. B. H.—An Old Orchid Grower (please send us your name and address).

Markets.

COVENT GARDEN, July 26.

The supply of fruit now reaching us is very much in excess of what was anticipated, and, all things considered, prices have been good. Raspberries and black Currants are in demand, but Cherries sell badly in consequence of the bad state they arrive in. All hothouse fruits have experienced a fall. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	4 0–12 0	Fuchsias, per dozen	4 0–18 0
Bedding-out plants, per doz.	1 6– 3 0	Heaths, variety, doz.	12 0–60 0
— in boxes, each	1 6– 2 6	Heliotrope, per doz.	6 0–18 0
Begonias, per doz.	6 0–12 0	Hydrangea, per doz.	6 0–24 0
Bouvardias, do.	12 0–24 0	Liliums in var., each	1 6– 6 0
Calceolaria	6 0–18 0	Mignonette, per doz.	3 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	4 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargoniums, p. doz.	9 0–36 0
Cyperus, do.	6 0–12 0	— scarlet, per doz.	2 6– 9 0
Dracæna terminalis	30 0–60 0	Petunias, per doz.	6 0–18 0
— viridis, per doz.	18 0–24 0	Rhodanthe, per doz.	6 0–12 0
Ferns, in var., p. doz.	4 0–	Roses, per dozen	18 0–60 0
Ficus elastica, each	2 6–15 0	— fairy, per dozen	4 0–12 0
		Valotta purpur., doz.	12 0–18 0

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	1 0– 2 0	— zonal, 12 sprays	0 3– 1 0
Carnations, per dozen	0 6– 2 0	Pinks (white and coloured), 12 bun.	6 0–12 0
— 12 bunches	3 0– 9 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Rocket, 12 bunches	3 0– 6 0
Eschscholtzia, dozen bunches	2 0– 6 0	Roses (outdr.), 12 bun.	2 6– 9 0
Eucharis, per doz.	4 0–12 0	— (indoor), per doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	— moss, 12 bunches	6 0–12 0
Heartsease, 12 bun.	1 6– 6 0	Stephanotis, 12 spr.	2 0– 9 0
Heliotropes, 12 spr.	0 6– 1 0	Stocks, 12 bunches	4 0– 8 0
Lilies (in variety), 12 sprays	1 0– 2 0	Sweet Peas, 12 bun.	3 0– 9 0
Mignonette, 12 bun.	4 0– 9 0	Sweet Sultan, 12 bun.	4 0–12 0
Myosotis, 12 bunch.	3 0–12 0	Tropæolum, 12 bun.	1 0– 4 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	2 0– ..	Mint, green, bunch	0 6– ..
Beans, French, per bushel	10 0– ..	Mushrooms, per pott.	1 0– 3 0
Beet, per doz.	1 0– 2 0	Onions, 12 bunches	9 0– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 7– 0 10	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	3 0– ..
Leeks, per bunch	0 2– 0 4	Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	2 0– 3 0

Potatos (new):—Jersey Kidneys, 10s. to 14s. per cwt.; Rounds, 9s. to 10s. per cwt.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apricots, per box ..	2 0– 3 0	Oranges, per 100 ..	12 0–20 0
Cherries, p. ½-sieve	6 0– 8 0	Peaches, per doz. ..	3 0–18 0
Currants, red, ½-siev.	3 0– 3 6	Pears, per doz.	..
— black, p. ½-sieve	5 0– 5 6	Pine-apples, per lb...	2 0– 6 0
Grapes, per lb. ..	1 6– 6 0	Strawberries, p. lb...	0 4– 1 6
Lemons, per 100 ..	8 0–12 0	Figs, green, each ..	0 4– 1 0
Melons, each ..	4 0–10 0		

SEEDS.

LONDON: *July* 25.—Increased animation now characterises the trade for farm seeds. For Trefoils especially there is a good speculative inquiry; and for such parcels as have changed hands an advance of £2 to £3 per ton has been realised. As regards white Clovers there is also a firmer feeling. Of red Clover seed the English crop will not, it is said, be large. The arrivals of home-grown Trifolium are every week becoming more numerous. With a feeble demand and a large supply close at hand prices naturally keep at a low level. No imports of this article from France are yet reported; indeed, this season, both as respects time and also quality, the French are behind the English—at any rate, so far as the London market is concerned. A few choice samples of fine black sowing Rape seed have come to hand, which have been readily placed at rates fairly remunerative to the grower. So soon as the threshing of this description becomes more general, quotations will, it is believed, recede considerably. There is a good sale for field Mustard seed. Canary seed continues quite a dead letter. Blue Peas, in sympathy with the late improvement in the corn trade, are hardening in value. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was decidedly firm. Wheat may be quoted 1s. per qr. dearer than on Monday se'nnight. Barley moved off quietly at an advance of 1s. per quarter as compared with the prices of this day week. Malt was without appreciable change. Oats were the turn dearer, and in the value of Maize an improvement of 1s. on the week may be reported. Beans and Peas were held for full prices, while as regards flour there was a limited trade doing on last week's terms.—On Wednesday the amount of business done, either separately as respects the various articles or as a whole, was the reverse of encouraging to factors. The market, however, partook of the same firmness of tone, and Wheat, Barley, and other descriptions of produce may be quoted fully as dear as on Monday.—Average prices of corn for the week ending July 21:—Wheat, 63s.; Barley, 32s. 5d.; Oats, 28s. For the corresponding week last year:—Wheat, 48s. 2d.; Barley, 30s. 11d.; Oats, 28s. 5d.

CATTLE.

At Copenhagen Fields on Monday trade in beasts was dull, owing greatly to the restrictions again issued as to the removal of cattle, and prices on the average were unaltered. The supply of sheep was small. Trade was active for them at advanced rates. Choice lambs and calves were in demand, at a slight advance. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 8d. to 6s. 2d.; calves, 5s. to 6s. 4d.; sheep, 5s. 4d. to 5s. 8d., and 6s. to 7s.; lambs, 7s. to 8s.; pigs, 4s. 4d. to 5s. 4d.—Thursday's market generally was quiet. Supplies of beasts were rather large for a Thursday. The demand was quiet, at barely Monday's prices. Sheep were steady, but with only a moderate inquiry. Lambs ruled firm. Calves and pigs sold at about late rates.

HAY.

At Whitechapel on Tuesday good fodder was in demand at full prices, but the trade was dull for inferior sorts. Prime Clover, 100s. to 140s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 124s.; inferior, 70s. to 85s.; and straw, 44s. to 60s. per load.—The supply of fodder on Thursday was large, the trade for which was dull, and prices for new and inferior sorts were lower. Quotations: — Clover, best, 100s. to 140s.; inferior, 85s. to 95s.; hay, best, 90s. to 124s.; inferior, 70s. to 85s.; and straw, 44s. to 60s. per load. — Cumberland Market quotations:—Superior old meadow hay, 130s. to 135s.; inferior, 90s. to 108s.; new hay, 84s. to 108s.; superior old Clover, 132s. to 140s.; inferior, 110s. to 120s.; new Clover, 88s. to 108s.; and straw, 58s. to 63s. per load.

POTATOS.

The Borough and Spitalfields reports state that the supplies continue moderate, and for all descriptions trade remains steady. Kent Regents, 240s.; Essex Regents, 220s.; Kent shaws, 150s. to 160s.; Essex shaws, 150s. to 170s.; Jersey round, 130s. to 150s.; Jersey kidneys, 200s. to 220s.; Cherbourg round, 120s. to 140s.; Cherbourg kidneys, 180s. to 200s. per ton.—The imports into London last week comprised 5416 baskets from Rotterdam, 294 barrels 273 baskets 144 casks Dunkirk, 289 barrels 132 casks Hamburg, 635 cases Cherbourg, 313 St. Vaast, 467 baskets 200 hampers Antwerp, 114 packages Boulogne, 112 St. Nazaire, 31 Lisbon, and 25 bags Barfleur.

COALS.

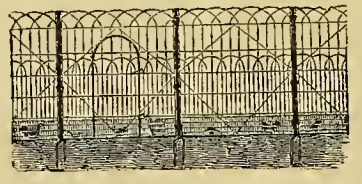
There was a good demand for house coals at market on Wednesday. "Best" realised former prices, while "seconds" advanced 3d. per ton. Quotations:—Walls End—Hetton, 19s.; Hetton Lyons, 17s. 3d.; Hawthorns, 17s. 3d.; Lambton, 18s. 6d.; South Hetton, 19s.; East Hartlepool, 18s. 9d.

THOMAS'S

NEW POULTRY FENCING,

No. 508.

Very strong and durable. Reduced Prices, 1877.



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This ornamental Fencing is easily fixed or removed by any labourer, without extra cost.

PRICES:—

6 feet high, 6s. per yard; 7 feet high, 7s. per yard,

Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 3s. extra, except when 12 yards are ordered, in which case a door is included.

Five per cent. discount allowed for prompt cash on Orders amounting to 40s. and upwards.

Illustrated and Priced Catalogues of every description of Horticultural Wirework on application.

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PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

HORTICULTURAL IRON and WIRE WORKS.

For CONSERVATORIES.
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GALVANISED FITTINGS FOR WIRING FRUIT WALLS.

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(NAYLOR STREET IRONWORKS),

are now able, having improved manufacturing appliances, to supply these at following close prices, for cash to accompany order:—

TIGHTENING RAIDISSEURS ..	2s. 8d. per dozen.
TERMINAL HOLDFASTS	1 8 ditto
EYES for GUIDING the WIRES ..	0 5 ditto
WIRE, best quality	1 10 per 100 yds.
WINDING KEY (only one required) ..	0 4

All Galvanised. Bags for packing extra.

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London Branch:—
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NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

For Sale, a
STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
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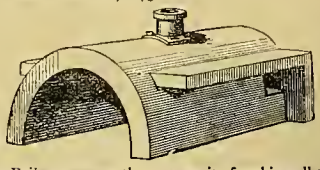
Silver Medal, 1874.
THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



"This Boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 254.
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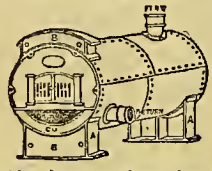
TRENTHAM GREENHOUSE BOILER,



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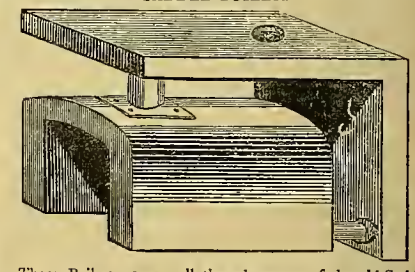
HOT-WATER ENGINEERS, &c., &c.
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 ,,	18 ,,	300	7 0 0
20 ,,	18 ,,	24 ,,	400	8 0 0
20 ,,	18 ,,	30 ,,	500	9 0 0
24 ,,	24 ,,	24 ,,	700	12 0 0
24 ,,	24 ,,	30 ,,	850	14 0 0
24 ,,	24 ,,	36 ,,	1,000	16 0 0
24 ,,	24 ,,	48 ,,	1,400	20 0 0
28 ,,	28 ,,	60 ,,	1,800	25 0 0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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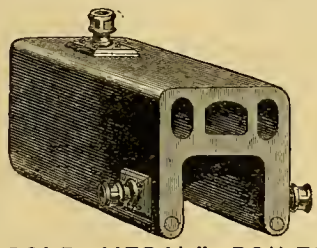

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Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

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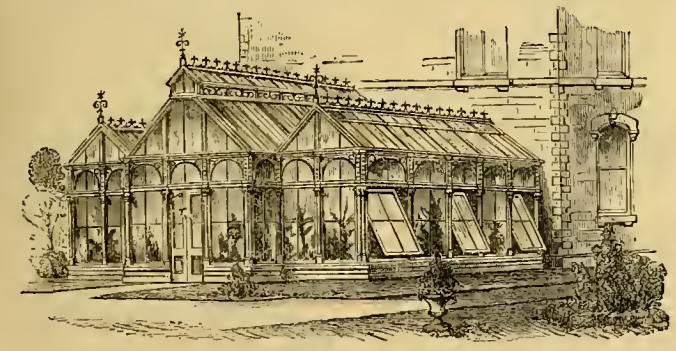

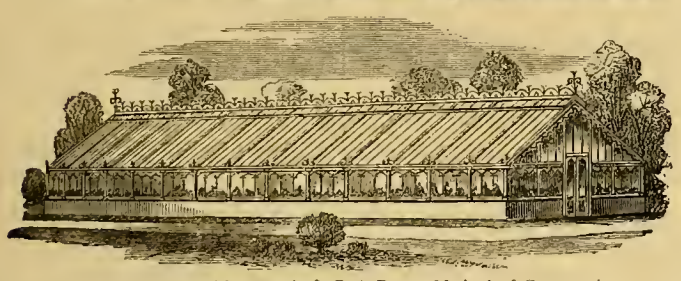

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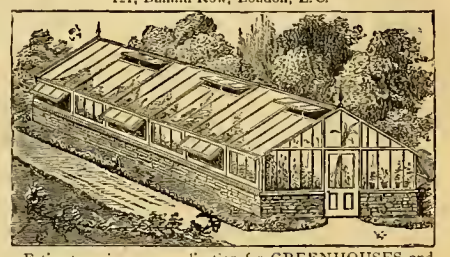

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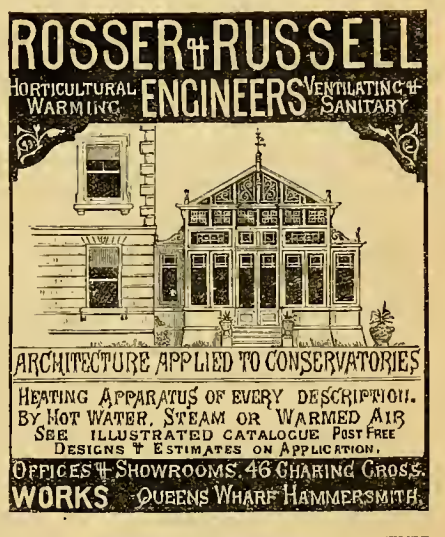
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10	0
6 feet by 4 feet, not painted nor glazed	6	0
Ditto glazed and painted four coats	16	6



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No AGENTS.

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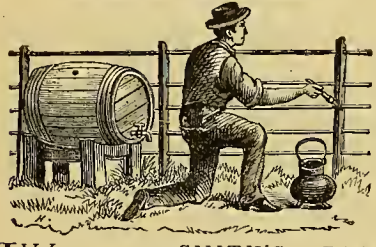

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—FRUIT and FLORAL COMMITTEES' MEETINGS, on TUESDAY NEXT, August 7, in the Council Room, at 11 o'Clock. General Meeting, for Election of Fellows, at 3 o'Clock.

ALEXANDRA PALACE.—The GREAT INTERNATIONAL FRUIT SHOW will be held on THURSDAY, FRIDAY and SATURDAY, September 13, 14 and 15, when Prizes to the amount of about THREE HUNDRED and FIFTY POUNDS will be offered for FRUIT, VEGETABLES, TABLE DECORATIONS, CUT FLOWERS, &c. Schedules are now ready, and may be obtained on application to JOHN A. McKENZIE.
1 and 2, Great Winchester Street Buildings, London, E.C.

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Mr. R. BURT, Hon. Secretary.
Mr. W. MARCHANT, Secretary.

SHROPSHIRE HORTICULTURAL SOCIETY.
ENTRIES for the ANNUAL EXHIBITION of this Society at Shrewsbury, August 15 and 16, CLOSE on THURSDAY NEXT, August 9, TWO HUNDRED AND FIFTY POUNDS in PRIZES. Schedules, &c., post-free, and Entries to be made to
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(The Seat of the Right Hon. the Earl of Roden.)

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H. CANNELL begs to inform the Public that he has many thousands of the above invaluable variety, established in small 60's, just ready for shifting, 15s. per 100; plants from ground 6s. per 100. The fact of his being situated in the midst of hundred of acres of the Kent fruit gardens enables him to offer really all the best and most approved kinds of STRAWBERRIES in cultivation. A halfpenny card will bring you full and valuable particulars.

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CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.
ROSES, FRUIT TREES, CONIFERS.

Address—CRANSTON & CO.,
KING'S ACRE, near HEREFORD.

THE NEW SEEDLING ROSE.

All who are interested in Roses for Bedding, should visit Sunningdale Nursery, where the

"QUEEN OF BEDDERS"

(NOBLE)

Can be seen in unwonted beauty.

At this moment a bed, 25 by 50 feet, has 22,500 buds and flowers upon it.

The Nursery is only five minutes' walk from the Sunningdale Station, South-Western Railway.

HARDY ORNAMENTAL TREES IN GREAT VARIETY.

EXTENSIVE COLLECTIONS,

Showing variation in colour, of deepest green and purple, and brightest gold and silver, assuming habits pyramidal, spreading, and weeping; leaves entire, or cut and divided like Ferns, spotted, or variegated—planted in groups to show contrast of form and colour—now in great beauty at THE ARBORETUM, five minutes' walk from Isleworth Station.

CHAS. LEE & SON, Proprietors.

QUANTITY and QUALITY.

NEW ROSES, IN POTS.
TEA and NOISETTE ROSES, IN POTS.
CLEMATISES, IN POTS, of best New and Old Sorts.
ORCHARD-HOUSE TREES, IN POTS.
VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.

ROSES.

CRANSTON'S NURSERIES
KING'S ACRE, HEREFORD.

(ESTABLISHED 1785.)

THE LARGEST ROSE GARDENS IN ENGLAND.

MESSRS. CRANSTON & CO.

Beg to announce that their ROSES (extending over many acres) are now in full bloom.

As considerable time will be required to inspect the whole of their Collection, Visitors to the Nurseries should take the morning trains arriving at Barr's Court, or Barton Stations, 2½ miles from the Nurseries, where conveyances are to be had.

Rose Blooms for Decoration supplied.

Pine-apple Nursery, Maida Vale, London, W.

E. G. HENDERSON AND SON can supply Seed of the following; quality of strains are the best that can be grown :—

PRIMULA SINENSIS FIMBRIATA, mixed colours or separate, 2s. 6d. per packet.

PRIMULA SINENSIS FIMBRIATA, double-flowered, mixed, 2s. 6d. and 5s. per packet.

PRIMULA SINENSIS FIMBRIATA, Maiden's Blush, new double, 2s. 6d. and 5s. per packet.

CINERARIA and CALCEOLARIA, 2s. 6d. each packet.

CYCLAMEN PERSICUM GRANDIFLORUM, 1s. and 2s. 6d. per packet.

PANSIES, best English, and blotched flowers, 1s. 6d. each pkt.

CARNATION and PICOTEE, 2s 6d. each packet.

NEW PELARGONIUMS.

PRINCE of WALES (Bull), 5s. each.
ROYALTY (Perkins), 5s. each.
BEAUTY of OXTON, 1s. 6d. each.
CAPTAIN RAIKES, 1s. each.
MARIE LEMOINE, 1s. each.
QUEEN VICTORIA, 1s. each.
LE 20 FÉVRIER
VOLUNTE NATIONAL
PROGRESS
MANIFESTATION
RÉVEIL DE LA FRANCE
LA DEMOCRAT
} (Lemoine's) 2s. 6d. each.

The Collection of the above twelve splendid varieties for 25s., postage or package free.

LUCIE LEMOINE, double white Ivy-leaf, 2s. 6d. each.
WONDERFUL (G. Smith), double scarlet, 1s. each.
MDME. AMELIA BALTET, best double white, 1s. 6s. each.

Post-Office Orders payable to FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON,

THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10s. 6d. each.

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

Good Flowering Plants, in Pots 7s. 6d. each.

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

THE THAMES BANK IRON COMPANY,

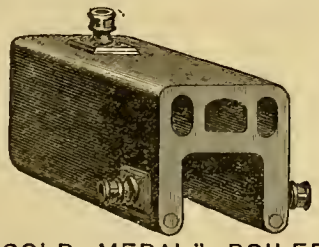
OLD BARGE WHARF,

UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



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"GOLD MEDAL" BOILER.

This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle*.
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872).
PATENT "EXCELSIOR" BOILER (1871).
"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.
PATENT PAXTON INDEPENDENT BOILER.
"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.

,, Half Specimens, 5s. to 7s. 6d. each.

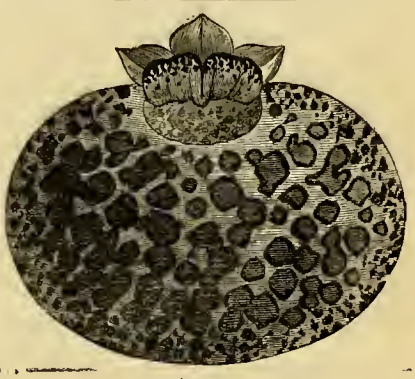
NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—CRANSTON & CO.

THE FINEST STRAIN OF CALCEOLARIA.



SUTTON'S "PERFECTION."

After many years' careful selection we have succeeded in producing a strain of Calceolarias which for beauty and form of flower, richness of colour, and habit of plant, is acknowledged to be far superior to any yet in cultivation. Our houses have been visited during the blooming season by some of the most eminent authorities of the day, all of whom agree in pronouncing our Improved Strain to be of unusual excellence.

Price 3s. 6d. per packet, post-free.

SUTTON'S SUPERB CALCEOLARIA
JAMES'S INTERNATIONAL PRIZE } 2s. 6d. per packet, post-free.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

CHOICE FLOWER SEEDS

For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, Post-free on receipt of P.O.O. or Stamps.

	Per packet— s.	d.
AURICULA, choicest mixed, alpine .. .. 6d. and	1	0
CALCEOLARIA HYBRIDA, very choice, mixed 1s. ,,	2	6
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CARNATION and PICOTEE, from stage flowers 1s. ,,	2	6
HOLLYHOCK, Prize English .. .. .. 6d. ,,	1	0
INDIAN PINK, splendid double, mixed	0	4
MIMULUS, Clapham's superb, very fine..	1	0
MYOSOTIS DISSITIFLORA—Forget-me-not ..	0	6
PANSY, choicest mixed English .. .. .. 6d. and	1	0
PRIMULA SINENSIS, choicest mixed.. .. 1s. ,,	2	6
POLYANTHUS, finest gold-laced, choice	1	0
STOCK, Brompton, scarlet Giant	0	6
,, East Lothian, splendid	0	6
SWEET WILLIAM, very choice, mixed..	0	6
WALLFLOWERS, splendid double, mixed .. 6d. and	1	0
GREENHOUSE PERENNIALS, 12 fine varieties ..	6	0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4	6

DANIELS BROS.,

ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.

SOLE MEDALLISTS

For the Best Hot-water Apparatus at the United States Centennial International Exhibition, Philadelphia.

BY HER MAJESTY'S *ROYAL LETTERS PATENT.*

WRIGHT'S ENDLESS-FLAME-IMPACT HOT-WATER BOILERS.

Guaranteed the most Powerful, the most Rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The 'Boiler of the Future:' I have no doubt about this."—WM. THOMPSON, Tweed Vineyards.

Our Patent Endless-Flame-Impact Boilers have excited a very great degree of interest, not only in this country, but also in Austria, Germany, Holland, Belgium, France, United States, &c.—from all of which we have had many inquiries. We feel sure the details of the experiences of the first ones put to work will be read with interest :—

"The Gardens, Drumpellier, Coatbridge (N.B.), December 1, 1876.

"Messrs. WILLIAM WRIGHT & Co.,
Hot-water Engineers, Airdrie (N.B.).

"GENTLEMEN,—The setting of your No. 6 'B' Boiler being so far forward on Wednesday last, I determined to get it started. The Pipes and Boiler being filled with water, a very small fire was lit. The effect on the Pipes was, I may say, instantaneous, as in a few minutes the hand could hardly be held on them, so very hot were they. This was the more remarkable, as bricks, lime, and everything were thoroughly wet, having been deluged by the previous rains whilst standing uncompleted. With other Boilers it generally takes a good many days before the brickwork dries and they 'answer' to the fire; but the moment the fire was lighted in yours, although all was soaking with damp round about, the heat rushed into the Pipes with a rapidity I have never seen equalled. There can be no question, therefore, as to its great power and extreme rapidity in working. What makes these results the more remarkable is, that we had no chimney—our bricklayer not having had time to get one erected—save a common fire-clay pipe on top of the Boiler, only about 18 inches high. I took this off repeatedly, and the furnace went quite well without it, so that its requirements in the matter of a stalk appear to be very slight indeed. I expect about half the usual quantity of small coal will be quite sufficient for it, as the 'Water Jacket' effectually prevents the loss of heat from any cause whatever, whilst the temperature of the escaping gases was so very low that I repeatedly held my hand in them, as they left the Boiler, without the slightest discomfort. Altogether we are greatly pleased with it, and have not the slightest doubt but that it will give the greatest satisfaction. I will hand you the pyrometer readings, for the temperatures in the various sections, very shortly.

"I am, Gentlemen, yours truly,
(Signed) "H. W. LEWIN."

On the 6th inst. he favoured us with the following additional particulars :—

"The Gardens, Drumpellier, Coatbridge (N.B.), December 6, 1876.

"Messrs. WILLIAM WRIGHT & Co.,
Hot-water Engineers, Airdrie (N.B.).

"GENTLEMEN,—Since writing you on the 1st inst. I have got about 5 or 6 feet of a stalk erected. The draught still continues excellent—in fact is rather in excess. The Boiler is rising in favour with us every day, as we become more and more acquainted with its good qualities. At first I intended firing it with our usual mixture of coal and dross, but found the heat far too high. We therefore put in dross alone, but even with that we have too high a temperature. Last night, to prevent this, we filled up with the dirtiest rubbish we could find, but when trying it before 'turning in' for the night, we found Boiler and Pipes and Houses again so hot that we shoved the damper in altogether, or nearly so; left three of the soot-holes open, to reduce the heat in the Boiler, if possible; and a large space open for ventilation in the top of the House. But in spite of all these precautions, the temperature this morning was about 70°. It is certainly a most extraordinary Boiler, and the men are all quite taken up with its performances. I shall use the refuse from the other Boilers and all the rubbish about the place for it, as nothing appears to come amiss to it. In fact, we are forced to try this to keep down the temperature; although, so far as we have attempted this remedy, it does not promise great success, as your Boiler appears to give nearly as much heat from rubbish as many Boilers do from the best coal, whilst the small quantity consumed, as compared with others, is quite remarkable. We are confident, also, that we will get rid of our usual night-work by means of your Boilers, as they seem to be quite capable of keeping up nearly any temperature for many hours without attention. Knowing the generally highly-sanguine temperament of inventors, I certainly was inclined to receive your assertions in your pamphlets and elsewhere as to the great benefits and advantages you had secured in your Patent Endless-Flame-Impact Hot-Water Boilers with a certain amount of reserve, and to allow a considerable margin for miscarriage of one sort or another; but I feel bound to say that, as far as our experience has gone with the Boiler you sent us, its merits have not been overrated by you, but the reverse. I shall have great pleasure in showing it to any one who may wish to inspect it.

"I am, Gentlemen, yours truly,
(Signed) "H. W. LEWIN."

"The Gardens, Parson's Green, Edinburgh, February 8, 1877.

"Messrs. WILLIAM WRIGHT & Co.,
Hot-water Engineers, Airdrie.

"GENTLEMEN,—In answer to your enquiries regarding your 'No. 4 D' Boiler, fitted up here by Messrs Meikle & Philip, Horticultural Builders and Hot-water Engineers, &c., Edinburgh, I beg to inform you that I am more than satisfied with its heating powers. Although everything about the Boiler was damp, I found I could heat all the pipes—upwards of 2200 feet of 4-inch pipes, many of them exceeding 4 feet in difference of elevation—in less than an hour, so that you could not bear to hold your hand on them. This result I never could attain with the aid of the two large oval flue Boilers I had before: whilst the consumpt of fuel is less than one-half.

"The draught is excellent (having been obliged to put in a damper) although the flue goes horizontally 79 feet under the wall, with only a rise of 18 feet of vent. One of the good qualities of your Boiler is the ease of its erection. Even with such a large and heavy Boiler as your '4 D' (nearly 30 cwt.), I had no difficulty in passing all the sections through a trap-door in stoke-hole 2 feet by 4 feet, and setting it up in a recess 4 feet square without the least trouble, and I am confident that, with the help of two men, I could take the whole Boiler down and have it again in full working order in less than two hours. Attached to Boiler are about 250 feet of 4-inch piping for drying-room in Laundry, and to none has your Boiler given greater satisfaction than to those in this department, where heat is an important element. From the careful examination I made of your Boiler at Drumpellier, and from my own experience of its performances here, I thoroughly endorse the statements Mr. Lewin has made regarding its many excellent qualities, and quite agree with him that you have rather underrated them than otherwise. The usual night work and late stoking too has been entirely got rid of, as it can be left from any hour in the evening till next morning without the slightest misgiving, and with little variation of temperature. Not the least of your Boiler's good qualities is its cleanliness, as there is no soot to be pulled out—all goes to flame. I consider the Horticultural World owes you a debt of gratitude for your invaluable invention, and I shall have much pleasure in giving ocular demonstration of its powers to any one interested in the matter.—I am, yours respectfully, "JOHN CLARK."

Mr. David Thomson, author of *The Handy-Book of Fruit Culture under Glass*, *Handy-Book of the Flower Garden*, editor of *The Gardener*, and gardener to His Grace the Duke of Buccleuch, at Drumlanrig Castle, has favoured us with a note on the same subject, from which we extract the undernoted :—

"The Gardens, Drumlanrig Castle, Dumfriesshire, February 22, 1877.

"Messrs. WM. WRIGHT & Co., Airdrie.

"GENTLEMEN,— . . . . Although a dabbler in Boilers, I think yours the most perfect 'Heat Trap' yet invented. We are going to put up another new range, and shall put one of your Boilers in, and in the interest of the public shall not lose a chance of recommendng it.—Truly yours,
(Signed) "DAVID THOMSON."

We have been kindly favoured with the following from Mr. WILLIAM THOMSON, of the celebrated Tweed Vineyards, author of the standard work on *The Vine, and its Cultivation*, and late Gr. to His Grace the Duke of Buccleuch, at Dalkeith Palace :—

"Tweed Vineyards, Clovenfords, by Galashiels, December 16, 1876.

"Messrs. WILLIAM WRIGHT & Co.,
Hot-water Engineers, Airdrie.

"GENTLEMEN,—Thanks many times for your prompt and kind reply to my enquiries about the Boiler. I have studied it as far as your able pamphlet and woodcuts have enabled me, and I have come to the conclusion that it is 'The Boiler of the Future.' I have no doubt about this . . . I shall use it for the one I need in February, but hope, before then, to run through and see it; and, if it answers, as I hope and believe it will, it may be a question if I should not pull out some of the Boilers I have in use, good as these are, for, if coal can be saved, the price of a Boiler can be made up in a few years. The Boilers I have here doing the heaviest work are of my own design—fire goes from A to F and back under the Boiler, then over the top and up chimney at D, thus traversing 60 feet. The Boiler is all bricked round of course, but the direct upward impact of the fire on yours is far better and more powerful than in them. Still you will see they are powerful Boilers; yet, with your Boiler before me I would not have them repeated if they gave way till I had a trial of yours.—I am yours truly,
(Signed) "WM. THOMSON."

On February 20, 1877, after inspecting our "4 D" at Parson's Green, near Edinburgh, he further writes us :—

"Messrs. WILLIAM WRIGHT & Co., Airdrie.

"GENTLEMEN,—When in Edinburgh I went out to Parson's Green, and saw the Boiler at work, and, as I expected to find, nothing could be more satisfactory than the way it does its work. . . . "I am yours truly,
(Signed) "WM. THOMSON."

A few months ago we supplied Mr. Thomson with one of our large Boilers. He is so satisfied with it that he has since ordered five of our largest, and says all his fifteen other Boilers will be discarded and ours alone used, as he feels certain he will get his work better done, and at the same time save at least half of his annual coal bill.—*See "The Gardener" for July.*

"6, Constitution Terrace, Dundee, March 9, 1877.

"Messrs. WILLIAM WRIGHT & Co., Airdrie.

"DEAR SIRS,—The Boiler recently had from you is very efficient, and promises continued satisfaction in every respect. The consumption of fuel is very small, and no furnace could do with less attention. I will be most happy to show and explain it to any one who may be making inquiries in this quarter.

"I am, dear Sirs, yours truly,
"J. A. STEWART."

"Brewery, Newport, Isle of Wight, March 7, 1877.

"Messrs. WILLIAM WRIGHT & Co.,
Engineers, Airdrie (N.B.).

"DEAR SIRS,—I am instructed by Mr. William B Mew to forward you the enclosed cheque for amount of account, which kindly acknowledge, and he wishes me to say that the apparatus is fixed and at work, and the result is highly satisfactory, but, owing to the very short time it has been in use, it is impossible for him to speak with certainty as to its durability.

"Yours truly, (Signed) W. WEEKS."

"Boston Spa, Yorkshire, March 27, 1877.

"Messrs. WILLIAM WRIGHT & Co., Airdrie.

"GENTLEMEN,—In the latter part of October of last year I requested you to send me one of your pamphlets. I duly received it, and was well pleased with it, and consulted my horticultural friends about your Boiler. Some shook their heads and said it was but an advertising puff: others, too cheap to be good; and not one gave me any encouragement to try it. My answer was, I would chance it, and if it proved only one-half what it was represented to be I should be well satisfied. I ordered one in November last, which came to hand shortly thereafter. It was at once erected and put to work, and I feel bound to say your Boiler is A 1. It does everything you state in your pamphlet, even more. A friend of mine of very great practical experience, a nurseryman (from whom you will shortly receive an order), is about to pull out a Saddle-boiler, not two years put in, to replace it with one of yours. He has seen my fire lighted and Boiler working at all its stages, and says it is marvellous, and pronounces it 'the best Boiler in the world.' As I am in the centre of a large horticultural district, I shall be most happy to show any interested parties your Boiler at work, as I consider it a great boon—it having great heating powers, causing very little trouble, and the consumption of fuel very small compared with other Boilers.

"I am, Gentlemen, yours truly (Signed) R. STUART."

"The Gardens, Preston House, North Shields, April 2, 1877.

Messrs. WILLIAM WRIGHT & Co., Airdrie.

"SIRS,—For these last thirty years both brains and temper have been frequently and heavily tried with Boilers, which in their turn were considered the best out. Indeed, there are few of any note but I have had something to do with, but never found one to give anything like satisfaction till we tried yours. We have now got it into thorough working order, and certainly it pleases me beyond what I expected in all respects. I can have it boiling in twenty-five minutes, which I could not do with some of the others in as many hours, and that with very little fuel, the saving from which will in time pay the price of it. With a well-regulated damper I can bank up the fire to keep in twenty hours, and I daresay longer, if necessary. Very little of a stalk is required, as it will do without one, and will burn almost anything. There is not a question of a doubt but that it will very shortly be 'The Boiler of the Day.' When I first saw it in the *Gardeners' Magazine* I told Mr. Fenwick that I preferred it to any I had seen. I am, therefore, the more delighted with the highly satisfactory result. It was put up by the joiner and myself in a very short time.—Your most obedient servant, (Signed) "JAMES M'QUEEN."

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "Our Boilers and Heating," which will be handed to all applicants, post-free.

We are prepared to supply THIRTY DIFFERENT BOILERS of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.
BOILERS SPECIALLY DESIGNED FOR LOW AND OTHER INCONVENIENT POSITION.

WM. WRIGHT & CO., HOT-WATER ENGINEERS, AIRDRIE, NEAR GLASGOW, N.B.

BOULTON & PAUL,

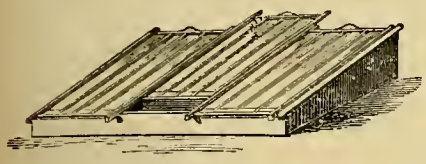
HORTICULTURAL BUILDERS,

NORWICH.

No. 75.—MELON FRAMES and FORCING FRAMES.

The largest Stock in the Kingdom, ready to be despatched on receipt of order.

These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen; 24 in. high at the back, 13 in. high in front; painted three coats of good oil colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in with putty—the best method of glazing known, and adopted by the most eminent Builders and leading Nurserymen (see *The Garden* for January 13, 1877, p. 30). Iron handles to each light, and an iron strengthening bar across. Each light is 6 ft. by 4 ft., and 2 in. thick.

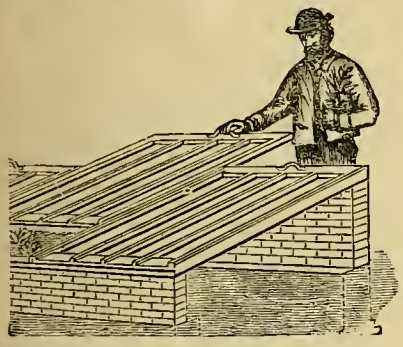


CASH PRICES (Carriage paid).

	Length.	Width.	£ s. d.
1-light frame	4 feet ..	6 feet	1 17 6
2 ,, ,, ...	8 feet ..	6 feet	3 5 0
3 ,, ,, ...	12 feet ..	6 feet	4 17 6
4 ,, ,, ...	16 feet ..	6 feet	6 7 6
5 ,, ,, ...	20 feet ..	6 feet	7 17 6
6 ,, ,, ...	24 feet ..	6 feet	9 7 6

Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh, on Orders of 40s. and upwards.

PIT LIGHTS and SILLS for BRICK WALLS on EARTH BANKS.



PIT LIGHTS AND FRAMES,

Complete for fixing on Brickwork, made in two sizes of lights to work 6 feet by 4 feet 2 inches thick, 7 feet 6 inches by 4 feet 2½ inches thick, lights glazed with 21-oz. British sheet glass, painted four times, sills 4½ inches by 3 inches, with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

CASH PRICES.

Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.

SILLS or FRAMES.	£ s. d.
With 2 lights, 6 feet by 4 feet, 8 feet long by 6 feet wide	2 16 0
With 3 lights, 6 feet by 4 feet, 12 feet long by 6 feet wide	4 3 0
With 4 lights, 6 feet by 4 feet, 16 feet long by 6 feet wide	5 10 0
With 2 lights, 7 feet 6 inches by 4 feet, 8 feet long by 7 feet 6 inches wide	3 10 0
With 3 lights, 7 feet 6 inches by 4 feet, 12 feet long by 7 feet 6 inches wide	5 2 0
With 4 lights, 7 feet 6 inches by 4 feet, 16 feet long by 7 feet 6 inches wide	6 14 0

Longer lengths at cheaper rates.

PRICES ON APPLICATION.

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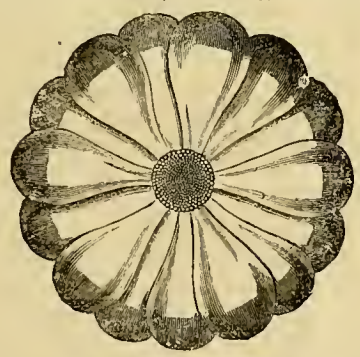

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SATURDAY, AUGUST 4, 1877.

NOTES FROM CHISWICK.

THERE are not a few of the old school of horticulturists who are fond of prating about the "palmy days of Chiswick." Well, no doubt they were "palmy days," for they included a much larger garden, a fine arboretum, a splendid Apple orchard, grand flower shows, and much grander company. If those days have passed away, horticulture is none the worse, for gardening is quadrupled in extent, and the one or two great flower shows of the fashionable suburb have developed into hundreds elsewhere. But if our older friends will regard the great show times of Chiswick as its palmy days, perhaps younger men may be induced to regard its present days as Chiswick's "practical" ones, for there is no other garden in the kingdom where more useful or more practical work is being done, and the Royal Horticultural Society, if it displays a somewhat gaudy bust at South Kensington, finds its backbone in the genuine horticultural work being accomplished farther west.

During the season—we mean, perhaps, the garden season—country cousins of the blue-apron fraternity pay their customary visits to the metropolis to see whatever can be seen in the way of flower shows, nurseries, and specially bedding-out displays—too true is it, alas! that these latter present a more powerful attraction than other garden sights—and to make a point of doing Battersea, Victoria, and Hyde Parks, that they may pick up the latest notions in bedding-out, which on their return they try to imitate, to their entire confusion and regret. The famed fable of the frog and the bull was intended to have a significance for all time, and it certainly has even in such small matters as these. If for once our garden friends can be induced to forego one of their customary floral *pièces de résistance*, and will instead take a look in at Chiswick, they will find much there to please and to instruct, and will probably pick up some crumbs of information not obtainable elsewhere. There is variety, and that is said to be charming, but apart from the variety there is much there that is intrinsically charming also.

Metaphorically we will take our visitors round to see what we saw there a few days since, and if they like the metaphor, certainly they cannot do better than turn the illustration to practical account. To begin with that humble but favourite garden flower, the annual Stock, we find the whole range of beds that on one side border the broad entrance walk, are filled with these, all the known home-grown and Continental varieties being represented. Here is a lot of useful food for digestion, but a farther disquisition on the respective merits of each kind we leave to some future day. In the beds on the grass plat are found arranged in colours all the very best old and new Zonal and "decorative" bedding Pelargoniums of the day. An hour might be spent with these to advantage, to the enlightenment of many provincial raisers of these things, and to the removal of much local conceit. So truly fine are many of these kinds that Denny, Postans, and George will soon find the ideal realised beyond which progress becomes retrogression. Here also are beds of Balsams raised from seed of all the best trade collections in plants, five of a sort, and duplicates of all

are being grown in pots elsewhere. Pentstemons of all the best kinds, Phloxes, and other good border flowers, are also found here in bloom. In the new herbaceous garden are dwarf Campanulas and many novel and other things, and beds of various interesting annuals, and many other interesting things too numerous to mention. Beyond the Pelargoniums, on a shady border to the right, are planted the bedding Violas and Pansies in immense variety, and most charming they are. In all directions are sowings of hardy annuals and biennials—all good, well-rogued stocks, and as the trade usually send seed of their best novelties to Chiswick, not a few good things may be seen there for the first time—the charming new rose-salmon Candytuft, recently alluded to by us, and its compeer, the new dwarf white, growing with all the older kinds; the new elegant Lady Albemarle Godetia, with a dozen other sorts; Clarkias in variety, including the new double kinds—in fact, lots of things that should be seen to be appreciated.

In the houses are many good things that can only be seen at Chiswick. The grand curvilinear vinery is a unique sight, and the Vines well cropped. The orchard-house makes a brave display, and forms one of the most valuable glass erections in the gardens. The long Peach-house, in which the trees are trained in the cordon-oblique style, gives a remarkable collection of that kind of wall fruit. In a lean-to is a very extensive collection of Tomatos in pots, all now fruiting, and close by is a show house, in which there is a charming collection of single and double Pelargoniums. Of the single kinds a superb scarlet of Mr. George's raising, named Lord Mayo, proved to be singularly noticeable for its splendid flowers and capital habit as a pot plant. In another show house there is seen a large collection of the tuberous-rooted Begonias in full bloom, all very beautiful but displaying rather too much of the orange-scarlet hue. There is also in flower a collection of Fuchsias, and lovers of this beautiful pot plant are specially requested to notice Laing's new hybrid out of Fulgens—at least, so it is said to be—Lord Beaconsfield, a capital decorative kind, and, not less attractive, Bland's grand dark double Champion of the World: this is at once a monster and a magnificent variety. On a side shelf are some plants of the best of the Ivy-leaf section of the Pelargonium, a few old bottoms—that is, plants of two years' growth—having developed into very handsome exhibition specimens, some flat and others pyramidal, as the habit of the plant is followed. Here is an idea for the framers of the next schedule of the Pelargonium Society; let them send the wretched golden and bronze Zonals to perdition, and put in a class or two for Ivy-leafs, and, oh, let them be untrained, except by judicious pinching. Further, we may in pity ask the hybridists, if they will raise new kinds, not to attempt to spoil those charming things; they have soft and pleasing hues of colour, have neat but varied foliage, are elegant both in habit and in flower, and as they may but improve only to spoil, we beg of them to leave these to us in all their present elegance and beauty.

Out-of-doors there is seen in a warm south border a remarkable collection of Tomatos, planted three lines deep, all the plants trained flatwise to stakes. Farther on a very extensive trial of garden Turnips, including the various French and Spanish kinds, is full of interest to vegetable cultivators. In another place there is an extensive assortment of Savoy Cabbages, in another rows of numerous sorts of Potatos, in another Peas and other vegetables. In the fruit quarters are large collections of Gooseberries, Raspberries, Currants, and Strawberries, and on the Nuts and Filberts a marvellous crop of fruit such as will enable the various features of each kind to be correctly studied. The pyramidal Pears, Plums, Cherries, &c., are splendid trees, with this year, alas! no fruit, but in this sense they are simply exhibiting action in unanimity with similar fruits elsewhere.

These are some, by no means all, of the features to be seen at Chiswick at the present time, but they fairly indicate how much valuable work is being done there—thanks to Mr. Barron's unflagging zeal and consummate generalship. To keep Chiswick going in so creditable a manner as Mr. Barron has done in the face of the enormous difficulties he has had to contend against during the past few years, has been a task of no ordinary dimensions, but it has been done and done well, and the hearty thanks of every horticulturist are his due.

New Garden Plants.

Phædranassa viridiflora, *Baker, n. sp.**

This is a new species of Phædranassa which flowered this summer with Mr. Elwes at Cirencester. He received it from Holland under the name of P. obtusa, from which it differs by its lanceolate leaves, and flower quite destitute of red, with a longer tube and shorter segments. Like the other species it dies down to the root in autumn, is scentless, and the leaves are not fully developed till after the flowers fade.

Bulb ovoid, 1½ inch in diameter, with a tuft of thick fleshy fibres at the base; tunics thin, brown, membranous. Leaves lanceolate, bright green, glabrous, under 1 foot long, 18—21 lines broad at the middle, acute, and narrowed from the middle to a short petiole, which is flat on the face; midrib distinct, chaonelled down the face; veins fine, immersed. Scape a foot long, terete. Spathe of 3—4 membranous linear or lanceolate valves 1—1½ inch long. Umbel 4-flowered; pedicels cernuous, ½—¾ inch long. Ovary obconic-triquetrous, green, ¼ inch long; perianth narrowly funnel-shaped, 1½ inch long; tube greenish-yellow, ⅜—½ inch long; segments oblanceolate-spathulate, 1 inch long, green, passing into whitish at the base, the outer ones 3½—4 lines broad, furnished with a distinct cusp at the tip, the inner ones rather broader, without any cusp. Filaments inserted at the throat of the perianth-tube, white, linear, simple, as long as the perianth-segments; anthers versatile, linear-oblong, varying from 2 to 4 lines in length. Style declinate, a little exserted; stigma capitate. *J. G. B.*

Cœlogyne Mayeriana, *n. sp.*‡

For many years I had this as a most doubtful plant in my herbarium, sent from England. The required information had not been given, and I was not sure whether I had before me a starved C. pandurata or a new species, or a monster of the first-named. Thus it had to be laid aside in my herbarium, the grave of not a few doubtful plants. Finally it reappeared last winter during the shortest days, when Herr Garten-inspector Mayer of Carlsruhe, the most skilful assistant of his excellent father, Herr Garten-director Mayer, twice sent me inflorescences and plants. I obtained such information that at length I became persuaded this is a totally distinct thing. Reduce a C. pandurata to half its size, and you begin to have a pretty good idea of our novelty. The bracts have to be reduced much more. The great difference is found in the lip. Its basilar part is longer than is that of C. pandurata, the anterior part is broader, and there is scarcely any middle part (nail, unguis, isthmus) at all in this, but it is well known C. pandurata has one that reaches nearly ¼—⅓ of the whole of the lip. The side laciniæ project in sharp acute angles in the old species, while in the new one they are blunt rectangular. The very base of the middle lacinia has some ramentaceous small obtusangled lamellæ, in the new one there are two cushions nearer the centre, consisting of many small laciniæ. That elevation of approximate plates on the base of the lip, so conspicuous in the old species, is not to be seen in the new one, where the keels run without those elevations of C. pandurata. The colours are identical. The bulbs I saw were narrower and not arched out at the sides. Yet I do not believe in the constancy of those features. I have with great pleasure named the plant Mayeriana, in memory of the two highly talented curators of the most remarkable aulic garden of Carlsruhe. *H. G. Rchb. f.*

* *Phædranassa viridiflora*, Baker, n. sp.—Bulbo ovoideo, tunicis brunneis membranaceis; foliis lanceolatis acutis viridibus subpedalibus breviter petiolatis; scapo tereti subpedali; spathæ valvis membranaceis linearibus vel lanceolatis; umbellis 4 floris; pedicellis cernuis perianthio 2—3-plo brevioribus; perianthii sesquipollicaris tubo anguste infundibulari flavo-viridi limbo duplo breviori, segmentis diu erectis oblanceolatis viridibus inferne albidis; filamentis edentatis linearibus segmentis æquilongis; stigmate exserto.

‡ *Cœlogyne Mayeriana*, n. sp., Rchb. f.—Aff. Cœlogyni panduratæ, Lindl., subduplo minor; pseudobulbis depresso-pyriformibus ancipitibus, diphyllis; foliis petiolatis oblongis acutis, Stanhopearum; pedunculis erectis racemosis plurifloris; bracteis scariosis ligulatis acutis ovaria pedicellata semiæquantibus haud conspicuis; sepalis ligulatis acutis; tepalis angustioribus; labello trifido, laciniis lateralibus basi semicordatis, semioblongis, antice obtusangulis, lacinia media ab isthmo brevissimo subnullo hastato semiovali toto limbo crispulo, carinis plicatis ternis a basi in basin laciniæ anticæ; tuberculis ex lamellis crispulis ibi geminis; venis radiantibus omnibus atratis incrassatis; columna apicem versus ampliata; basi utrinque angulata.—C. h. Carlsruhe, ab exc. Mayer.

NOTES ON THE PAST SEASON.

The entire loss of hardy fruit crops, with but very few exceptions, will ever be remembered by those who are in any way engaged in or connected with fruit growing, either for private or marketing purposes, and what is still worse, the dire effects of the inclement weather have not been confined to outdoor crops alone. Never do I remember to have seen more brilliant prospects of a Pear crop, and its complete annihilation must be a sad contemplation for many like ourselves. The desperate cold winds that prevailed during the spring were bad enough, but it was left to the frost on the night of May 2 to obliterate any ray of hope that one had. We registered 7° of frost on the night of the 2d here, whilst in London it was nearly doubly severe. The Apple orchards were in full blow at the time, so that I fancy the Apple crop will be more abundant all through the northern counties on account of the blossom not being in so advanced a state at the time.

All stone crops out-of-doors are a complete failure, indeed Peach trees have suffered so much that it may be a year or two before they are able to recoup themselves. Plums are in a similar plight, and have suffered severely from the attacks of insects; they, too, will require the most minute vigilance to restore them to a healthy condition. Figs are plentiful out-of-doors here, and never require protection. The aspect, the climate, the natural soil, and its adaptability for growing certain things will account, in a great measure, for the apparent differences of opinion in these matters.

Of small fruits there is a great abundance, especially Strawberries—our former recommendations still hold good with regard to this, the most valuable and esteemed of small dessert fruits. Keens' Seedling, imported from a distance, does well for a season, and then degenerates from a fruitful cropper to a herd of barren weeds. Is this climatal or constitutional, or both? We have asked the question before, and hints like these may serve as a lesson against sweeping changes without a fair trial of comparison.

Raspberries are not in their natural element here. We have blinks of a torrid climate which tells heavily on our light sandy soil and subsoil. The Raspberry is at home in a soil inclined to be peaty in a rather shady position with plenty of moisture at the root. Currants and Gooseberries are plentiful, and of fair quality.

The effects of the weather, I am sorry to say, have also been felt to considerable extent in this neighbourhood in unheated and badly ventilated late houses, whilst those possessed of more modern structures complain as well. With glass houses and hot-water pipes we are supposed to be proof against any weather. Well, but are we? True, if we did not aim at succession crops the matter would be a simple one, but when fashionable people lay down rules for our guidance we have no other alternative than to follow them up to the best of our knowledge. We have, therefore, to open our ventilators in order to retard crops, and if there be a dry keen east wind on at the time, and a clear bright sky, as there generally is with the sun pouring down his rays, alternately with those sweeping cold winds when Phœbus is hidden for a time only to return with greater fury—if you arrange your ventilators for a change of dull weather all practical men will understand that the individual so circumstanced has not made his bed among Roses.

All that any one can do is to make the best of his position, A.'s case, though apparently the same as B.'s on paper, might be very different if all matters were put to a practical test. Visionary ideas are like cobwebs, you may warp them round an imaginary enemy, but the thread is delicate and will not bear much pressure. So it is with all matters in gardening; no one can give a sound opinion without he is first acquainted with all the practical details. Depend upon it there is a reason for everything; if there are empty Peach and orchard houses it was their inevitable and

irremediable fate consequent on the long continuation of biting east winds, over which no one has any control but the clerk of the weather; and whilst we are always ready to bow to superior knowledge and skill, and have no desire to explain away the credit due to those who are fortunate enough to have crops, yet I think it will be generally conceded that much depends on aspect, equipment, and other kindred matters which will be evident enough to the practical cultivator. We have had a busy time of it with insects, and do what we will we cannot effectually eradicate that greatest of all pests, black-fly. *W. Hinds, Otterspool.*

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

Kennedyas.—These are a handsome genus of evergreen conservatory summer blooming twiners, natives of New Holland and New South Wales. For a lofty conservatory the strong-growing species are well adapted, especially for draping the roof, for which their young drooping shoots, hanging in graceful festoons, are very effective. One advantage which they possess for growing in such positions is, that they will bear cutting-in freely, which is an advantage in the winter, when as much light as possible is required by the plants grown underneath. This is a consideration not sufficiently kept in sight in the selection of the kind of plants to be grown for roof climbers, betwixt which and the things that occupy the body of the house there must necessarily always be a compromise, as there is no question but that the climbers do more or less injury to the other plants, and are simply allowed to occupy their position to give a general effect to the house. There is a great difference in the strength of growth and general appearance of the different species, the smaller growers being more suitable for clothing a pillar than training to the roof. The strongest growers can with advantage be used for covering a back wall, in which situation they will succeed, even in partial light, much better than many things of more tender nature; they are easily grown, make rapid progress, and are not liable to get out of order at the roots to such an extent as many plants are, but, like some other subjects of similar nature, they do well when planted out. They are much better for being kept in a pot for a time until they have acquired sufficient strength of root to enable them to lay hold of the soil in a reasonable time after they are turned out, without which it is apt to get sour. When planted out the root room should be limited or increased according to the space the plant is destined to cover, a matter to which sufficient attention is not always paid in preparing the places for planting such things, and which afterwards gives trouble and causes a necessity for using the knife to an extent to keep them within the prescribed limits not consistent with their flowering in their wonted manner when the roots have too much room. In selecting plants that are intended for climbers it is always necessary to be particular that they are perfectly free from the worst species of insects, such as mealy-bug and scale, as when the things to be thus grown overhead are infested with these noxious insects they affect every plant that is grown under them, and by this means all get in a condition that entails an amount of labour such as could not be credited except by those who have had to contend with a collection of plants so affected. If healthy young plants in 6-inch pots are selected, they should in March or April be moved into others 2 or 3 inches larger, according to the quantity and condition of their roots. Kennedyas will thrive in either peat or loam; it is better to use the former for the weaker growing species, as it will impart a freer disposition of growth, confining the strong growers to loam, which should be good in quality, containing plenty of vegetable matter. They are comparatively strong-rooted subjects, and do not require the soil breaking very fine; add to it a fifth or sixth of sand, according to its nature; drain the pots sufficiently, as from the vigorous character of the plants they will need a good deal of water in the growing season. After potting place them for a few weeks, until the roots get hold of the soil, in a little closer atmosphere than an ordinary greenhouse, keep the atmosphere rather moist during this time, after which give more air in the early and middle part of the day, closing the house in good time, and syringing overhead, giving water to the roots as required, when in active growth they will take a good deal. Continue this until the middle of August, when the plants should have more air, and cease syringing, to discourage further growth and ripen up the wood.

At the time of potting, half-a-dozen sticks, 3 or 4 feet long, should be inserted in the soil just within the rims of the pots, round these the shoots ought to be kept closely and regularly trained, as if allowed to twine to the supports, or become entangled with each other they are difficult afterwards to regulate without injury. They should be kept through the autumn and winter in a temperature of from 35° to 40° in the night, and 10° or so warmer in the day, but not so high as to excite any growth, or they will suffer when the roots are disturbed in planting out, which should be done before growth begins in the spring: the border in which they are to be planted may be from 1 to 2 feet in width, according to the greater or less space to be covered. It should have 4 inches of drainage in the bottom, consisting of crocks, broken bricks, pebbles, or anything of a similar nature, on which place an inch or two of fibrous material, over this put 10 or 12 inches of the soil, which should have a good quantity of sand mixed with it, and a sprinkling of crocks or charcoal will be an additional assistance in keeping it sweet. In planting disentangle the roots so far as can be done without injuring them, spreading them out and making the soil tolerably firm. Do not give water until it is required, which, if the soil at the time of planting is in right condition as to moisture, will not be nearly so soon as in a pot. Train the shoots in their places. I have said nothing about stopping—the necessity or otherwise for this will depend upon the number of shoots the plants have corresponding with the requirements of the situation. A single shoot to each wire will, in most cases, be preferable to more. They will require little further attention except water at the roots as needed, keeping the shoots from getting entangled, and a sufficient use of the syringe during the growing season to keep down aphides and red-spider. When they have filled their allotted space they will need the shoots reducing from time to time during the summer and in the autumn, cutting in as far as requisite. If they ever get affected with scale the best method of dealing with them is in the winter, when at rest, to partially head them down, cutting into the strong wood, untwining this from the wires, and steeping the whole down as near as can be got to the collar in Abyssinian mixture at 6 or 7 oz. to the gallon, repeating the operation two or three times in the course of a few weeks, before they have begun to break, brushing it well in about the collar of the plants. After cutting back thus severely they must not be over-watered at the roots, but much less given until they have made considerable progress. When the soil gets at all exhausted an inch or two each spring may be removed and replaced with fresh, and manure-water during the growing season will also be a great assistance to them.

The undermentioned kinds are deserving of a place:—

K. Marryattæ.—A handsome scarlet-flowered species from Australia.

K. Fredwoodii.—Also an Australian plant, a good grower, and free bloomer. Flowers red.

K. nigricans.—Flowers purple and green. It is from New Holland.

K. inophylla.—This is a fine scarlet kind. A New Holland species.

K. rubicunda.—A strong growing kind from New South Wales. Flowers deep red.

K. monophylla.—Also a strong growing sort from New South Wales. It has purple flowers.

K. Makoyana.—A Swan River plant, with scarlet flowers. A free grower.

K. ovata purpurea.—Is from New Holland. It has purple flowers. *T. Baines.*

RAPID RISE OF WATER IN PLANTS.

In carrying out some experiments for another purpose, I was so surprised at the rapid recovery from a withered condition of some plants to perfect freshness and the normal position of the leaves, that I determined to undertake others for the express purpose of noting the actual time taken up by different plants in regaining a fresh condition. I will give the results in the case of some Raspberry-canes as an example. My first cane was cut at 10.10 A.M. on a cloudy day. It was a vigorous cane in a growing state, 4 feet 4 inches high, bearing twenty-five leaves, three or four of the lower of which were beginning to change yellow; and it soon began to wither, attached, as it was, in an erect position in my study with the window wide open. At noon all the leaves were flaccid, the upper young ones very much withered, and the growing tip of the cane drooped about 5 inches. After waiting until 12.10 P.M., to make up two full hours since it was cut, it was fixed in an erect position in a tumbler of water, the water being 3⅝ inches deep. The cane touched nothing except the cross bar to which it was loosely tied in an erect position with the curve of the drooping tip towards the light. By 12.20 I was surprised to find that nearly all the leaves had regained their normal rigidity, and I then set myself to watch the conclusion of the experiment. I was more than surprised, I was astonished at what I then witnessed. As I have already stated, the tip of the cane was 5 inches lower from drooping than when the cane was cut. At 12.10 this tip had scarcely begun to rise, but by 12.30 it had regained its normal position, though it was not, and never became, quite so rigidly erect as it was before it drooped at all. This I attributed to the action of the attraction of light. However, I shall be within the margin if I say that the tip rose at least 4 inches in the whole twenty minutes, and at least 3 of these 4 inches during the last ten minutes. The movement was indeed so quick as to be distinctly visible. Leaflets unfolded, petioles spread themselves out, and the stem gradually rose, until it was nearly quite erect. Thus, in this short time the tip of the cane described nearly a quarter of a circle, and the leaves on the outside of the curve passed through nearly half a circle. Consequently the water must have passed from cell to cell almost as rapidly as it is diffused through a lump of sugar. Not having any suitable apparatus I could not determine the exact quantity of water absorbed by this cane during the twenty minutes the experiment lasted, but from measurement and calculation, 1¾ cubic inches may be regarded as an approximation to the truth.

At the same time as I cut the Raspberry cane, or within half a minute at most, I cut a stout stem of Jerusalem Artichoke, about 5 feet high, bearing thirty-three leaves, most of which were a foot long and 4½ to 6 inches broad in the middle. This was put into water at the same time as the Raspberry-cane, but from its more herbaceous nature it was much more withered, and never recovered. In this case, although the bottom of the stem was twice cut, it was wholly unable to take up sufficient water to fill the plant, as the evaporating surface was so great. With a second Raspberry-cane, cut the same day at 12.55 P.M., I attempted to decide two questions, firstly, whether the fluid imbibed by the plant actually mounted to the top in so short a period as that occupied by the first cane to recover from the withered state; and, secondly, whether one-half of the circumference of the stem only being in the water, would be able to absorb sufficient for the needs of the leaves all around the stem. The first problem I failed to solve, probably because the colouring matter I used was refused by the plant. The only thing I had in the house that I thought would answer my purpose was port-wine; but, as I wanted to use the same quantity as I had of water alone in the first experiment, to save my wine I simply added sufficient to colour rather deeply the tumbler of water.

To the second question my experiment gave me an affirmative answer. The second cane was even more robust, though shorter-jointed than the first, was in more active growth, and bore as many leaves, but it was only 3 feet 9 inches high. After splitting the stem in half from the base about 6 inches upwards and removing one-half, this cane was put into the tumbler of wine-and-water, and mixed in the same manner as the other, at 2.35. Although this cane had been cut only an hour and forty minutes it was perhaps rather more withered and flaccid than the first became before putting it into water, and the tip had drooped about 5½ inches. The process of recovery was very slow, and it would be useless to describe it here; suffice it to say, at 5.35 the leaves had regained their normal position, and the tip of the cane was erect. I may add that the curve of the droop was turned from the window.

In order to ascertain how high the coloured liquid had risen I cut them through in various places, but I could not detect the slightest trace of my wine, even in the part that was actually in the mixture. To

test this more thoroughly I used my first cane, which had been lying on the floor from 1 to 6.35 P.M., and was very much withered, again; before putting it into the wine-and-water I cut it at the base, as in number two, and also took a piece out halfway through the stem on the opposite side a little higher up, so that practically the stem was completely severed. At 10 o'clock the same evening it had nearly recovered, and promised well for complete recovery, but after twenty-four hours it was still a little flaccid at the tip, and probably if the weather had been dry it would most likely have been in a worse state. No trace of the colouring matter could be found in this cane. *W. B. Hemsley.*

ADELAIDE BOTANIC GARDEN.

Dr. Schomburgk in his report on the condition of the Adelaide Botanic Garden for 1876, remarks that the climate of that city is one of extremes:—Our annual average fall of rain is 21 inches, and last year only 13.434 inches fell—being the least ever registered. The dryest season before was in 1859, when 14 460 inches fell. Until the month of August only about 8 inches had been registered, and the worst was feared for our crops, but fortunately, during the months of September, October, and November, 3.571 inches more fell, which saved the Wheat crops in some of the districts. During December the heat in Adelaide had been very great for the first five or six days, but on Thursday the 14th it was almost unendurable at about 3 o'clock, when the thermometer registered 114°.2 in the shade, and 162°.6 in the sun; which was the highest reading registered since January, 1862. This degree of heat has only been exceeded on three former occasions, viz., January 20, 1835, when the thermometer registered 116°.3, and the 9th and 14th of January, 1862, when the reading for both days was 115° in the shade. This unusually dry season would have proved very destructive to our young plantations, especially in the park, where within the last two years 9000 trees have been planted, but for the attention paid to them, and the free supply of water—nearly our whole staff of men having been employed during November, December, and January in watering. I am glad to say that we have saved them nearly all, as I consider the loss of last season's planting not quite 2 per cent. The trees from colder climes, such as North America, Europe, and New Zealand, always suffer most. But the greatest enemy the garden had to contend with was the heavy frost. The lowest temperature during the month of July was 28° Fahr.—the lowest I have experienced in South Australia. These severe frosts have had a most disastrous effect upon the garden. The tropical and sub-tropical plants, especially tropical Ficus, constituted the chief bulk of the sufferers, and that to such an extent as would be hardly credited by those who have not seen the injury done.

Palm-house.—The building and interior arrangements of this structure have been completed. The opening ceremony was performed by Lady Musgrave on Monday afternoon, January 22, and it is highly gratifying that there is but one opinion with regard to the undertaking and the artistic appearance.

I think it is not out of place to give a *resumé* of the work performed regarding the house during the last year. The ironwork and glass arrived during December, 1875, from Bremen, in very good condition; and it is only just to mention that the workmanship of both the wrought and cast iron was considered by competent judges as faultless. The forty-two cases of glass, I am sorry to say, had suffered considerably on board the vessel—nearly one-third of the bulk having been broken, for which compensation was made by the captain of the vessel.

As already mentioned in my former reports, to insure a striking effect it was found necessary to erect the building on a terrace of about 6 feet high and 30 feet broad on all sides of the house; 20 feet of this terrace are formed into a walk, and the remaining 10 feet into a flower border, surrounding the walk. The building of the foundation of the house was very expensive, as it had to be laid into firm ground; on one part of the side on which the house stands a lake was intended to be formed, and a large part of the soil had already been excavated to a depth of 4 to 5 feet. The idea was afterwards abandoned, and the excavation filled up with soil and debris—thus greatly adding to the expense of the foundation, which in some places is from 8 to 9 feet deep. Three horses and drays, and ten men were occupied twelve weeks with sloping, excavating, loading the drays, and removing the soil to the terrace, and about 100 loads of turf Couch-grass, Cynodon Dactylon, were used for turfing the terrace. The turfing, notwithstanding the unusual dry season, has fortunately answered as well as could be expected. Two flights of steps on the north and south sides of the terrace, 12 feet broad at the top, and 30 feet at the base, with a neat coping, lead up to the terrace; at the bottom, on each side of the steps, are placed two vases, and on the summit tasteful pedestals, bearing on the northern sides statues of Ceres and Clio, and on the southern Flora and Pomona. The statues and vases have been procured from the celebrated firm of Castener & Co., Berlin, which, from their exquisite workmanship, are real objects of art. The cost, freight included, was £100. The steps are of Mintaro slate, and the cost of building, £260.

The interior arrangement of the house is as follows:—Both ends of the house terminate in a half octagon; in the eastern one a basin and fountain have been placed, surrounded by a fine collection of Ferns—Dicksonia antarctica, Alsophila Cooperi, and A. Leichardtiana. In the front of the basin are planted the following smaller kinds, viz., Adiantum amabile, concinnum, farleyense; Gymnogrammas, Lomarias, Blechnums, Pteris, &c. The empty space between these Ferns is planted with Lycopodium, which has grown so luxuriantly that it forms a splendid green carpet. In the western octagon is constructed a grotto from stalactite, specially imported from the Black Forest in Germany. The grotto is about 10 feet high and 8 feet broad. At the back of the grotto there streams, over quartz and sandstone rocks, a cascade, into a small basin. The large pieces of stalactite are put together in a wild and irregular manner, and the effect produced is striking. The top of the grotto is embellished with Dracænas, Palms, &c., intermixed with climbers, viz., Antigonon leptopus, Cissus discolor, Asparagopsis javanica, Echites rubrovenosa, &c., which hang in festoons over the stalactite. The interior wall of the grotto is planted with Philodendron daguense, melanochrysum, Pothos argyræa, macrophylla, &c., growing on the stalactite, and spreading their handsome leaves symmetrically. Around the basin are placed a number of the most handsome leaf-plants, viz.:—Dieffenbachias, Phyllotænium Lindeni, Spathiphyllum, &c.; and on both sides of the grotto are grouped a number of rare and handsome Ferns, viz., Adiantum peruvianum, gracillimum, concinnum, cardiochlæna, speciosum, prionophyllum, excisum, fovearum, Hendersoni; Davallia tenuifolia, Moorei; Gymnogramma, Cheilanthes, Pteris, &c. Two fine specimens of Alsophila Cooperi, the stems 6 feet high, adorn both sides of the grotto, which produces a pleasing aspect.

The central plant of the rotunda is a magnificent specimen of Latania borbonica, about 16 feet high, which, when in its former place, filled the rotunda of the conservatory. Round this noble Palm is formed a large group, principally variegated leaf-plants. The group measures 50 feet in circumference on its base, and is bordered by an ornamental tastefully coloured border worked in cement. This majestic group is a striking object, which, upon entering, attracts the eye at once. An avenue 6 feet wide runs from one extremity of the house to the other, traversing round the centre group and both entrances. Both sides of the straight walk are lined with Fern trees of equal height (6 to 7 feet) from New Zealand, Port Natal, and Queensland, and contain the following specimens, viz., Cyathea dealbata, Dregii, excelsa, medullaris; Alsophila Cooperi, Leichardtiana, australis; Dicksonia antarctica and Youngiæ. These have been the only plants specially bought for the Palm-house.

The walks are skirted with an ornamental border about 2 feet high, composed of bricks and cement, with a tasteful coping, so that the walks afford as much space as possible for the accommodation of the numerous visitors, especially on Sundays and holidays, when the house is crowded, and at the same time, not to encroach upon the space for the plants, the border juts in and out at right angles forming a pattern *à la grec*. The floor is tiled with red and blue octagon tiles, which produce a very pleasing effect.

Fig. 26.—Agave flaccida.

The broad beds extending alongside both sides of the walk are filled with the choicest plants, especially Palms, partly planted in the soil and partly in pots. I will only mention the most noteworthy, viz., Cocos Weddelliana, coronata, flexuosa; Martinezia erosa; Elæis guineensis; Ceroxylon niveum, andicola; Areca Nenga, Nibung, Catechu, monostachya; Œnocarpus Bacaba, Penanga, Kuhlii; Zalacca edulis; Dæmonorops fissus, palembanicus; Pritchardia macrocarpa, pacifica; Thrinax brasiliensis, parviflora; Astrocaryum Malybo, Murumuru; Maximiliana regia; Orbignya dubia; Kentia Forsteriana, Belmoreana, Thrinax elegans, Cecropia, Paratropia, Musa, Cycas, Aralia, Ravenalia, Heliconia, &c.

The twelve brackets which support the roof and sides of the wings of the houses have been planted with choice collections of climbers, viz., Petræa, Stigmaphyllon, Combretum, Antigonon, Allamanda, Stephanotis, Passiflora, Tacsonia, Aristolochia, Jasminum, Clerodendron, &c. Considering the luxuriant growth since planted, they will soon reach each other and form a green dome, which will greatly contribute to shading and cooling the house. The eight graceful pillars which support the rotunda have also been supplied with climbers. A shelf runs along the windows of the house, on which are placed smaller and tender plants, which produce a fine effect from the terrace through the glass.

The ventilation is also perfect. Two rows of ventilators are placed on the sides, and a row on the roof, which are easily worked by pulleys and ropes.

The rotunda, with its recesses and corners, cannot be shaded by blinds; and to protect the plants from the burning rays of the sun the glass has been frosted. The large surface of glass exposed to the sun, notwithstanding the shading and frosting, produces great heat in the house, and on hot days every precaution is necessary to keep the temperature down. In fact, the effects of the sun on thick glass acts like a burning-glass, so that the leaves of the plants exposed to it have been burnt. During our unusually hot weather every attention was required to prevent such injury, especially on days when the thermometer showed 163° in the sun and 114° in the shade; but I am glad to say very little injury was done to the leaves. We have now gained experience to prevent a repetition in future. When the climbers have covered the roof this will lessen the heat, and will give more shade.

The trials of the heating apparatus gave great satisfaction. The boiler is one of Messrs. Holme & Partington's, Manchester, tubular boilers, No. 2, about 18 inches in diameter and 5 feet high, heated with coke, which was warmly recommended by Mr. Rothermund, Bremen, who uses the same in his Palm-house. Considering the great cold they have to contend with in Germany, Mr. Rothermund feared that one boiler would not be sufficient to produce the required heat, so he put up a second reserve boiler; but even during the coldest time one boiler warmed the house. The boiler is placed on the western side of the house, in a 7 feet deep excavation, reached by steps. Two rows of 4-inch iron pipes traverse both sides of the house, ending in two cisterns in both corners of the eastern wing. The length of the pipes is 443 feet. To prevent accident one of the cisterns is provided with a safety-valve. The chimney is scarcely observable; a copper tube is fixed on the corner pillar. The trial of the heating apparatus showed that two small buckets of coke, in the course of half an hour, made the water boil in the cisterns—a distance of 104 feet from the boiler.

As the extensive surface of the roof will produce, during heavy rain, a considerable rush of water, large gutters have been provided, and by means of 204 feet of iron pipe the water is led from the terrace on the eastern side into the small lake on the western side. It irrigates the lawns. A lightning-conductor has been fixed on the rotunda.

I think that nothing has been overlooked, and everything has been carried out as practically as possible.

In fact the interior of the Palm-house appears as if the plants had grown there for years; and it is like a fairy tale of the "Thousand and One Nights" that in so short a time the house has been embellished with such magnificent and valuable specimen plants, the number of which is 1145. At the same time it is a riddle to the public where these fine plants had been before stored.

No doubt the whole undertaking is a great success; but as there is nothing perfect in the world so it is with our Palm-house—it should at least be twice as large. In a few years, by the steady increase of tropical plants, the house will be overcrowded, and the noble Palms will soon have reached the roof.

The cost of the ironwork and glass, including freight and commission (it had to be transhipped in London), delivered in the garden, has been about £1300, and the cost of building the foundation of the terrace, flight of steps and statuary, has been about £2500, making a total of £3800. This does not include the work of painting and glazing, which has been carried out by some of the workmen employed in the garden, under the direction of a professional painter, who is also expert in glazing, and an *employé* of the garden. The assistance of our labourers at the work has also not been taken into account.

THE GENUS AGAVE.

(*Continued from p.* 41.)

Series I.—Coriaceo-carnosæ.—Texture of the leaf rigid, not at all fleshy nor yielding to the touch when mature; end-spine large, hard, and pungent.

Group IV. Americanæ.—Edge of the leaf without any distinct horny border. Teeth large, deltoid-cuspidate, comparatively few in number.

In this paper I propose to deal with the dwarf species of this group with oblanceolate leaves, leaving till next time the larger kinds.

33. *A. flaccida*, Jacobi, Monogr., p. 226, (fig. 26); *A. cuspidata*, Hort. Saunders.—Leaves 40—50, in a dense rosette 1½ foot broad, oblanceolate-spathulate, 3 inches broad three-quarters of the way up, narrowed to 1½ inch above the dilated base, glaucous green, the face flat throughout; the hard, pungent end-spine 1 inch long, and decurrent a little; the crowded prickles ⅙—⅓ inch long, deltoid, with a large cusp, slightly hooked downwards Inflorescence unknown.

A native probably of Mexico. I am acquainted with Jacobi's plant from the description alone, which matches very well the plant called A. cuspidata in the Saunders' collection, from which our drawing was made. Whether this be the same as A. rubescens, Salmdyck, Kunth, Enum., vol. v., p. 835, I have no means of knowing except from the description. Our present plant is midway between A. macracantha and Scolymus var. amœna.

34. *A. viridissima*, Hort. Peacock.—Acaulescent. Leaves about 30 in a rosette 2 feet broad, oblanceolate-spathulate, 1 foot long, 3 inches broad three-quarters of the way up, narrowed to 2½ inches above the dilated base, where it is ½ inch thick, very rigid in texture, bright green, not at all glaucous, the centre ⅛ inch thick, the face flat, the end-spine hard and pungent, nearly 1 inch long, the close grey spreading unequal prickles ⅙—¼ inch long, slightly curved upwards in the upper half of the leaf. Inflorescence unknown.

A native probably of Mexico. I have seen it only in Mr. Peacock's collection. It is a very distinct-looking plant, well marked in the group by its thin rigid bright green leaves.

35. *A.* (*Littæa*) *utahensis*, Engelm. in S. Wats. Bot. 40 Parall., p. 497; Notes, p. 20.—Acaulescent. Leaves ensiform, 6—12 inches long, 12—21 lines broad, thick, glaucous, the channelled pungent end-spine about 1 inch long, the deltoid teeth ⅛—⅙ inch long, white with a darker base. Scape 5—7 feet high, including the 1—2 feet spike; peduncles finally ¼ inch long; pedicels shorter. Perianth yellowish, including the ovary about 1 inch long; tube very shallow; segments 3—4 times the length of the tube; stamens inserted at the middle of the tube; filaments little exserted, ¾ inch long; anthers ½ inch long. Capsule oblong-trigonous, about 1 inch long; seeds ⅛—⅙ inch broad.

Fig. 27.—Agave macrantha.

A native of Southern Utah and Arizona, not yet known in cultivation. It reaches the furthest north of all the Agavoid plants.

36. *A. macracantha*, Zucc.; Jacobi, Monogr., p. 92.—Acaulescent or shortly caulescent. Leaves 30—50 in a stiff rosette 1—2 feet broad, oblanceolate, 6—12 inches long, 1—1½ inch broad above the middle, narrowed to 1 inch above the dilated base, where it is ½ inch thick, very stiff and rigid, very glaucous, the face rather turgid in the lower half, the centre ¼ inch thick, the end-spine nearly black, very pungent, ½—¾ inch long, the purplish-black subdistant prickles ⅛—⅙ inch long, deltoid, with a large cusp straight or slightly hooked. Scape 2—3 feet long; bracts erect, lanceolate-acuminate, growing gradually smaller upwards. Flowers 10—12 in a lax raceme ½ foot long, all solitary on ascending pedicels ¼—½ inch long, which are usually bracteolate near the tip. Perianth greenish, 2 inches long including the ovary. Ovary oblong, 1 inch long; lobes about three times as long as the tube. Filaments exserted about ½ inch; anthers ⅝—¾ inch long.

A native of the mountains of Mexico, ascending to a height of 5000 or 6000 feet. It seems to have been known in cultivation since about 1830, and is now widely distributed. It is marked by its stiff dwarf habit, and its nearly black spines form a very effective contrast in colour with its very glaucous leaves. It runs into numerous varieties and I cannot separate specifically *A. flavescens*, Salmdyck, Jacobi, Monogr., p. 91; *A. Bessereriana*, Jacobi, Monogr., p. 92 (two forms figured *Gardeners' Chronicle*, 1871, p. 75, and in flower Bot. Mag., t. 5940); *A. subfalcata*, Jacobi, Nachtrage, 2, p. 75; and *A. linearis*, Jacobi, Nachtrage, 2, p. 76. There is a full account of it in the *Botanical Magazine* from a plant that flowered with Mr. Saunders in the spring of 1871. It recedes from the ordinary Littæa type of inflorescence in having all the flowers single, and it will be interesting to ascertain how far this character is maintained on further acquaintance. Our present (fig. 27) drawing represents the form that is widely cultivated both in English and Continental gardens under the name of A. Bessereriana candida.

37. *A. concinna*, Baker; *A. sudburyensis*, Hort. Peacock.—Acaulescent. Leaves about 30 in a stiff rosette 1½ foot broad, oblanceolate-spathulate, 7—8 inches long, 2 inches broad at the middle, narrowed to 1½ inch above the dilated base, where it is ½ inch thick, the face flat, slightly glaucous, the centre ⅛ inch thick, the pungent end-spine nearly 1 inch long, the subdistant much hooked deltoid-cuspidate prickles about ¼ inch long. Inflorescence unknown.

Country unknown; probably Mexico. I have seen the plant only in Mr. Peacock's collection. It differs from macracantha in the shape, thickness, and colour of the leaf and character of the prickles. *J. G. Baker.*

INFLUENCE OF LIGHT ON PLANT GROWTH.

In consequence of a remark made by Dr. Gilbert at one of the meetings last year of the Scientific Committee of the Royal Horticultural Society, the question of the influence of light on the growth of plants was discussed in several communications by different contributors to the *Gardeners' Chronicle*, but the subject dropped at the time without having received the attention it deserved. I am induced to reopen the discussion, not because I have any new facts of my own to offer, but because I think a sketch of the present position of our knowledge may be acceptable. It is necessary in the first place that we should perfectly understand what is meant by the assertion that light is antagonistic to growth, or we shall probably find ourselves discussing the same question from different standpoints. Indeed, it was perhaps through a misconception of a statement made by Mr. Dyer which appeared in the *Gardeners' Chronicle* (vol. v., new series, p. 722), that Dr. Gilbert was led to bringing the topic under the consideration of the Scientific Committee. But I ought to say that I have no authority for advancing this opinion, as Dr. Gilbert may have, for aught I know, sufficient grounds to refuse to accept the assertion that light is antagonistic to growth in any qualified sense whatever. Mr. Dyer, in the place quoted above, simply gave the general bearings of the results obtained by Sachs and others in their investigations on the laws of growth, and in all these investigations temperature, moisture, and other conditions, played important parts. He there states that "varieties in the normal rate of the longtitudinal growth of stems appear to be produced by variations in the external conditions of moisture, temperature, and light. Taking intervals of time as abscissæ, and increments of temperature and growth as ordinates, the curves of temperature and growth (formed by connecting the ends of ordinates) are found to follow one another, rising and falling together, without, however, being related in any more definite manner. The influence of light is quite of an opposite kind—it is antagonistic to growth. The curve of growth will, therefore, have a maximum during the night and a minimum during the day; but the rate of growth exhibits a certain inertia, light only gradually checks it, so that the minimum is towards evening; and similarly the absence of light gradually stimulates it, so that the maximum is towards morning." But, from what follows, it will be seen that it is only when the temperature is nearly uniform day and night that growth proceeds in the manner here described. Lindley, writing in 1842, expresses it as his opinion that there are other influences not yet detected at work governing the fluctuations in the growth of plants; and Reinke, in his latest investigations, seems to have encountered the same difficulty in accounting for the phenomena of growth. In all cases the influence is supposed to be limited in its action on the extension or growth of plants, as distinguished from assimilation. Some details of Reinke's experiments, just alluded to, are given in the *Gardeners' Chronicle*, new series, vol. vi., p. 103.

That light is really antagonistic to growth under any conditions there is still room for doubt, and it is equally true that light under certain conditions has not the power to prevent growth, and rapid growth. Therefore the assertion that light is antagonistic to growth seems too absolute, even if opposed to the attribute of heat, unless we are to assume that, because plants do not grow, or do not grow so rapidly, under certain conditions of illumination that light is the cause. Before adducing arguments in support of any particular theory let me give a summary of the results obtained by some of the most careful enquirers. While accepting their results, we are still at liberty to reject any or all of their deductions.

Period of Growth.

Numerous experiments have been made to determine the period of the twenty-four hours during which plants exhibit their greatest intensity of growth. By growth, here, elongation or extension of the axis is to be understood. A complete history of the subject will be found in the *Adansonia*, vol. ix., p. 203, by Rauwenhoff, and in the *Arbeiten des Bot. Inst. in Würzburg*, 1872, by Sachs. But neither of these writers mentions the experiments conducted by Dr. Lindley in the Horticultural Society's garden at Chiswick, and recorded in the *Transactions* of the Society, vol. iii, new series, p. 103 and p. 247. Among the earliest observations of this kind on record are those by Ventenat (1793) on the rate of growth of the flower-stem of an old *Fourcroya gigantea* at Paris. This attained a length of 22½ feet in seventy-seven days, and made more growth during the day than during the night, and grew fastest on the hottest days.

In 1828 Professor E. Meyer, of Königsberg, published some careful observations on the periodic growth of plants. The first related to the growth of the peduncle of Amaryllis belladonna. The peduncle, he tells us, was measured three times daily, namely, at noon, at 6 P.M., and at 6 A.M., with the general result that the growth was much more rapid by day than by night. Respecting a series of observations on the growth of Wheat and Oats, he found the growth invariably greater between 8 A.M. and 8 P.M. than during the night. And according to his observations these plants showed a greater energy of growth between 8 A.M. and 2 P.M. than during the succeeding six hours.

Observations by Professor Mulder, published in 1829, on the growth of the leaves of Urania speciosa, gave a contrary result. His measurements were almost hourly from 5 A.M. to midnight, and they showed that there was considerably more growth during the night.

A few years later De Vriese took measurements of the growth of the flower-stems of two plants of Agave americana, near Haarlem. One of them attained a length of about 24 feet in seventy-one days, and in both plants, with the exception of a few days, the nocturnal growth was constantly less than the diurnal growth. In 1847 the same botanist made some further observations, in which the sum total showed the greatest growth for the day, though towards the end the nocturnal growth exceeded the diurnal.

Dr. J. Münter (*Botanische Zeitung*, 1843) recorded a series of careful observations of the elongation of the common peduncle of Pelargonium triste. In this case again the growth was greater during the day than during the night. But in some experiments with other plants he observed the reverse was the case.

About the same date Professor Hartig took measurements of the growth of a Hop plant at 7 A.M., 3 P.M., and 11 P.M., and took simultaneously barometrical, thermometrical, and other observations. During the first part of the experiment the greatest energy of growth was between 7 A.M. and 3 P.M., but later on, when the total rate of growth had begun to decrease, it was between 3 and 11 P.M.

An experiment by Weiss, of Lemberg, with Agave Jacquiniana, from April 3 to May 25—measurements taken at 6 A.M., at noon, and at 10 P.M.—gave for the first period (eight days, April 3 to 12), greatest growth during the night; for the second period (ten days, April 12 to 22), greatest growth during the afternoon; third period (seven days, April 22 to 29), morning; fourth period (seven days, April 29 to May 6), night; fifth period (thirteen days, May 6 to 19), morning; sixth period (six days, May 19 to 26), greatest growth during the night. Altogether there was a greater total growth in length during the day, and in diameter during the night.

During the latter part of the summer of 1865, Duchartre observed the growth of several plants, and in each case the total night growth greatly exceeded the day growth. To give an example or two. Vitis vinifera grew between August 6 and September 8, 447.5 millimetres (nearly 20 inches), whereof 164 or 36.6 per cent. during the day, and 283.5, or 63 4 per cent., during the night. In Fragaria, total growth for the day was 33 7 per cent. against 66.3 per cent. for the night. Humulus Lupulus, Althæa rosea, Gladiolus gandavensis, furnished similar results.

In the following year—1866—at Montpellier, Professsor Martius recorded the nightly and daily growth of the inflorescence of Dasylirion gracile from June 1 to 23. The total growth was 2.881 metres, of which 1.266 metres was made during the night, and 0.793 during the day, the total night growth to the day being as 1 : 0.61. A plant of Phormium tenax exhibited the same phenomena.

Rauwenhoff, in the place quoted above, records a long series of observations taken under the most variable conditions of the weather, and varying very much as to the period of the greatest energy of growth; but, confining ourselves to the total during the whole period by day and night, divided into two equal periods of twelve hours, there is in the case of each plant observed a considerable percentage in favour of the day. The following are some of the figures given by Rauwenhoff:—

Bryonia, total growth 1276 millimetres, whereof 753, or 59 per cent., by day, and 523, or 41 per cent., by night. Wistaria, total growth 3414 mm., whereof 1976, or 57.8 per cent., by day, and 1438, or 42 2 per cent., by night. Vitis, total growth 2372 mm., whereof 1306, or 55.1 per cent., by day, and 1066, or 44.9 per cent., by night. Cucurbita, total growth 6102 mm., whereof 3491, or 57.2 per cent., by day, and 2611, or 42.8 per cent., by night.

Dr. Lindley's experiments (*Transactions of the Royal Horticultural Society*, new series, vol. iii., p. 103 and p. 247) were of two series, the one conducted in a stove, in which the average day temperature was 73° and the night temperature about 65°, and the other in the open air, during the months of August and July in front of a vinery. The first series was on Salix pentandra, Ficus Carica, Passiflora onychina, and Vitis vinifera. Measurements were made four times during the twenty-four hours, namely, at 6 A.M., noon, 6 P.M., and 11 P.M. As may be seen from the accompanying table, copied from Dr. Lindley's paper, there was no uniformity in the behaviour of the different plants employed, and that the rate of growth was maintained, with the exception of Passiflora onychina, at something approaching regularity during the whole of the twenty-four hours; and it is a singular fact that each plant made its maximum growth during a different quarter of the twenty-four hours. The growths are given in inches and decimal fractions:—

Names of the Plants Employed in the Experiments.	12 P.M. to 6 A.M. Morning.	6 A.M. to Noon. Forenoon.	Noon to 6 P.M. Afternoon.	6 P.M. to 12 P.M. Night.
Salix pentandra	9.37	+11.13	10.42	9 71
Ficus Carica	4.37	4 88	5.04	+5.23
Passiflora onychina ..	18.0	13.41	+22.44	18.20
Vitis vinifera	+18.13	17.24	17.21	16.02
Total growth during the experiments ..	*49.87	46.66	55.11	49.16

The second series was conducted out-of-doors during the months of July and August, upon the Hop, Grape Vine, Jerusalem Artichoke, Gourd, Sweet Willow, Scarlet Runner Bean, and Fig; and the measurements were taken at 4 A.M., noon, and 8 P.M. Of all these plants the Grape Vine was the only one that made its greatest growth during the darkest period of the twenty-four hours, that is from 8 P.M. to 4 P.M., and this only during the month of July. All the others showed the greatest energy of growth during daylight, and the majority between noon and 8 P.M. The total growths of all the plants taken together during the two months were, between 8 P.M. and 4 A.M., 119.07 inches; between 4 A.M. and noon, 156.26; and between noon and 8 P.M., 180.90. Observations on the weather were made simultaneously, and special attention was given in elaborating the results to the influence of light on growth. Dr. Lindley himself was greatly surprised at the results obtained, and with regard to light he says, in the concluding remarks of his second paper—"It does not seem desirable to extend these tables further, for if the observations are analysed for the effects of wind or bright light, there are the same inexplicable discrepancies. Indeed, the average of the afternoon growth being so much higher than that of the morning and night, as is shown in the table at p. 255, seems to render an examination into the effects of light superfluous; for it must be admitted that on an average we have more light between noon and 8 P.M., the time of the afternoon observations, than in either of the other periods."

* A seventh was deducted from this, and added to the fourth column, to equalise the periods.

General Conclusions.

From the foregoing figures it will be seen that no general law appears to obtain with regard to the period in the twenty-four hours during which plants develope their maximum intensity of growth. It varies for the same plant, according to circumstances, and especially, it would seem, according to its stage of growth and general rate of growth; and it varies for different plants in the same stage of growth, and subjected to the same conditions at the same time. Nor do these figures indicate that light is antagonistic to growth, as distinguished from assimilation. But experiments made by Sachs, under artificial conditions in which he could control the amount of heat and moisture whilst retaining the normal conditions of light, gave gradually increasing increments of growth from sunset to sunrise, then gradually diminishing until they reached the minimum at sunset. This, however, only proves that with increasing light there must be a corresponding rise in the temperature to maintain active growth; and that too high a temperature in darkness, or subdued light, stimulates an excessive elongation of the internodes. Plants assimilate and grow under the influence of light, provided the heat is sufficient; in darkness they continue growing at a lower temperature, until they have exhausted their assimilated food. When the state of darkness or semi-darkness is unduly prolonged plants make a great effort to reach light by developing extraordinarily long internodes. That plants will flourish and quickly attain maturity in almost continuous light is proved by the vegetation of high latitudes; and in the equatorial regions the rains govern to a greater extent the growing season of plants. Observations on the day and night growth of plants in tropical countries would be exceedingly interesting. If, as has been asserted by some, these islands in past ages enjoyed a warmer climate than now, and supposing the hours of sunlight to have been the same as at present, would that in any way account for the prodigious vegetable luxuriance exemplified in the coal measures? In the tropics the rainy (growing) and dry (resting) seasons differ more in humidity than in anything else. With us the greatest amount of light, heat, and growth go together, but if the temperature falls below a certain point the light alone is insufficient to promote growth and most likely assimilation also. On the other hand, with favourable conditions of light and heat during the day, the plant assimilates sufficient food to enable it to continue growing until the return of light and heat. The plant, so to say, is asleep, but sleep does not necessarily arrest growth. A certain amount of heat and moisture combined will promote growth, but not sustain it, whereas the addition of light, without retarding growth, enables the plant to find and cook its food, and continue growing.

High Night-Temperature Detrimental.

A knowledge of these facts is important from a practical point of view, as they go to show that a continuously high night temperature is prejudicial to the healthy growth of plants; it stimulates without feeding, and finally overtaxes the energy of the plant. The real meaning then of the assertion that light is antagonistic to growth is, that if the temperature is as high during the darkness as during the daylight, then growth will be more active by night than by day. Have experiments yet proved that this disturbed relation of light and heat could be successfully adopted in practice, or that a plant will flourish and reach maturity under such conditions? I think not, and if they have not it seems to me that it is stretching a point to say that light is antagonistic to growth, simply because plants grow equally as well for a short time in the dark. Excessive heat and light together sometimes retard growth, and possibly the greater nocturnal growth is sometimes to be accounted for in this way. Doubtless we have much yet to learn as to the sepa-

rate and combined influences of light, heat, moisture, &c., and what are the most favourable proportions of each for any given plant. But darkness should be regarded by the horticulturist, as it is indeed by good practical men, as a period of rest, when the temperature should be allowed to fall considerably below a normally good day temperature, in order to avoid stimulating unhealthy weakly growth. *W. B. Hemsley.*

THE FULHAM NURSERY.

This is one of the oldest of the old London nurseries, having existed as a scientific garden and nursery upwards of 200 years. In the history of Fulham we read that the Fulham Nursery and Botanic Garden was established by Messrs. Ferbur & Gray, the most eminent nurserymen of their time. It has a world-wide reputation for rare trees, many of which were contributed by Catesby, Collinson, Miller, and other botanists and travellers, which were added to by Bishop Compton's noted collection. For many years it has been in the hands of the Messrs. Osborn and their family.

Deciduous Trees.

Lovers of rare trees will here see many old examples such as are seldom to be met with. Amongst trees of a weeping habit particularly noticeable is the Japanese Sophora (Sophora japonica pendula), here represented by a couple of venerable specimens, very distinct and handsome. Near them is a splendid example of the North American medicinal Sassafras (Laurus Sassafras), from which the Sassafras chips are obtained. It is an old tree, the bole thick and rugged. The Chinese Magnolia conspicua is also to be seen, and not far from it stands M. Thompsoniana, a hybrid betwixt M. tripetala and M. glauca, and which has the fine perfume of the latter. The Judas tree (Cercis siliquastrum) is represented by a good specimen. Pyrus arbutifolia was at the time of my visit (in the autumn) in splendid condition, the leaves as highly coloured as those of the snowy Mespilus in the last stages before they fall, the Pyrus having the advantage in retaining its foliage much longer in this highly coloured state. Its red, berry-like fruits also make it more effective. Gymnocladus canadensis is represented by a specimen near 50 feet in height, the result of some forty years' growth. Its foliage in form is something like that of the Rose Acacia (Robinia hispida). There is a fine specimen of the Diospyrus Lotus, laden with its intensely acrid fruit. Near it is Magnolia auriculata, said to be the oldest example in the kingdom. Pyrus hybridis, supposed to be a hybrid betwixt Pyrus Aria and the common mountain Ash, is a fine spreading tree. Here, also, is a grand specimen of the Cork tree (Quercus Suber), with a gnarled old bole. An example of Celtis occidentalis is said by travellers to have attained a size greater than to be met with in its native habitat. It is a grand tree, its branches very tough in the bark, and pendent at the points. Then again there is the Chinese Kolreuteria paniculata, a very distinct tree, its singular seed-vessels in the autumn being like the Horse Chestnut. In general appearance it is not unlike the Kentucky tree, Gymnocladus canadensis. Rhus Cotinus (the Venetian Sumach), a handsome deciduous shrub, was very effective. It is not nearly so well known as it deserves to be. Rhus Toxicodendron (the poison Oak), is a low growing shrub, the leaves of which assume a fine colour in autumn. Fraxinus quadrangulata, scarce and distinct, its shoots whilst young having the peculiarity of being quite square. This is said to be very difficult to propagate. Carpinus americana (the American Hornbeam) has few rivals for the beauty of the colouring of its autumn foliage. Morus alba (the white Mulberry) and its varieties, is said to be the best for silkworm feeding.

The above are some of the most remarkable and distinct trees and shrubs with which this nursery abounds, and which are here to be seen in size and condition such as to be met with in few places. The fashion in trees, as in many other things, seems to run periodically in grooves. For the last thirty or forty years coniferous and taxaceous trees, many possessing doubtful ability to withstand the occasionally severe winters we get, have almost alone found favour with planters, to the exclusion of the more distinct and interesting deciduous trees, the ability of which to stand our severest winters is sufficiently proved, and whose general suitability to occupy prominent positions on lawns, in shrubberies, and in the dressed grounds, whether comprising hundreds of acres, surrounding the finest mansions, or in the limited space attached to a villa residence, renders them alike worthy of a place. To the lover of trees in general a walk through this nursery with the veteran Mr. Pitman, is a real treat. He has been here some fifty-five years, the greater portion of the time as outdoor foreman. Trees and shrubs of all kinds appear to have been his delight and study. His keen observation and retentive memory are such that the slightest difference in form of leaf, general habit, or any peculiarity which he has seen becomes indelibly fixed in his mind in a way that renders him a most reliable authority.

There is a fine stock of the more generally met with hardy trees and shrubs. A deal of care has been taken in selecting and propagating the best forms and varieties. In Thorns there is great variety, amongst which Cratægus prunifolia is a fine red-fruited kind, the foliage in the autumn dying off a beautiful colour; C. punctata rubra, the autumn colouring of the leaves of this is the most intense of all; C. coccinea maxima is another desirable kind, with large leaves and very large fruit; C. Aronia is one of the best of the yellow-fruited kinds. Of Planes, in which Londoners have trees the best suited to their soil and climate, there is here a form under the designation of Platanus acerifolia pyramidalis, more compact in growth, and said to be more hardy than the others. After all the discussion there has been about the Oriental and Occidental varieties of Plane, there is one difference yet to be mentioned—the Oriental variety will not strike from cuttings, but the Occidental does; the latter are here all raised in this way. I noticed a new acquisition, Parrotia persica, from the shores of the Caspian. In the autumn the leaves, which die off very slowly, are indescribably beautiful, a mixture of vivid crimson and yellow, by the side of which the finest tricolor Pelargonium looks pale. Especial attention is paid to Ivy in pots, so useful in giving immediate effect in the covering of walls, &c. All the best kinds are grown, and for freedom of growth are in a condition not often met with. Lilacs for forcing in pots are remarkably well done. Syringa rothomagensis is the variety grown. Plants in small pots from 6 to 7 inches were beautifully furnished and profusely set with flower-buds. Another fine forcing plant here is Viburnum plicatum.

The Fulham Oak.

I have not yet said anything about the noted Fulham Oak (see p. 145). The tree here was for a long time supposed to be the original from the Acorn, and it is said that Loudon had all the soil removed from around the base of the bole to see if anything in its growth could be detected which would confirm or upset this supposition; if so, there was a singular oversight committed, as there is unmistakable evidence of its being a grafted plant, the union being clearly visible in the bark a short distance above the ground. A small sucker from the stock near the ground has sprung up, and so far as the appearance of the leaves go seems to be Quercus pedunculata. The spread of the branches covers a space of some 78 feet across; it is supposed to be fully 200 years old, and girths about 15 feet. It has not grown much in height for the last fifty years. In "Murphy's winter," 1837-38, a singular circumstance happened to the tree. During the severe frost that then occurred, one night the men in the bothy at some distance were alarmed by what they thought was a discharge of fire-arms, and ran out-of-doors, when it was discovered to be reports caused by the disruption of the bark through the effects of the intense cold. Something of a similar nature was noticed in several places in the severe winter of 1860-61.

Fruit Trees.

This nursery has long been famed for its fruit trees of all kinds, which are remarkable not only for their clean, thriving condition, but also for another matter of importance, especially in such things as Peaches and Nectarines, correct nomenclature. Pears particularly are very fine, all or nearly all worked on the free stocks. In giving preference to this over the Quince Mr. Pitman justly observes that all varieties of Pears that are in the least inclined to be gritty are still more so when grafted on the Quince, often to an extent in some soils that makes them worthless.

Amongst kinds not so generally known, or grown as the older established sorts, are Souvenir du Congrés, in the way of, but considered superior to Williams' Bon Chrétien; Beurré Superfin, Pitmaston Duchesse, Beurré d'Amanlis and Doyenné du Comice. Apples are likewise grown in very large quantities and are well managed; many are grown on the Paradise stock. Amongst kitchen varieties not much known, but highly recommended, are Stirling Castle and Aitken's No. 2. Of Plums there is an equally healthy stock: as an early sort nothing is so much in demand as Rivers' Early Prolific, bearing profusely in almost any soil or situation; the Early Orleans is better liked than the old variety. As a late kind Belle de Septembre is coming generally into favour; the Kentish fruit growers are going largely in for this sort, than which no better evidence need be forthcoming. Amongst Peaches there is a great demand for Stirling Castle, which is found to do well on most soils; and Belle Beauce, an early sort, something in the way of Grosse Mignonne, but handsomer, and an immense cropper. Early Louise is well liked. Much attention has been paid to the most suitable stocks for Peaches as well as other things. The Mignonne or Brompton stock is found to be the best for some, as for instance Stirling Castle, and the fine, but comparatively little grown late variety Têton de Venus; these are here altogether worked on this stock, the former variety absolutely refusing to live on the Mussel stock—neither does Grosse Mignonne do well on it. In Cherries, the French variety, Olivet, a very large kind of the Duke section, and the American Governor Wood, are both recommended as first-rate early sorts. The Portugal Quince is much superior to the old varieties, the fruit larger, and it comes quicker into bearing: it was fruiting freely on three years' worked plants. There is also a fine stock of Peaches, Nectarines, Plums and Pears in pots.

Glass Department.

The show house is a long span-roofed structure containing the usual fine-leaved and flowering subjects; I noticed here a fine stock of Ficus lanceolata, an excellent plant for living rooms, and which can be used in place of the Ficus elastica, requiring like treatment: the leaves are deep-green and shining like those of the latter variety, but are much more elegant in shape. Palms, Dracænas, variegated Phormiums, Cordylines and Yuccas are here grown—amongst the latter are several fine specimens of Y. filamentosa variegata; with these are associated a quantity of Ferns. On the roof are grown the rose-coloured Lapageria and Clematis indivisa.

Adjoining this house is a long hip-roofed range in four divisions, the first of which was filled with young Palms, consisting of most of the popular kinds. In the next house I met with an old plant, long in the country, but with many now lost sight of, Murraya exotica, an erect growing hard-wooded subject with white flowers, in character like a cluster of small Jasmine flowers, and highly fragrant; the perfume may be described as something betwixt Jasmine and Orange blossom.

The two remaining houses are used as general stoves, in which were a number of specimen foliage plants, comprising different varieties of Pandanus, Palms, Caladiums, a very fine example of Cycas circinalis, mixed with smaller things, such as Aralias, Reedia glaucescens, the Fern-leaved Campsidium, most of the newer Crotons, the handsome-leaved Terminalia elegans, a number of young plants of Cocos Weddelliana, and some nice specimens of variegated Pine-apple, intensely coloured, much shorter and stouter in the leaves than usually seen. Thus grown, it is one of the handsomest coloured leaved plants we possess.

At a short distance are several span-roofed houses filled with greenhouse plants; the first was occupied by a quantity of the tender kinds of Rhododendrons, Daphne indica, Lapagerias, and an assortment of the best sorts of greenhouse climbers.

Another was devoted to Camellias, mostly trade-sized plants in healthy condition.

In another house were most of the leading kinds of Dracænas, Gardenias, and the useful Brunsfelsia americana, with its long tube-shaped flowers; Epiphyllums, Ardisia crenulata, raised from seed; Bouvardias, seedling Palms, and Eucharis amazonica.

In the propagating house the usual work of striking and grafting was going on; the newer and finer leaved varieties of Aralia, such as A. Veitchii, are found to do remarkably well grafted on A. Guilfoylei. I noticed here a handsome seedling Dracæna, with drooping leaves, and habit something like D. Mooreana, bright green, banded and edged with white and pink.

A long house was filled with Figs in pots, consisting of the best kinds. There is a roomy span-roofed house devoted to young Vines for planting,

comprising the older-established kinds, as well as new ones. Amongst those which made their appearance some years back, and were by many people discarded before their qualities were fully proved, are Madresfield Court and Mrs. Pince's Muscat, which are again in much re quest.

Another very large double span-roofed house was filled with a grand lot of fruiting Vines, than which nothing could possibly be finer, taking into account both size and general condition. Very great pains are here taken to obviate that (to gardeners) most provoking disappointment—Vines purchased for fruiting, and having no fruit in them. They are trained near the glass, and kept in the house until the leaves have either fallen or are quite yellow, the effect of which is very different from that which results from turning out-of-doors whilst both wood and foliage is in a half-ripened state. Amongst the new kinds, Golden Queen appears to be a very strong grower.

The general nursery stock was in fine healthy condition, evincing careful attention. In the outdoor department plants of all kinds gave unmistakable evidence of the periodical removal so essential to their well-doing when planted where they are to be permanently grown. *Zed.*

NEW VEGETABLES.

The following memoranda on certain new vegetables which have been grown here may be useful to many growers, affording them information on a point on which they may have had no opportunity of acquiring more direct information :—

Pea Sutton's Dwarf Wrinkled.—Height 12 inches; very early and useful.

Pea Laxton's Standard (from Veitch).—A grand second early; height 2 feet 6 inches, full of well-filled pods, splendid flavour; must be in every one's garden.

Pea Sutton's Tall Wrinkled.—One of the best main crop Peas I ever saw; height 4 feet, a good cropper; all the pods well-filled. In flavour equal to Veitch's Perfection. Here we have a Pea which has long been sought after.

Pea Carter's No. 100.—A second early, a good cropper, and the Peas of a good colour, but not quite so sweet as in some varieties; very prolific in pod.

Radishes, Carter's New Scarlet and White Turnip.—Both splendid in flesh and flavour; clear as crystal in skin and colour.

Of *Sutton's Lettuces* there is only one really good Brown Cos. Is this the one that was sent out in 1869 as Moor Park? If not, it is quite new and very first-class, holding good when other varieties have all gone to seed. *C. Penny, Sandringham, July* 28.

THE PHALÆNOPSIS HOUSE AT BROOMFIELD.

One seldom meets with a floral scene more enchanting than that presented by the bank of blossoms in Mr. Warner's Phalænopsis-house, when the plants are in the height of their bloom, as represented in the accompanying engraving (fig. 28), from a photograph. The number of plants here collected together and forming one grand group, is unusual; their health and vigour has been seldom equalled, and perhaps never surpassed, and the variety in the form and colour of the flowers is quite charming. Here might be seen in the early spring season, in the full glory of a profuse inflorescence, the well-known forms of P. amabilis and grandiflora, laden with their grand panicles of broad massive milk-white flowers, and forming a striking contrast to the various lovely shades of rosy hue presented by the floral panicles of P. Schilleriana; while the mottled leaves of the latter mingled with the clear green foliage of the older kinds, came in as a most effective base and background, giving to the mere colour-effect a richness and softness of which it would be difficult to find a parallel. To the Orchid grower and to those who are at all familiar with Orchids, the healthy vigour of the plants, and the strength of their grandly panicled inflorescence, would prove even a greater charm, so exceptional is it to see such a rich assemblage of these rare and valuable specimens so well managed as in this case. Mr. Warner has, indeed, had long experience in Orchid growing, and he has turned his experience to good account, as the view we now publish will abundantly testify.

With trees and shrubs and flowers in the outdoor garden there can be no question that the massing principle is far more effective than the promiscuous dotting about of even fine individual specimens; and it is the same with the inmates of our glasshouses, as witness the Odontoglossum-house at Trentham, the Masdevallia-house at Messrs. Veitch's, the Cattleya-house at Broomfield, and again, in its season, the splendid bank of Phalænopsis which has occasioned these remarks. The distinctive characters of the plants are, in such cases, strengthened by iteration, and the consequence is that a much more impressive effect is realised. Even when the collection is less extensive than in this case, and when consequently a separate structure cannot be afforded to the different family groups, we strongly recommend the system of grouping the plants, rather than that of intermingling them promiscuously. This mode of arrangement is not alone more pleasing in the effect produced, but is obviously advantageous in studying and carrying out the cultural requirements of the plants themselves.

The general treatment to which Mr. Warner's plants are subjected, and by means of which he keeps them in such a satisfactory condition, has been so often alluded to in our pages that we need not now enlarge on that point, and we will therefore only further say to those who doubt the advantages of the grouping system, look on this picture and be convinced. We add a few further remarks, communicated by Mr. B. S. Williams, by whom the plants were also inspected when in flower :—

"The Phalænopsis-house of R. Warner, Esq., Broomfield, Chelmsford, presented at the end of February last an Orchidaceous spectacle especially grand. The view of a house principally filled with these charming Orchids when in their full beauty, cannot fail to leave a lasting impression. The house now referred to is more than 50 feet long, and on either side was a fine display of the charmingly graceful drooping and arching spikes of mauve and white flowers, intermixed with other fine Orchids of different colours. At the time of our visit there were many hundred blossoms, and so it is every season; in fact, it has been our pleasure to witness this display each season for the past fifteen years. Many plants of Phalænopsis Schilleriana had fifty or more flowers upon them, and they were in vigorous health and with good firm foliage. This may be accounted for by their not being grown in too much heat. Some Orchid growers persist in giving them more heat than they require, but Mr. Warner has always grown them in a good-sized house, with a free circulation of air during the summer months, and with less heat in winter than most growers give them. We cannot doubt but that this is the right plan, as they were growing stout and strong in foliage, and producing fine spikes of flowers, which continued a long time in bloom. P. grandiflora and P. amabilis are cultivated in the same house as P. Schilleriana, and continue flowering from February until April. They are extremely useful for bouquets, cut flowers, &c., and what more graceful or charming can be found than a spike of P. grandiflora or amabilis for the decoration of a lady's hair?—it is not only most lovely but lasts long, as if carefully preserved in water the same spike will serve for several times.

We have said how well the plants are flowered, but besides this Mr. Warner has collected the most distinct varieties as to form and colour. The true mauve of the Schilleriana combines well with the white of grandiflora and amabilis, and the foliage of other Orchids amidst their lovely spikes of aërial beauty also conduces to the effect produced. This all lends a charm to the scene, the impressive effect of which can be fully realised, as one may stand at the end of the house and see every spike to advantage.

The Odontoglossum-house was also in good bloom. The many varieties of O. Alexandræ and O. Pescatorei, with their splendid spikes in full perfection, and intermixed with the bright colours of O. triumphans and O. luteo-purpureum, and the creamy white and spotted flowers of the O. Andersonianum, made a charming contrast. There were many of the bright coloured Masdevallias in bloom, the magenta and scarlet hues of which had a pretty effect amongst the various white flowers of the Odontoglots. *B. S. W.*"

THE ROYAL GARDENS, KEW.

(*Continued from p.* 108.)

Charcoal for Gunpowder.—The large consumption of Dogwood for this purpose of late years in Europe has produced a scarcity of this material. The Royal gunpowder factory at Waltham Abbey appears to have drawn its supplies of Rhamnus Frangula wood from Germany, though it might be grown in England on the coppice system with the greatest ease. A substitute has, however, been proposed for it, and a specimen of the wood was sent to Kew for identification. It was determined to be Hornbeam (Carpinus Betulus), which has been, at any rate, formerly employed for gunpowder manufacture at Berne.

Chicle Gum.—A protracted correspondence has been carried on with the Colonial and Foreign Offices with reference to a gum known in New York (where it was used for chewing) under the above name, which it was supposed might be valuable for telegraphic purposes. It was confused in some way with another very obscure product known as Monesia, which is used in medicine, and which appears to be derived from the Brazilian Lucuma glycyphlæum. Chicle gum, on the other hand, comes from Mexico, and is produced, according to our most recent information, by Achras Sapota. A specimen sent to Kew was submitted to Messrs. Siemens Brothers, and they reported that in "mixing with india-rubber it made the latter too brittle, and therefore cannot improve the quality of the rubber if intended for the insulation of cable wires."

"Cocoa-nut Disease" of Demerara.—Great destruction has been wrought in the cocals of Demerara by the larvæ of a small beetle (Passalus tridens) which completely destroy the soft tissues of the interior of the stems, and eventually of course inevitably kill the trees. It is difficult to prescribe any remedy except "stamping out" by burning the infected trees as soon as they show symptoms of the larvæ being at work.

Coffee Disease.—In my last report I stated that Dr. Thwaites, the Director of the Botanic Gardens, Peradeniya, Ceylon, had drawn up a series of questions on this subject which have been addressed to the various Coffee-growing countries and colonies. All the replies and information that are likely to be received in answer to this enquiry having now come to hand, I have thought it would be most useful to summarise the results in the present report as likely to give them the widest circulation.

According to the replies no disease, or at any rate none with the characteristic peculiarities of the Hemileia, occurs in any of the following seats of Coffee cultivation:—Angola, Bahia, Bermuda, Cartha, gena, Cayenne, Costa Rica, Grenada, Gold Coast, Guiana (British), Jamaica, Java, Madeira, Mauritius, Nicaragua, Réunion, St. Helena, Sierra Leone, Trinidad.

In the following places from which replies have been sent Coffee is not grown:—Barbadoes, Buenos Ayres, Honduras (British), Leeward Islands (except Dominica), St. Vincent, Surinam, Zanzibar. With respect to the remainder, the information received may be conveniently summed up under the following heads:—1. Hemileia vastatrix ("leaf blight") of Ceylon and Southern India and associated diseases. 2. Cemiostoma coffeellum ("Coffee fly") of the Antilles and Brazil and associated diseases. 3. "Borer." 4. "Coffee-bug." 5. "Canker" and other vague diseases attributable to climatic causes.

The reports received bearing on these several heads are perhaps not as complete in information as might have been both expected and desired.

In the light, however, of knowledge derived from other sources they have proved to possess considerable interest. In some cases the statements have been of a very hypothetical nature, as, to give one instance, where a South American reporter expresses the opinion that the Ceylon disease—the vegetable origin of which is unequivocally known—is "propagated by myriads of diminutive insects."

I cannot refrain from calling particular attention to the fact that whereas in British Guiana Coffee was once largely cultivated, especially in the county of Berbice, it is now "imported."

1. *Hemileia vastatrix.*—The "leaf disease" is a scourge of quite recent origin. In May, 1869, a few Coffee plants were noticed in Ceylon to be attacked by a fungus upon the leaves. In July following 2 or 3 acres of Coffee plant were found to show it. After this its progress was quite extraordinary, and in 1872 it was to be found in nearly all, if not all, the estates in the island. It also soon spread to Southern India, and though Java is at present free from it, I learn while this report is in preparation that it has made its appearance in Sumatra. I have, however, found no satisfactory evidence of its existence in other parts of the world than the islands and countries contiguous to the Indian Ocean. I conclude, therefore, that it is at present a local or endemic parasite, which, however, unless measures are taken to prevent the introduction of Coffee plants from infected countries into others at present free from it, may be expected to spread eventually wherever Coffee is cultivated. The fungus, which is allied to the Moulds, was first described by our distinguished English fungologist, the

Rev. M. J. Berkeley, in the *Gardeners' Chronicle* for 1869 (p. 1157, with a woodcut), and subsequently in the *Journal of the Linnean Society* (*Botany*, vol. xiv., p. 93, pl. 3, fig. 10). A short account also appeared in the *Quarterly Journal of Microscopical Science*, 1873, pp. 79—81. It is probably indigenous to Ceylon, and has only assumed the proportions of a scourge because it has found the constitution of the Coffee plant suited to it.

The conditions under which the economic plants are grown in large areas are, of course, extremely favourable for the rapid extension and development of parasitic plants and insects. When these have only native plants in small quantities to prey upon they pass unnoticed, and their appearance on a large scale is one of the penalties which man must expect to pay co-operation of the Rev. R. Abbay, Fellow of Wadham College, Oxford, who was attached to the Eclipse Expedition, and remained some time afterwards in Ceylon for the benefit of his health. Mr. Abbay's observations, though imperfect, are a first step towards a more accurate knowledge of the subject, and will, I hope, shortly be published.

The mycelium, or vegetative part, of the Hemileia penetrates the tissues of the leaves of the Coffee plant, where it is out of the reach of any agent such as sulphur (whether applied in powder, as is so successfully done with Hop mildew, or, as suggested by Mr. George Wall, by fumigation). Moreover, the detailed treatment of the trees in a large plantation by any remedy of the kind would be practically impossible. I fear that the "leaf disease" is a (*Gardeners' Chronicle*, 1876, February 19, p. 246; March 4, p. 308; *Grevillea*, 1876, vol. iv., pp. 116, 134—135). From a report by Dr. Cooke, issued by the India Office, it appears that the Pellicularia "makes its appearance about July, when the leaves of the trees affected by it get covered with a slimy gelatinous matter, and, turning black, drop off; the berries likewise rot and fall in clusters." It is estimated that nearly one quarter of the crop each year is lost by this plague. The collection and burning of the dead leaves will in this case also have to be persevered with. As suggested by Dr. Cooke, the fungus being external in its growth, is likely to be materially checked by the application of sulphur.

A somewhat similar disease to the Pellicularia, but described in too vague a manner to speak definitely

Fig. 28.—Mr. Warner's Phalænopsis House.

for such an enormous disturbance of natural conditions as is implied in replacing a tropical forest of the most varied and mixed vegetation by a plantation of some single economic plant. In temperate countries exactly similar phenomena are exhibited by the rapid spread of the Potato fungus, the Vine louse (Phylloxera), and the Potato beetle from the western side of America, first to the eastern, and then, at any rate in the case of the two former, and no doubt eventually in the case of the latter, to the Old World.

Mr. Berkeley's examination of the Hemileia was made from dried Coffee leaves transmitted to this country. A first essential is a more adequate study of the fungus than such specimens could afford, especially in all the details of its life history, from germination to fructification. Some progress in this latter task has been made by Dr. Thwaites, with the trouble with which the planters for the future will have always to reckon. As with our own Potato disease, they must rest their hopes on the likelihood of its proving intermittent, and bear, as best they may, the constant loss of a certain percentage in every year, with occasionally the loss of an entire crop. At the same time every precaution should be made to destroy all the infected leaves by burning, and, even when more certain knowledge is arrived at, to boldly sacrifice the foliage of trees on the first symptoms of the malady, so as to prevent the fungus ripening a fresh crop of spores.

In Mysore another disease appears also to be rather prevalent, which is produced by a fungus distinct from the Hemileia. This is known as the "leaf-rot," or Kole-roga. It has been described by Dr. M. C. Cooke under the name of Pellicularia kole-roga upon, seems to have occurred in 1864 in Jamaica, the leaves of the Coffee plants being covered "with a white substance of a glutinous nature."

As I have stated in an earlier portion of this report, the Liberian Coffee has not proved exempt from the attacks of the Hemileia in India and Ceylon. Mr. G. A. Cruwell, who has visited Liberia, believes that it is affected with the Hemileia in its native country. Specimens sent to Kew by him are pronounced by Mr. Berkeley not to be affected by the Ceylon leaf disease, but to owe their discoloration to some other cause.

2. *Cemiostoma coffeellum.*—A disease has for many years been known to exist in the Island of Dominica, and also to a large extent in Brazil. This was characterised by the appearance of large discoloured blotches upon the leaves, leading eventually to their

decay and fall, and so seriously impairing the health of the trees. The leaves are destroyed by the larvæ of a minute but very prolific moth. They live between the two surfaces of the leaves, and gradually consume the intermediate cellular tissues. The moth is, in fact, a member of the same genus as that which mines the leaves of the Laburnum in our gardens. This insect is said to lessen the Coffee crop in Brazil by at least one fifth. The little pest has been found in the Antilles, Island of Martinique, province of Rio Janeiro, and over the whole Coffee region of Brazil.

According to an enclosure in Mr. Acting Consul Austin's despatch to the Foreign Office, it is of comparatively recent introduction into Brazil:—"In 1854, or soon after, the Imperial Government, desirous of introducing several species of Coffee amongst us, advantageously cultivated in other parts of the world, committed the error of importing plants instead of seeds, and thus we had here Coffee trees grown in Ceylon, Martinique, Bourbon, &c., it being quite possible that in this manner the germ of the Coffee disease was imported." This is also the opinion of Mr. B. Pickman Mann, who has reported in the most admirable manner upon the whole subject to the Brazilian Government (see *American Naturalist*, 1872, June and July). I may also call attention to a similar transference, from the Old to the New World, of the moth which injures the Sugar-cane, and which is referred to below. The only plan of radically dealing with this pest is to destroy the injured leaves while the Coffee-fly is still in the larval state. Mr. Mann remarks:—"If the leaves were picked at such a time as to take the greatest number of larvæ when they were about two weeks old, it would not be difficult to select them, as the size of the blotches would make them very noticeable. I find that the expense would be more than met by the next year's crop."

Mr. Consul Pauli has sent from Puerto Rico leaves which are affected with the Cemiostoma in its most characteristic manner. The disease appears to do little injury in this island, and no particular attention is paid to it.

In Venezuela a disease occurs which is known by the name of "candelillo," and which is also, according to the information supplied by Mr. R. T. C. Middleton, Her Majesty's Minister at Caracas, identical with the "mancha de hierro," or "iron-stain." Dr. Ernst, however, believes them to be different, and attributes the latter to the Cemiostoma. The specimens forwarded to this country by Mr. Middleton of the iron-stain are, however, at once distinguishable from the ravages of the Cemiostoma. The leaves have been submitted to the Rev. M. J. Berkeley, who reports that they are affected by a minute fungus, a Depazea, for which he proposes the specific name of maculosa. It has fusiform spores, .0008 inch long, and containing about seven nuclei. In Venezuela Coffee appears to suffer little, comparatively speaking, from maladies of any kind.

3. "*Borer.*"—In all tropical countries trees of all kinds (the Cocoa-nut Palm mentioned above is an additional example) are peculiarly liable to the ravages of various wood-eating beetles. Coffee is no exception, and the reports from various countries mention "borers," no doubt different in every case, with which the cultivator has to contend. They are peculiarly met with where the plantations are new clearings, and an important means of extirpating them is the systematic clearance of any decaying or other wood which they can use as a refuge.

They are mentioned from the West Coast of Africa, Sierra Leone, Liberia, and Gold Coast; they are also occasionally troublesome in Jamaica. It is in South India, however, that they work harm on the largest scale, and for an account of the Xylotrechus quadrupes, which is the "borer" of that country, I must refer to Dr. Bidie's report on its ravages, published in 1869.

4. "*Coffee Bug.*"—While "borers" attack the roots and stems of Coffee trees in hot countries, various species of Coccidæ suck the juices of the young twigs and leaves. Under the names of "blight," "bug," and "scale," these are mentioned in the reports from Gold Coast, Hawai, Madeira, and Trinidad. In the latter case they are noted as being accompanied (as is often the case when they attack the Orange), by "sooty-blight," a fungus (Capnodium, sp.), which covers the leaves with a dark Incrustration. The Coffee-bug of Ceylon (Lecanium Caffeæ), was once a source of considerable injury to the Coffee estates of that island. It is described in Emerson Tennent's *Natural History of Ceylon*, pp. 436-441. As in other countries, in the face of careful cultivation it appears to have ceased to give annoyance.

5. "*Canker.*"—Coffee, for some imperfectly understood reason, has apparently failed to hold its ground in Natal. It is subject to a "bark disease," which is thus described by Mr. C. T. Saner:—"The first symptom of the disease is the withering of a small tertiary or secondary branch; on further examination it will be found that the bark, under the primary branches, is decayed and blue-mouldy; the blue mould extends downwards gradually over the whole stem, killing the tree in a few months. . . . A tree once attacked never recovers. . . . All soils and situations seem alike liable to the disease; the trees seem to begin to suffer when about six years old. The area of land under Coffee has been already much reduced, the crop having already proved unremunerative; the Sugar-cane is gradually but surely supplanting the Coffee tree."

Here, of course, the mould is the proximate cause of death, but the ultimate cause is evidently, from the fact of its appearing when the trees are at the age of six years, due to some unfavourable external condition. The opinion of experienced persons in the colony is so entirely at variance as to what these may be that I am indisposed to express any myself. The collapse of Coffee growing is by some attributed to neglect of cultivation, by others to unsuitability of climate, and last of all to want of depth of subsoil, as shown by the small height attained by the native arboreous vegetation.

In Jamaica "canker" is also spoken of as a source of constant loss of about 1 per cent. per annum of the Coffee trees. Its effects increase with age, and are attributed to the roots penetrating to uncongenial soil. Local "blights" also occur, which are attributed to sudden climatic changes.

In Java a fungus attacks the trunks, giving them "a white appearance," and produces death in all the parts above.

To be continued.)

Apiary.

DO BEES MASSACRE THE DRONES.—I don't think Mr. Murray's suggestion in your last issue very fair in regard to finding out whether the bees really massacre the drones or not. Shutting them up in a hive for a month would be certain death to most of them, and would in no way settle the question. Before I read Mr. Murray's notice I was watching daily all their movements most carefully to see what was their intentions towards Mr. Drone after he was required no longer, and I am more convinced than ever that they persecute him to death. When I lift a skep at anytime now, they have all the drones banished on to the floor-board, and in several cases I have found in the morning a great number of drones lying before the skeps, which must have been pulled out of the cells for they never were the length of flying. In my apiary just now a great many of the skeps have begun the drone war, that is, every drone is seized as he goes out or in and is put overboard if possible. As I said before, I don't think they ever attempt to use their sting, but I have seen repeatedly the bees pinching eagerly at the juncture of the wing, and very often after they are overboard they are never able to fly again, but otherwise seem all right as they are quite able to run about. I for one should never believe the question settled by shutting the drones up till they died. *W. K.*

Foreign Correspondence.

THE COLORADO BEETLE.—Thinking your readers would like some account of these interesting insects, which have become of late the all-absorbing topic and occupation of the Potato growers in Canada, it may not be amiss to give you some particulars, in all probability not generally known in your part; and first, with regard to their appearance, they are dressed so elegantly and appropriately that it seems quite a pity to kill such beautiful creatures, so finely proportioned and painted with alternate stripes of highly burnished dark and light chocolate, and their shoulders spotted in like manner and finished off with elegant heads and horns. They fly very prettily, and without any undue haste, and have an unerring scent for any small patch of Potatos, even if only the remains of the previous year's crop come up amongst other vegetables; they gather about the plants as soon as they appear, and proceed to devour the leaves as they unfold themselves, and at night nestle around the earth at the roots for shelter. In a few weeks they pair, and lay patches of brilliant yellow eggs about thirty to sixty each in number, from which minute grubs issue, grow rapidly, and attack the poor esculent with unremitting vigour, soon leaving a field of bare poles as the sole reward of the careless planter; but as this result does not approve itself to most of us the question is, how to destroy this pest most successfully, and some use Paris-green mixed with flour, others in water, which seems the best plan if all the animal life of the field is to be destroyed; but those who prefer leaving Nature to provide some enemy eventually to extirpate our foe daily pick all the beetles and eggs visible, and so, after many weeks of labour, obtain a fair crop of delicious Early Rose—the sort now universally grown in this locality, but still not in the quantity we used to dig before the Colorados made their unwelcome appearance. It is very curious in picking to notice the instinct of both beetles and bugs of all ages, which, as soon as disturbed, practise what is called "the opossum trick," viz., fall down apparently dead, instead of taking to their wings and flying away, as a much smaller and less handsome variety invariably does; but we leave this insect unmolested, as we believe it feeds on the eggs of the larger one, although not to any very appreciable extent at present. Recently, however, we have seen two enemies devouring the eggs, viz., a small round black beetle and a very minute fly of the same colour; and it is said that in some districts a large black insect is attacking when at maturity these annoying adversaries to our daily dinner-table. The Potato-beetle has been known after finishing the Potatos to attack the Tomatos. It mostly lays its eggs on the south or south-easterly side of the plant, but also sometimes on Thistles or grass. The price of Potatos has been very high of late, in consequence of the labour connected with their growth, and ranged from 80 cents to 1 dollar the bushel of 60 lb. in Barrie.

In conclusion, you may be congratulated you have no beetles in addition to the many diseases Potatos seem to be heir to in England; but some of us seem to think it is a pity that you, who have so much time and labour to spare [! !] have not the Colorados instead of us, to whom time and labour are so rare and valuable. *John Morren, Elm Farm, Minesing, Canada, July* 14.

P.S. By-the-bye, we have an extremely beautiful spider, which has apparently come with the beetles; it has a very stout pale yellow body, with a dark chocolate-coloured head. For the information of apiarians, as to the capabilities of this country for their craft, I may state the result of one day and a-half of the work of fifteen hives last week in this neighbourhood, amounting to 150 lb. of brilliant, excellently flavoured honey. Could any of your readers favour us with the proper temperature for a winter bee-house, as we are much puzzled at our climatic variations and the number of deaths frequently occurring in consequence?

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Now that a considerable portion of the specimen and half-specimen hard-wooded plants are removed to the open air, an opportunity will be afforded of allowing more room for the smaller young stock which, often for want of space in the early part of the season, are let to stand too close; and although this at any time of the year, but especially while the growth is being made, should never be permitted; yet, where there has been any overcrowding, it will to some extent improve the condition of the plants by, from this time forward through the autumn, standing them sufficiently far apart in a light house. Any further tying-out or training required should at once be attended to, for whilst yet growing, the leaves and points of the shoots will assume their right position, a circumstance that will not occur later on when the growth is finished and the wood become hardened. Be careful to keep the strongest shoots tied down the lowest, leaving the weaker growths free to assume an erect position, by which means the future growth will be much better equalised than by any possible amount of stopping the strong shoots, though in most instances it will be necessary to pinch out the extreme points of the latter. All hard-wooded

plants that are subject to the attacks of red-spider, should during the summer be looked carefully over every fortnight or three weeks; where such precaution is not taken this insidious little insect, which in hot weather increases so rapidly, often does irreparable mischief, especially to young plants, before it is detected. Whenever young growing stock gets infested with it to such an extent as to injure or prematurely destroy a portion of the leaves, it induces a hard stunted condition of the wood that seriously affects the capabilities of the plants for free development in future. Through this many beginners in the cultivation of these subjects fail, although the cause is often attributed to some deficiency in the soil in which they are grown, or defective cultural treatment in other matters. Where spider has got established to any considerable extent the simplest, cheapest, and best remedy will be either dipping in or syringing with a weak solution of Gishurst, 2 or 3 oz. to the gallon. Such things as Chorozemas, Gompholobiums, Polygalas, and Pimeleas, where the intention is to grow them well, should be syringed overhead with clean water daily all through the growing season—not being content with sprinkling the tops of the leaves with a dash from the syringe, which has little or no effect upon the insects, as they lie secure underneath, but getting the water to the under surface, and wetting the foliage all round. During this month the atmosphere of the house may be allowed to get a little drier than early in the season, so as to gradually harden up the shoots and leaves, and except in the case of any plants that are late in making growth, and which ought to be kept separate from the general stock, air should now be left on all night, not closing the house in the afternoon. The humid condition of the external atmosphere, consequent on the recent showery weather in most parts of the country, will have just suited the larger plants that are now fully exposed to the open air, and to some extent will have relieved the necessity for daily syringing overhead, yet when the weather is at all dry there must be no lack of attention in this matter, in addition to which the whole must be carefully looked to every day as to the water requirements of the soil. The latest flowered Epacrises that have been kept under glass to induce them to make growth may be turned out about the middle of the month, as three weeks' exposure will in most cases be found sufficient to induce them to set their flower-buds just as well as a longer period out. Hedaroma (Darwinia) tulipiferum requires especial treatment. If the plant is turned out-of-doors before its flowers are set, which is easily seen by the points of the shoots turning down in a hooked fashion, it will very rarely set at all. I never saw an instance of a plant blooming freely that was exposed to the open air previous to the flower-buds being thus formed, and yet there is no plant grown that it is more necessary to submit to open-air exposure for a few weeks, as when kept under glass all summer the leaves and points of the young shoots never get enough hardened to resist the attacks of mildew; but neither it nor the smaller species, H. fuchsioides, should ever be stood where they are under the full influence of the mid-day sun, or the foliage suffers. The best position I have found for these plants when out-of-doors is at the north side of a moderate-sized tree, sufficiently far from it to just avoid the drip, but where they will be sheltered from the sun's rays for four or five hours during the middle of the day.

Soft-wooded Greenhouse Plants.—Large-flowered Pelargoniums that were recently turned out-of-doors to ripen their wood should at once be cut down, otherwise there will not be time for them to make growth and to get the potting completed in due season. The fancy varieties must not be cut in nearly so close as the large-flowered kinds. If the plants at the time of cutting down are at all affected with aphides the shoots should be fumigated or washed with tobacco water (the latter is more effectual, as it not only destroys the mature insects, but also their eggs), or the insects will attack the young growth as soon as they break, in which way they will do serious harm by checking the first efforts the plants make. Before heading down see that the soil is in a moderately dry state, and that it does not receive much water until they have again got fairly into growth. On cutting the plants back immediately put them in a cold pit or frame to induce them to break, to assist which damp overhead daily with the syringe. Small plants struck in the spring of both large-flowered and fancy kinds should have their points stopped and the shoots tied down in a horizontal position, almost level with the rims of the pots. It is essential that they be thus shaped whilst young, otherwise these Pelargoniums can never afterwards be got into the requisite form, as, even for ordinary decorative purposes, they are very unsightly when the growth is allowed to run straight up in an erect position. Chrysanthemums now in their blooming pots should be tied so as to prevent their being broken with the wind, and from this time forward should be liberally and continuously supplied with manure-water. Syringe them overhead with clean water every evening; this, with abundant root moisture is essential, not only to the production of the full complement of fine flowers, but it is also necessary to preserve the lower leaves in a healthy growing condition, without which, even if freely bloomed, they have an unsightly look. *T. Baines.*

FRUIT HOUSES.

Pines.—We amongst others engaged in the cultivation of these which have to furnish a supply of ripe fruit annually for the London season, have necessarily to devote special attention to the subject. We find the Queen variety pre-eminently the best suited for the purpose. At about this season the suckers obtained from the current year's fruiting plants will be rooted. We divide these plants into two sections; the first of these comprises the strongest and most forward plants: these when they are properly rooted are placed into 10 and 11-inch fruiting-pots, and replunged into a bed having a temperature of about 95° where the base of the pot rests, and have every encouragement afforded them to make vigorous growth during the remainder of the growing period. The second section of these plants includes the smaller ones, which are repotted when they are ready for it, into 8-inch pots, in which they remain until the subsequent spring, when they are likewise placed in fruiting-pots of similar dimensions to those referred to above. These plants have only a temperate course of treatment, so as to keep them steadily advancing. The first selection of plants started with us identically last year, have now completed a growth, and are in a fit state for hardening by means of ventilation, preparatory to being excited to throw fruit for the early part of next summer, and the second portion being now in full growth, which will form a successional supply. Timely attention should be given to the state of the soil which will be required for potting, as at this season it is apt to become too dry. Prepared soil should also be well covered up to avoid the consequence. This and the following month is undoubtedly the primest period in the whole year for these subjects. *George Thos. Miles, Wycombe Abbey.*

Vines.—Where early forcing is contemplated the wood should now be approaching ripeness. A dry warm atmosphere by day, with plenty of air at night, will most likely bring about conditions favourable to the production of close compact bunches, which always set and colour better than those which are borne by half-ripened wood. Pot Vines now ripe may be removed to a sheltered sunny situation out-of-doors for a time. Let them be well secured from injury by wind, and protect the roots from drought by a good covering of dry Fern or litter. If at this season it is necessary to keep back Grapes for any length of time after they are ripe, a little light shade drawn over the roof for a few hours on bright days will greatly aid in preserving the colour, but the wood and foliage should have the benefit of full exposure to light when the sun is off the house. Muscats still green, also Lady Downe's, Alicante, and other winter kinds, this year later than usual, should have the benefit of a warm temperature to secure perfect maturation of fruit and wood by the end of September, as fruit ripened after that time generally shrinks and keeps badly when transferred to bottles in the Grape-room. Observe former directions with regard to scalding, and see that the night temperature does not fall below 70°, with a little air at the top of the house, which must be liberally increased as the day temperature rises. Young Vines planted out this spring which have not filled the space allotted to them should still have abundance of heat and moisture. Stop all laterals from the base up to the pruning bud, and let the remainder have full play over the trellis. Early Vines which have not finished satisfactorily may now have the inside or outside borders removed and replaced with new compost without detriment to next year's crop. The house should be kept close, warm, and moist until new root and lateral growth sets in. *W. Coleman.*

Melons.—Lose no time in getting out the latest sowing of Melons as soon as they are strong enough for removal to the fruiting pots. If the house is well supplied with pipes for top and bottom heat when the nights become long and cold, good fruit may be obtained; but without these appliances a satisfactory result is very uncertain. Give abundance of tepid liquid to plants swelling off fruit as the growth at this season is rapid, and syringe freely when the house is closed in the afternoon, but avoid wetting the foliage of delicate kinds subject to scalding at the morning syringes. While giving liberal ventilation with decreasing supplies of water to plants ripening or approaching that stage carefully guard against sudden checks. Many crops of fine Melons have been prematurely ripened by the sudden change from a moist genial growing atmosphere to one of sterility and starvation. Plants in pits and frames will require all the attention that can be given to them if success is to be certain, as nights are still cold, and a little more sunshine would be an advantage. Keep the foliage the reverse of crowded, but at the same time let the frame be well filled with leaves. Stop all laterals, long or short as the case may be, until all the space is filled, as Melons like Grapes are sure to finish well if they can be kept in healthy growth. If manure is used for mulching be careful to use that which is free from worms and avoid placing it close to the stems, particularly where the plants are subject to canker. The best and safest top-dressing at all times and in all places is a good layer of heavy loam well charged with dune-dust, and all extra food can be supplied at the right time in the form of liquid manure. *W. Coleman.*

KITCHEN GARDEN.

All good cultivators will now be able to rejoice in having followed up a systematic course of trenching up the soil deeply. At no season does the benefit to be derived from the practice give more certain evidence of its efficacy. All crops which have been planted in soil which has, say, within the last twelve months been moved deeply have the greatest possible advantage over such as are planted in ground which has been, perhaps, for some years merely dug over. They lay hold of the soil at once, and start away, let the weather be ever so hot and drouthy. One good watering generally suffices to give them a fair start, and all the after-care required is to keep the surface-soil well pulverised, both to retain the moisture and keep down weeds. This is an operation which must be persistently carried on amongst all crops advancing forwards for autumn, winter, and spring use. If any of these are still left unplanted no time should be lost, but especially see to the stock of Walcheren Cauliflower. This is one of the most useful and delicate of autumn vegetables, and deserves liberal treatment both as to enrichment of the soil by manure and copious supplies of liquid manure and water alternately. Veitch's Autumn Giant Cauliflower also deserves very liberal treatment; the first sowing will soon begin to furnish sound, compact heads of a fair size, and is more certain than Cauliflower; but experience proves that there should be at least three successional sowings at intervals, and the same with planting, in order to keep up a succession of decent heads, as it is very apt to come in all at once, and thus is soon over. Early sorts of Potatos will now be generally ready for lifting, and advantage should be taken of this at once to clear a large space, to be at once sown with Turnips for the autumn and winter supply. The sorts may consist of one-half Snowball and the other Veitch's Red Globe, which is a very hardy and valuable variety, a late sowing of which will stand through the winter, and furnish a fair spring supply. Other portions of the ground left vacant by lifting the Potatos should be filled up with Coleworts, Buda Kale, Jerusalem Kale, and other late sorts, for spring use. A bed or beds, according to the demand, should be at once put into a course of preparation for the sowing of prickly Spinach for the winter supply. This crop requires a well-enriched soil, and plenty of room for development, and should never be sown later than grouse-shooting day, the 12th. The last sowing of Carrots to stand through the winter should be got in at once. A warm sheltered border should be selected, and the soil moved deeply and well pulverised, but not manured unless the manure is in the condition of a light decomposed soil, so that it may be thoroughly incorporated with the soil. James' Intermediate and Early Horn are the best sorts for this sowing. A good bed of Tripoli Onions for planting out to stand the winter should be got in at once; a bed also of American Cress and Australian Salad Cress should be sown at once; this and the next sowing will be found very useful auxiliaries to the salads through the winter and spring. In light soil on a warm border sow a good breadth of red and white turnip Radish; give them room enough, or if they come up too thickly thin out the crowded parts, and should dry weather prevail they will require watering. If not already sown get in at once the different sorts of Cabbages to stand through the winter. Veitch's Improved Atkins' Matchless, and Carter's Heartwell, the latter smaller, but turns in very early, are two good and reliable sorts. A pinch of red Dutch Cabbage should also be sown either now or at the next sowing. Continue to transplant Lettuces from the later sowings, and see that the necessary sowings to stand the winter are carried out. Beds of Endive from the first sowing should not be neglected, but do not plant extensively of this sowing, as there is always a liability in these early sowings of running to seed. Look well to the continued supplies of water and liquid-manure to Celery, loosen the soil about the plants, but do not be in a hurry to commence earthing-up until about three weeks before its being required for use; this, of course, applies only to the very early ridges, the main crop will require more frequent attention to that important matter. A few rows from the latest sowing in the open border should be planted out for use in the spring. Celeriac also should be planted at once in rich soil; this is useful for soups in winter and spring. If Cucumbers and Vegetable Marrows on ridges are to be kept in full bearing they must have liberal supplies of water. Keep Tomatos well thinned out and constantly nailed to the walls. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, AUGUST 4, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	Aug. 7	Royal Horticultural Society: Fruit and Floral Committees at 11. General meeting at 3.
FRIDAY,	Aug. 10	Cheadle Flower Show (two days).
SATURDAY,	Aug. 11	Cartmel Horticultural Society's Show.

A THIRD edition of Colonel GREENWOOD'S TREE LIFTER,* published by the executors of the late gentleman, has lately been issued, and it has a special interest now in connection with the views on PLANT NUTRITION advocated by Mr. MURRAY. Colonel GREENWOOD formed one of that small but most valuable class of country gentlemen, blessed with excellent powers of observation and strong common sense, and who know how to apply them to the management of their estates, and the cultivation alike of their cattle and of their plants, whether for horticultural or agricultural purposes.

It must not be forgotten that JOHN EVELYN, and our great physiologist KNIGHT, belonged to this class. With little or no previous study of the subject, KNIGHT set himself to work out many a problem of natural history, and especially of vegetable physiology, with what results we all know. Though he started with little or no knowledge of what his predecessors had done, he soon found the desirability of making himself acquainted with the literature of the subject, sagaciously prompted thereto by Sir HUMPHREY DAVEY.

Reverting to Colonel GREENWOOD, those who remember the original publication of his works and his letters in the *Athenæum* and other journals, will also remember the slashing language which he sometimes used to support his own views, or to attack those of others. We do not now advert to the Colonel's advocacy of transplanting large trees with the tree lifter, so as to secure a large ball of uninjured roots, because this is a matter on which every practical gardener will cordially agree with the Colonel. It is, however, a matter of regret that much more is not done in the way of ornamenting and purifying our road sides and town streets by the transplanting of large trees as urged by our author. The present month and that next following are the best adapted for the process.

We have, however, no intention to discuss this portion of the subject at present. Our present concern is with the "theory of transplanting, or physiology of trees in reference to transplanting," wherein the Colonel gives his views of the way in which trees live, and carry on their vital functions. The perusal of Mr. MURRAY'S paper (see p. 72), it may be stated, furnished the motive for looking once again at what Colonel GREENWOOD had advanced. Having done so we could but be struck with the additional illustration that this book affords that a man may be a very good practitioner and a very wild theorist, and *vice versâ*. We find Colonel GREENWOOD, for instance, stating in the most peremptory and dogmatic way:—"That part of the root which is universally believed to imbibe no moisture, the woody part, is the only part which does imbibe moisture; and that part of the root which is universally believed to be the only part which does imbibe moisture, the unripe ends or fibres, is the only part which does not imbibe moisture." ! This is pretty well for a beginning. "What faith," we may ask in the Colonel's own words, "is the practical man to place in the theorist who puts him up to such secrets as these?"

* Longmans.

As he goes on, the Colonel discusses the operations of the leaves in a manner that will commend itself to Mr. MURRAY. The carbon, of which plants contain so much, is obtained, says the Colonel, from the soil by the roots, and not from the air by the leaves. Still this does not entirely deprive the leaf of its supposed offices, for, as the Colonel picturesquely says, "the leaf is the turntable which shifts the sap from the up to the down line in summer, as the bud is this turntable in the winter. Summer and winter this traffic is constant; but as it is less in winter, so the plant and staff required to work it is less. Keep your turntables in order or lose your traffic." Unlike Mr. MURRAY, therefore, Colonel GREENWOOD believes in a downward current and a downward growth, and to make the matter plainer it may be well to cite his *ipsissima verba*:—

"That the growth in the girthing, or diameter of trees, is a downward growth, that is, from the descending sap, or at least that the descending sap is necessary for the growth in girth, seems clear from this: If a ring of bark is taken off round a branch of a tree, so as permanently to lay bare the wood, and to intercept the return of the sap through the bark, as long as the branch lives it will continue to increase in girthing above the ring, but not below it; and when such a branch is sawed in two, lengthwise, each additional annual layer may be counted above the ring, but none below it. But if the growth in girthing were deposited from the upward sap, the parts of a branch below the ring would be more favourably situated for it than the parts above the ring; also, if notches are made up a stem, the new growth comes first on the highest, and descends in succession. From these facts it is believed that, after the sap has been elaborated in the leaf, in its descent through the bark it deposits the new growth in girthing. If, however, the sap is elaborated solely in the leaf, and if the growth in girthing is deposited solely from the descending sap in the bark, the growth in girthing of the Plum-stock of a grafted Peach-tree should be Peach; but the stock remains still Plum, its roots Plum, its shoots Plum, and its suckers Plum. On the other hand, if the elaboration were wholly in the root or stem, and the new growth in girthing from the upward sap, the wood and leaves of the Peach would become Plum. But purple Beech and variegated Sycamore grow forever unchanged, though engrafted on common stocks, as a single branch of a plant accidentally variegated will for ever retain its character.

"When Peach scions are grafted or budded on Plum stocks from 4 to 5 feet high, the Plum stocks taper in the usual way, from below upwards; but in the course of years the growth of the Peach appears to overpower the stock, and it will be seen to taper from above downwards. This over-growth says distinctly that it comes from above; but that this over-growth is Plum, not Peach, says as distinctly that it is not solely from above."

The facts just quoted are beyond question. The exceptions, as Mr. MURRAY says, are too few to be of importance from our present point of view. The facts are relied on alike by Colonel GREENWOOD and by Mr. MURRAY, but the use they make of them is rather different. Here, then, we have something like a conflict of opinion, while the facts remain unchanged, *tant pis*, for the theories in this case. Since the original publication of Colonel GREENWOOD'S book much has been discovered and written concerning the source of carbon and the way in which it enters the plant. The mode of growth, too, of the wood, which formerly excited so much diversity of opinion, has been, thanks mainly to M. TRÉCUL, so far explained that the diversities in question are now all but non-existent. The Colonel, or his editor, appears to be quite unaware of this, and a book, originally published some thirty years ago, is, very unfairly to its author, allowed to see the light not only without any change of text, but without added comment or explanation.

The growth of wood, according to TRÉCUL'S observations, takes place as it were locally. It is not necessarily a downward process, beginning above and travelling downward. Wherever there are cells, vegetable bricks if we may so call them, capable of growing and sub-dividing, there, if conditions be favourable, growth will take place. The scion and the stock are both invested with a layer or layers of these growing cells—each has its own zone of cells capable of division. Hence it is no wonder that when the stock-cells divide and grow that the product is represented by cells of similar character, and that when the cells of the scion grow they reproduce the scion. Cells have an individuality of their own—they act in common with others on occasion—they feed on the same food, have the same structure, grow in the same way, but for all that they "behave," as the phrase has it, differently. Our own cells afford a parallel illustration. We have blood-cells, nerve-cells, epidermal-cells, gland-cells, and so forth, all originally and fundamentally the same, and nourished with precisely the same food, but each retains its own individuality. The cells of the liver do not take on themselves the office filled by the nerve-cells; neither, when they grow and multiply, do they produce anything else than liver-cells. It is in this distinct individuality of the cells, or of certain groups of cells, that we must, we believe, look for the explanation of very many of the phenomena of plant life. Some of these phenomena are common to the whole plant, others are restricted to particular cells. A supply of food is a requisite of all and every portion of the living plant. What particular use is made of that food, however, depends on various circumstances, of which none is more potent than the individual requirements of particular cells.

—— WE publish in our present issue the genera results of an inquiry throughout the United Kingdom as to the condition and prospects of the POTATO CROP. Speaking generally, we may say, on the evidence obligingly furnished us by our correspondents, that the crop will prove an average one, although the tubers are small, and from ten days to a fortnight later than usual. The Potato disease has made its appearance almost everywhere more or less, and in some cases in an aggravated form.

—— We have received several letters on the subject of alleged malpractices at ORCHID SALES at Stevens' Rooms, in addition to those already published. The charges imputed are in some cases of so serious a nature that the attention of the auctioneer and of the vendors must be called to the subject, in order that an explanation may be afforded or a remedy supplied.

—— It's an ill-wind, they say, that blows no one any good. The recent confusion of days and dates at South Kensington brought Mr. TURNER to London on Tuesday last, with a couple of boxes of NEW PICOTEES, which he could not exhibit as there was no meeting, and so we had the pleasure of a quiet survey of their lovely contents. Here are our notes respecting these novelties:—Morna (FELLOWES) is a fine medium edged red, of full average size, the white very pure, the marking even and well-defined, and the edge smooth: a very choice flower. Lothair (FELLOWES) is of the same colour, but with a much heavier edge; it is also a larger flower than the last, and has a pure white ground and well-defined marking, but here and there shows a slight roughness on the edge. Princess Mary (FELLOWES) is a full average-sized light purple edge, perhaps rather too full for some tastes, but smooth, pure, and with a clean wire edge of colour. Idalia (FELLOWES) was past its best, but judging from one young undeveloped flower it is a very promising and very pure light rose-edged flower, which the older examples show to be rather over average size. Estelle (FELLOWES) belongs to the full-sized category, and has a light rose edge—so light, indeed, as to be scarcely discernible, and therefore the flower is not an attractive one. Lady Louisa (ABERCROMBIE) is a lovely flower, with heavy rose edge; the petals broad, smooth, and pure, not too numerous, and the markings clear and evenly distributed. Beauty of Cheltenham (ABERCROMBIE) is a light-edged purple, full and large, fairly smooth on the edge, and with a neat and even marking. Miss Frowd (TURNER) is a large, heavy, red-edged sort, very full and high-centred, smooth, with the edge rather irregular, but bright and clear. Whether all these will prove to be acquisitions time will show, but most of them would have taken an

honourable place in any show stand, and appear to be distinct and good—worthy acquisitions to a most charming class of flowers.

—— Dr. Wittmack recently brought to the notice of the Horticultural Society of Berlin fruits of an Indian Crucifer, the seeds of which are now imported into Germany for the large percentage of oil they contain. According to Dr. Wittmack they belong to Sinapis glauca of Roxburgh, which Hooker (*Flora of British India*, i., p. 156) regards as nothing more than one of the many cultivated forms of Brassica campestris. The seed is said to yield 35 kilogrammes more oil from 1000 kilogrammes of seed than Rape; and the oilcake from the refuse is, according to analysis, very nutritious, containing 34 per cent. of protein and 10 per cent. of fat.

—— Mr. Bernard Dyer, F.C.S., Member of the Society of Public Analysts, of 17, Great Tower Street, London, has been appointed Analytical and Consulting Chemist to the Nottinghamshire Chamber of Agriculture. Mr. Dyer holds similar appointments in connection with the Devon County Agricultural Association and other kindred societies.

—— Several plants of Forsythia suspensa are well established on one of the walls at Kew, growing near the top without communication with the soil. In this position they were self-layered from a tree removed during the past spring. All are growing freely, and do not appear in the least to suffer from drought.

—— The French papers record the death of M. Pancher, well known as a botanical collector in New Caledonia, and M. L. Maout, the author of some excellent educational works on botany, and the *collaborateur* of M. Decaisne in the preparation of the text-book translated by the late Mrs. Hooker under the title *Descriptive and Analytical Botany*.

—— Mr. Andrew Murray writes us hoping that the example set by our correspondent "D.," in our last issue, stating his views and experiments on the Circulation of the Sap, may be followed by others; and he suggests that instead of his attempting to answer them piecemeal, both they and many other such contributions in other journals should first be taken into consideration by the sub-committee appointed by the Royal Horticultural Society for the consideration of the question.

—— There is no phase of plant life more interesting to gardeners than germination. In the *American Journal of Science and Arts* for July, 1877, Dr. Asa Gray describes the Germination of Megarrhiza californica—a cucurbitaceous plant having very large fleshy roots. This same plant was described and figured by Naudin, from living cultivated specimens, in 1859 (*Annales des Sciences Naturelles*, série 4, vol. xii., p. 154, t. 9). He called it Echinocystis fabacea, the specific name being given in allusion to the form and size of the seeds, which, Naudin says, one would take at first sight for those of a leguminous plant rather than those of a plant of the family to which it really belongs. The plant, it may be added, proved quite hardy in the climate of Paris; but it is of botanical interest only—that is to say, it possesses no decorative beauty. Dr. Gray states that on germinating some fresh seeds this spring he was surprised to find that they came up in the manner of Beans. Instead of remaining underground, as from the great thickness of the cotyledons would have been expected, the body of the seed in its shell was raised well out of the soil upon what seemed to be a well developed radicle, like that of a true Echinocystis. If the cotyledons had expanded, though remaining fleshy in the manner of Phaseolus, the difference between this and Echinocystis, with cotyledons truly foliaceous in germination, would be much less than had been supposed. Dr. Gray waited long to see if this would occur, but in vain, as well as for the appearance of the plumule from between the bases of the fleshy cotyledons. After the lapse of about a fortnight the plumules of those germinating plantlets in a pot appeared separately, and on exposing the whole to view it was seen that the plumules came forth from the base of what appeared to be a radicle 2 or 3 inches long, and below this the thickening of the root, which attains enor-

Fig. 29.—The "Fulham Oak." (see p. 139.)

mous dimensions in old plants, had already commenced. A large amount of the nourishing matter stored up in the cotyledons had been carried down to the root, and used in its growth as well as in that of the plumule. The latter came from a cleft at the very base of the seeming radicle, which otherwise appeared to be solid. But on cutting it across towards the base this was found to be tubular, and later, when more spent, was separable from above downwards into two. This, therefore, says Dr. GRAY, is a case in which long petioles to the cotyledons (of which there is no appearance in the seed), connate into one body, are developed and greatly lengthened in place of the radicle which is thus simulated.

—— LILIUM EXIMIUM (longiflorum var.) is in great beauty in pots in the Temperate-house at Kew. On a single stem are eleven expanded flowers, and in one of the pots are seventeen flowers. The pots are 24-sized, and in each was placed a single bulb.

—— Cutch, or Catechu, and Gambier, or Terra japonica, are two IMPORTANT TANNING SUBSTANCES, the first imported from India, and the second chiefly from Singapore. Cutch is produced by cutting up the wood of Acacia Catechu into chips, boiling them, and evaporating the fluid, so as to form an extract, which is made into blocks or lumps and packed in bags or mats for exportation. As it appears in commerce it is a brown, somewhat resinous-looking substance, breaking with a dull fracture and having a strong astringent taste. Its use chiefly is for tanning purposes, and it is also used in small quantities in medicine as an astringent. The quantities of this product imported in different years varies much, but in the year 1874-5 191,891 cwt. were sent from India. Its average value when exported is said to be about 15*s.* per cwt. About three-fourths of the whole quantity comes from the Burmah ports, and a large proportion from the forests beyond the frontier in Upper Burmah reserves of Catechu-producing forest have been formed in Pegu, but outside these reserves the destruction of the trees for the purpose of Cutch manufacture goes on unchecked as before. From the fact that the demand for Cutch is increasing, and from the certainty of a decrease in the supply from beyond the frontier, it is urgently necessary to demarcate extensive tracts of Cutch-producing forest in Burmah, so that a permanent supply of the article may be ensured. The tree is stated to grow in all parts of India proper, from the Indus in the Punjab to Ceylon, and Cutch is manufactured in many places in South and Central India, and in the sub-Himalayan forests as far north as the Ganges; but not much of the Cutch produced in India proper is exported. Gambier is a very similar product to Cutch, having much the same appearance and being used likewise for tanning and dyeing. It is produced by boiling the young shoots and leaves of Uncaria Gambir, a large climbing shrub, with hard woody hooks or recurved spines. It is cultivated largely in the Straits of Malacca, the product, Gambier, fetching about the same price in the English market as Cutch. Considering the outcry that has been made lately on the scarcity of tanning materials it is satisfactory to know that in India the more general cultivation of the Acacia Catechu for the purpose of furnishing increased and continued supplies of Cutch is occupying some attention.

—— CALANDRINIA NITIDA is one of the prettiest of all annuals in flower at Kew. The leaves are deeply glaucous, growing in a tuft, and the flowers pink, of large size, growing on stems rather more than a foot in height.

—— "ON BLACK MOULDS" is scarcely a title to attract the attention of the general reader, but under such a title we have before us a reprint of a paper read by Dr. M. COOKE before the Quekett Microscopical Club, which contains some good advice addressed to those microscopists and collectors who plod along without any specific object in view, who simply go over the same ground that hundreds have traversed before them, and who never get beyond amusing themselves.

—— The SCOTTISH HORTICULTURAL ASSOCIATION bids fair to become a valuable institution. Though only established in March last, four meetings have been held for the discussion of various matters of garden interest, which have been well attended. More than 150 members have enrolled their names. The subscription is fixed at the moderate rate of 2*s.* 6*d.* per annum.

—— The death of Dr. PIGEAUX, the librarian of the Central Horticultural Society of France, is announced.

—— A contribution to SCIENCE from, and printed in, the city of MEXICO, is an occurrence of such rarity that it demands some notice if only to direct to it the attention of scientific men in Europe. But it has another claim on us, as it includes some notes on the flora of a portion of the State of Hidalgo, from Parchuca through Actopan, Ixmiquilpan and Zimapan to Jacala. It is an octavo tract of fifty pages, with a map and coloured figures of Hiræa Barredæ, a new species, and of a species of the beautiful genus Hauya, perhaps H. elegans; and it bears the title of "*Noticia Cientifica de una paste del Estado de Hidalgo*, por MARIANO BARCENA," Professor of Paleontology and Geology in the national museum. It treats of the physical geography, geology, fauna and flora of a narrow strip of country bordering the road leading through the towns mentioned above. The botanical portion is mainly limited to an account of the characteristic plants on different formations at different altitudes, with a systematic list of the species. Speaking of the forest vegetation of the mountain region of the southern part, the author mentions Liquidambar styraciflua as one of the commonest trees, and as attaining truly majestic dimensions. He measured some which were from 100 to 130 feet high; and he adds that the elegant outline of this tree and its beautiful palmately lobed leaves imprint a special character on the woods of these regions. We have repeated what he has to say respecting a tree that he greatly admired, and we will follow it with a translation of a short paragraph relating to a curious bird, called *El Centzontle*. "The centzontle," he says, "is a kind of dictionary or singing catalogue of the birds of the locality in which it lives. It learns all the songs it hears, and amuses itself by repeating them in a more or less regular order, frequently interrupting this sequence with a previously forgotten or recently acquired note." The writer suggests that the specific name of polyglota should be given to this bird, which possesses the power of "pronouncing the idioms of all the other birds." The last chapter is devoted to statistics of population, education, natural productions of the country, &c., from which we may make some extracts on some future occasion.

—— In the backwoods of America, as stated in the *Indian Agriculturist*, the following method of REMOVING THE STUMPS OF TREES has proved very efficacious. In the autumn a hole 1 inch or 2 inches in diameter, and 18 inches deep, is bored into the stump and filled with 1½ oz. of saltpetre, dissolved in water and the aperture closed. In the following spring half a gill of kerosene oil is put into the same hole and lighted. The stump is said to smoulder away without blazing, and the fire extends to every part of the roots, leaving nothing but ashes.

—— On the subject of the CULTIVATION OF CAOUTCHOUC-YIELDING PLANTS IN INDIA a recent report says that it will not be possible to form an estimate of the future yield for many years to come. But considering that the future supply of Caoutchouc to the trade of the world is uncertain, and that the consumption of the article is steadily increasing, it seems right to continue these plantations of Ficus elastica on a large scale in one province until further experience may teach us another and more remunerative plan of producing Caoutchouc in India. The experiment hitherto made to raise the two most valuable Caoutchouc-producing species, Hevea brasiliensis, a huge tree producing the best Para rubber and Vahea, a climbing plant which produces the Madagascar Caoutchouc, tend to show that, in Bengal at least, the long dry and hot season and the low temperature during the winter months are against them. At present, therefore, we must regard the Ficus elastica as the most important, if not the only Caoutchouc-yielding tree for India. This, as far as our information goes, is the present state of the question, and Assam being in the midst of the natural range of the tree, is unquestionably the province where its cultivation has the greatest chance of success. Ficus elastica is also indigenous in Sikkim, but in the present state of forest administration in India, with a small surplus revenue, and a very small staff, which is barely sufficient to do justice to the most pressing works, it is absolutely necessary to concentrate in a few places all operations which require close supervision and a large money outlay at starting, and not to scatter experimental plantations broadcast all over the country. The quantity of caoutchouc from Ficus elastica exported from Calcutta in 1874-75, and produced in the forests of Assam and Sikkim, amounted to 15,893 cwt., the value of which is estimated at from £6 to £7 per cwt.

—— With reference to the COLORADO POTATO BEETLE, which promises to be "the lion" of the "big Gooseberry" season, we have been favoured by Messrs. HOOPER & Co., of Covent Garden, with the following extract from a letter received from Messrs. B. K. BLISS & SONS, the well-known American Potato exporters:—

"We see by the papers that the Colorado beetle has made its appearance in England. Your people need not be frightened—a few doses of 'Paris green' will fix them. It was feared a month ago that the crop would be destroyed with us, but they were soon disposed of, and the Potato crop never looked better than it now does. From present appearances there will be an abundant crop this season."

Messrs. JAMES GIBBS & Co., of 16, Mark Lane, E.C., and Mr. LOUIS STOLLWERCK, of 145, Cannon Street, E.C., have favoured us with a model of the Colorado beetle in all its (six) stages, manufactured by Messrs. STOLLWERCK BROS., of Cologne, by order of the German Government, after the specimen and larvæ found near Cologne at Mulheim-on-Rhine. The retail price of hese models is 2*s.* each, and, with a view to make the British agriculturists thoroughly acquainted with this insect, so that it may be easily recognised should it reach our shores, Messrs. JAMES GIBBS & Co. have purchased 10,000 of these models, which they are distributing, free of all cost, to the principal landowners and leading agriculturists throughout the United Kingdom. Seeing how much is being done to make the appearance of the insect generally known, there should be little excuse for mistaking a friend for a foe, as was done at Hereford the other day.

—— On the occasion of the recent exhibition of the Kirkcudbright Floral and Horticultural Society, Mr. JAMES SERVICE, nurseryman, Maxwelltown, was presented with a handsome marble timepiece, along with a silver teapot for Mrs. SERVICE, in acknowledgment of the hearty interest which he had always taken in the exhibitions of the Society, and of his exertions to promote their success. Lord SELKIRK, who made the presentation, remarked that he understood Mr. SERVICE had been one of the most zealous promoters of the exhibitions, and he thought it alike honourable to himself and creditable to his brother horticulturists that his exertions should be thus publicly acknowledged.

—— The third part of the third volume of HANSTEIN'S *Botanische Abhandlungen* is wholly devoted to a paper embodying the results of the joint researches of the late Dr. A. BRAUN and Dr. HANSTEIN, ON THE REPUTED PARTHENOGENESIS OF CŒLEBOGYNE ILICIFOLIA. To Mr. JOHN SMITH, so many years Curator of Kew Gardens, belongs the credit and honour of having first observed and recorded (*Transactions of the Linnean Society*, xviii., p. 509, t. 36) the singular phenomenon exhibited by this Australian plant, of producing perfect seeds without any apparent action of poller. Since the publication of this unexpected occurrence several other observers have paid some attention to the subject, and several other supposed instances of parthenogenesis have been recorded. In spite of all this corroboration there were many—and doubtless there are still—who would not accept the fact because it was contrary to long-cherished theories. Parthenogenesis has been observed, it is believed, in Xanthoxylon Bungei, by DURIEU; in X. alatum, by Hanbury; Dodonæa hexandra, by FR. VON MUELLER; Aberia caffra, by ANDERSON; Carica Papaya, by BERTHELOT; Ficus, by GASPARRINI; Excœcaria marginata and Torreya nucifera, C. BOUCHÉ; Cucurbitaceæ, NAUDIN; Cycas, A. BRAUN; and the subject is now exhaustively treated in the place quoted above.

THE POTATO CROPS OF 1877.

Scotland.

Aberdeen.—Potatos here are fully a fortnight behind the average seasons. The old Ashleaf I am now using are particularly fine, and with me all the sorts seem very luxuriant. In this neighbourhood I only hear of one instance of disease—a patch a few yards square, and 2 miles north. During the past week the weather has been all that could have been desired, from which I am in hopes the disease will be staved off till the tubers are more matured. *R. Farquhar, Fyvie Castle Gardens, July* 28.

—— Potatos now present a fine appearance, although fully a fortnight behind time. I am afraid of disease attacking them soon, the weather being so dull and damp and the haulm so succulent. *G. Donaldson, Keith Hall, Inverurie.*

Argyll.—The only drawback to the Potato crop in this district is its unusual lateness, for otherwise the plants look vigorous and promise well for a crop, both on the low ground and high-lying land; and if anything could show more clearly than another that the vital energy of the Potato is not exhausted, it is the circumstance of the Potato retaining, as it does at present, the healthy spread of foliage in such cold, sunless, wet months as June and July have been, measuring as they did 7 and 8 inches rainfall respectively. Of course everything depends on the weather in the future, not only for the Potato, but for every other crop. At present the weather could not be worse than it is. *John Cale, Inverary.*

Banff.—The Potatos are healthy and vigorous, both in gardens and fields everywhere in this district, but later than usual by ten days or a fortnight. *J. Webster, Gordon Castle, July* 26.

Berwick.—The Potato crops are not looking so well as usual, and are at least fourteen days later than usual. *Peter Loney, Marchmont House, Dunse, July* 26.

Caithness.—The Potato crop is quite free from disease, but, owing to the cold spring, they are three weeks later than usual. If we get favourable weather there is every prospect of a heavy crop. *J. Sutherland, Langwell, Berriedale, Wick, July* 30.

Clackmannan.—Early Potatos are very good, and other crops looking well but late. *Thomas Ormiston, Alloa Park Gardens.*

Dumbarton.—Potatos look well in this district, and no disease has appeared up to this date. *James Mitchell, Camis Estean, Helensburgh.*

East Lothian.—Potatos are looking well, but ten or fifteen days later than ever I have seen them during thirty-five years. On heavy soils in East Lothian they are a very indifferent crop in the fields. *Alex Shearer, Yester Garden, Haddington, July* 31.

Fife.—The appearance of the Potato crops is generally good, and a good average yield is expected. The fields generally have a full healthy growth. *Robert Foulis, Fordell, Inverkeithing.*

Forfar.—The lateness of the season has been much against Potatos here, they are therefore small and poor in quality as yet. The haulms are, however, remarkably strong and healthy, and, with a little more time and heat, good results may be expected. No signs of disease here, nor in the neighbourhood, so far as I can ascertain. *George Johnstone, Glamis Garden, July* 31.

Lanark.—The Potato crops have still a very healthy and luxuriant appearance both in gardens and fields, and no trace of disease is as yet observable on the tubers. *Andrew Turnbull, Bothwell Castle, July* 27.

Mid-Lothian.—Early Potatos have been fully three weeks later than usual in being fit for use, but they are now of good size and excellent quality, with no taint of disease, and ten days of fine weather would put them past danger. Late Potatos are growing luxuriantly, and promise a fine crop, and although the weather has, till within the last few days, been favourable to the appearance and spread of the disease, still there is no symptoms of it, and if the present dry breezy weather continues they may get over the critical stage without any serious injury. Some strong healthy kinds are blooming profusely. Among a few sorts "curl" has appeared to a slight extent, but is not spreading, and is not nearly so bad as it has been in some recent years. Early Rose and some other American sorts seem to suffer most from it. Hay is a heavy crop, but suffered badly from heavy rains while being made. Grain crops look very promising, but the harvest will be ten days later than usual, even with fine weather till then. Turnips are looking first-rate. *M. Dunn, Dalkeith.*

Moray.—Early Potatos are not a good crop this season, owing to the summer being so cold and wet. Late kinds promise well. *Donald Cunningham, Dornaway Castle Gardens, July* 28.

Nairn.—I can scarcely say how they will turn out yet. They seem to be prolific but very late, and if this damp sunless weather lasts much longer I am afraid our old enemy the disease will spoil them. The field Potatos about here look quite healthy, but smaller in the stalk than usual. Dry and sunny weather is much wanted for all crops, whether in the field or garden. *J. Maitland, Cawdor Castle, July* 30.

Perth.—The Potato crop has not looked worse here for many years. Amongst early kinds nearly a half are diseased. *John Browning, The Gardens, Dupplin Castle.*

Renfrew.—Potatos are everywhere round here in want of good weather. In gardens they look well and turning out a fair crop, with no sign of disease. In fields, however, they are not up to their usual appearance, being in many cases stinted-looking, and the braird did not start as regular as the farmers would have wished. They are much later this year, and with dry weather they, no doubt, would improve to a great extent. *John Methven, Blythswood.*

Ross-shire.—The crops in this district are very vigorous; the haulm is getting very strong, and there is no disease. *James Laing, New Tarbat, Parkhill, July* 28.

Sutherland.—No symptoms of disease have as yet appeared in this neighbourhood; the haulm seems healthy and strong. Early kidneys are, however, scarcely so strong as usual, and I have never observed such a large proportion of the sets come up with the crop quite sound as is the case this season. *D. Melville, Dunrobin Castle Gardens, July* 30.

Wigton.—Potatos look well; no disease is to be seen in this district, and no report of its existence has reached me; but, like every other crop, they are from two to three weeks later than usual. *Archibald Fowler, Castle Kennedy, July* 26.

England—Northern Counties.

Northumberland.—Our Potatos are very good both in quantity and quality. No sign of any disease yet. Our main sorts are Rivers' Royal Ashleaf and Myatt's Prolific. I have grown them three years, and they have never failed in being a good crop. *William Turner, Caphéaton, Newcastle-on-Tyne, July* 31.

—— A good and plentiful crop, with no appearance of disease as yet. *A. Ingram, Alnwick Castle Gardens.*

Cumberland.—The Potatos in this district look well, and in most cases have a large quantity of top, owing to the continual dark droppy weather. The first early Potatos are lifting small, and are more soapy when cooked than they have been for a good many years. I have not seen any appearance of disease on the top yet, or heard of any in this neighbourhood. *John Taylor, Isel Grange, July* 31.

Westmoreland.—The Potato crops here look remarkably healthy, but very late. No appearance of disease as yet. *William Shand, Lowther, Penrith.*

—— A good crop, and very healthy. The season in Westmoreland has been very unfavourable to crops in general—much rain, little sun, and the temperature very changeable. *C. Sandford, Underly Hall, Kirkby Lonsdale, July* 31.

Durham.—Potatos look remarkably well, and I hear of no disease at present. *Robert Draper, Seaham, July* 26.

Yorkshire.—Kidney Potatos are good, and free from disease. Late sorts look healthy. *James Fowler, Harewood House, Leeds, Au . 1.*

—— The crops are not so vigorous as usual, and the disease has appeared here and there in the district. The variety called Snowflake was early affected in the foliage in several gardens about here. In some of the plants the stems are quite decayed, and there is no crop at the roots. The rainfall during June and July, up to this date (July 26), has been 4.77 inches. There has been very little thunder. *J. Simpson, Wortley Hall Gardens, Sheffield.*

—— Potatos all looking remarkably well. I am taking them up daily, and can find no signs of disease as yet. *William Lewin, Aske Gardens, Richmond.*

—— The Potato crops are in general very promising at the present time, both in the garden and the fields, but the early kinds were nearly three weeks later in coming into use than they have been for some years, owing, no doubt, to the long continuance we had of cold dull sunless weather; up to the present time they are free from disease. Dry bright sunshiny weather would now be beneficial to them. *M. Saul, Stourton, July* 31.

—— Potatos, as with most things here, are very late; they are however looking very promising. I have not yet seen anything of the disease, nor heard anything of it in this neighbourhood. *John Young, Wentworth, Rotherham.*

—— Early Potatos have been a good crop, but quite a fortnight later than usual. The disease has shown itself in several places, especially in wet low-lying situations. Later crops look fairly well, but not so much so, accordingly, as the early crops. There are large quantities of Potatos grown within a few miles of this—Scotch Regeot is the variety most grown; the seed is purchased in Scotland, but several growers tell me they get the best crops form seed grown one year in England. *H. J. Clayton, Grimston.*

—— Healthy, and promising well for a good crop. I have heard of but few complaints yet of the disease. *Robert C. Kingston, Brantingham Thorpe, Brough.*

Lancashire.—Potatos being late, I can give no opinion as to how they are likely to be in regard to disease. Vegetation in this part is at least three weeks later than I have ever known before. *Henry Lindsey, Huntroyde Gardens.*

—— Early Potatos are not so good as usual. There are a good many blanks in the rows, and the tubers are small. Later crops are looking very well. No sign of disease yet. *W. B. Upjohn, Worsley Hall Gardens, Manchester, July* 26.

—— Potatos look well generally, but the kidney sorts run rather smaller than last year, and a few diseased ones have been found. As yet no round ones have been dug. Everything about here is later than usual. *F. H., Knowsley, July* 27.

—— Potatos, like other crops, are unusually late; early crops have been unsatisfactory; numerous, but uneven in size. Late crops look promising, and up to the present time are free from disease. *A. Jamieson, Haigh Hall, Wigan, July* 31.

—— Potato crops here are abundant, the quality and yield excellent, and no appearance of disease. *W. Hinds, Otterspool, July* 30.

Midland Counties.

Cheshire.—The Potato crop this season may be considered good so far. Early sorts have improved much this last week; second earlies are scarcely commenced on yet, owing to the lateness of the season, but to all appearance there will be a good yield. Late ones look well. Very little disease at present. *Alfred J. Grant, Withington Hall, Chelford, July* 30.

—— The crop may be said to be about an average. There is little or no sign of disease, but it is early yet in the season for it to make much appearance. *R. Mackellar, Abney Hall, Cheadle.*

—— Up to the present time the Potato crops have been very good in quantity and quality, but about a week later than usual in coming in for use. The plants and tubers are healthy and free from disease, but I have just seen some Myatt's Prolific and Dalmahoys, growing in a rather damp and shaded place, which showed the usual symptoms of disease on the leaves and stalks, and on examining them a few diseased tubers of the Dalmahoys were found, but none of the Myatt's were diseased. I have also heard of the disease having made its appearance in some of the gardens in the neighbourhood, but it is as yet rather too soon to judge as to what extent it is likely to prevail. The kinds I find to succeed best are Mona's Pride, Veitch's Improved Ashleaf Kidney, Dickson's Improved ditto, Early Coldstream, Yorkshire Hero, and Bryanston Kidney. *Wm. Whitaker, Crewe Hall, July* 30.

—— The crops in this district are good, though late. I have not seen any diseased ones in the gardens here; have only heard of its appearance in one or two places. *W. Muir, Oulton Park, Tarporley.*

—— Potatos look remarkably well, especially the later kinds. Very little disease has shown itself yet. *T. Selwood, Eaton Hall Gardens, Chester, July* 28.

Derby.—The Potatos around this district look very healthy, and free from disease. Our early varieties

turned out well, but the tubers were smaller than in former years. The late crops are promising an excellent yield with well formed and large tubers. *J. W. Bayne, Kingston Hall Gardens, July* 26.

—— Up to the present time the Potato crop throughout this district looks most promising, and with fine weather will be unusually good. We find Veitch's Ashleaf the earliest, Rivers' Royal the heaviest cropper, and Hammersmith Kidney of the best quality. Fox's Seedling Round is an enormous cropper. All the American kinds are deficient in flavour, no better croppers, and quite as subject to disease. *H. Goodacre, Elvaston, Aug.* 2.

—— The crops in this neighbourhood look well, but yesterday a neighbour of mine showed me some of Myatt's Prolific very much destroyed with the dry rot. *William Brown, The Gardens, Bretby Park, Burton-on-Trent.*

Notts.—The Potatos are looking better than ever I remember them at this time. No signs of disease as yet. What we have been getting of Royal Ashleaf has been very fine-flavoured. *A. Henderson, Thoresby Park, July* 30.

—— Up to the present we have seen no signs of disease, but they are late. *Henry Gadd, Wollaton Hall Gardens, July* 30.

—— The Potato crops in this district are at present looking healthy, and the early sorts now being lifted are productive and excellent in quality, Some symptoms of the fungus have appeared here on Snowflake, but owing to the low temperature in the last two weeks in July the disease has been arrested. A great rise in the temperature, however, occurred on the 29th, and if a rainy or showery period sets in, I am afraid the Potato crops will be doomed again. Last year the disease first appeared on some of the American varieties of the early ripening section, and on a standard sort of Mr. Fenn's raising, named Rector of Woodstock. This was in the end of July, but the weather in August was very warm and dry, and the disease made no progress till the heavy rains set in in September, when the late varieties of Potatos were attacked, and great losses were sustained by large growers in the warp lands in this district. *William Tillery, Welbeck.*

Salop.—Potatos are an excellent crop, but disease has made its appearance in the neighbourhsod on wet land. *William Pratt, Hawkstone Gardens, July* 30.

—— The Potato crops are good though late. I found a few diseased tubers on July 20; the fatal black spot is showing itself amongst the foliage and stems of the late Potatos, though it does not appear to be spreading very fast. *George Pearson, Attingham Gardens, Shrewsbury, July* 31.

—— Our early sorts are somewhat small this year, which I attribute to the dry and cold weather in May, but I am glad to say they are sound in every respect at present. I fear the rains will cause them to renew their growth till late this autumn. Late Potatos look remarkably well at present, and I anticipate a good crop, but it is too soon to speak definitely as to produce or quality. *A. S. Kemp, Haughton, Shifnal August* 1.

Stafford.—The Potatos, both early and late, are looking well in this district, but are quite a fortnight later than usual. I have heard of a few cases of the disease, but have not witnessed any myself. *O. Thomas, Drayton Manor.*

—— Potato crops look exceedingly well generally; early varities are a fine crop, especially Lee's Hammersmith Kidney, which is one of the best early sorts that has come under my notice. Late sorts are looking very promising, and apparently free from disease. *E. Simpson, Wrottesley, Wolverhampton.*

—— Potatos are excellent, free from disease and looking remarkably well. Late crops have very much improved since rain fell. Carrots and Onions are very much attacked with grub. The second Peas are poor, and want sunshine to bring them on. First earlies did well, and late Peas will be good. *Thos. H. Rabone, Alton Towers.*

Leicester.—The Potato crop was exceedingly promising, but the disease has made its appearance here, and in most of the gardens in this neighbourhood. *M. Henderson, Cole Orton Gardens, July* 30.

—— Early Potatos have given a fair produce. Later kinds under favouring showers have thrown up a large amount of haulm, which at present is very green and vigorous. No sign of disease has appeared. *W. Ingram, Belvoir Castle Gardens, July* 29.

Warwick.—This is not by any means a Potato neighbourhood seeing that its culture is mostly confined to gardens and allotment gardens, but generally speaking about here the Potato crop may be pronounced a fair and prosperous one, rescued perhaps from partial failure by the timely rains which fell during the first weeks of July. I have heard of but one echo of disease so far, and nothing at all of the Colorado beetle. This beetle, according to the *Illustrated London News* of July 14, appears to enjoy no larger immunity from the preying of other smaller beetles than the flea immortalised in rhyme :—

"Little fleas have smaller fleas
To worry and to bite 'em;
Smaller fleas have lesser fleas—
And so *ad infinitum*."

With the assistance of the said Uropedo americana, which makes it a special business to plague the Colorado beetle to death, let us hope that when the enemy does appear amongst us that we shall be enabled to show him a front which knows nothing but total extermination, bag and baggage. *W. Miller, Combe Abbey.*

—— The tops are looking healthy, and as yet I have heard of only two or three small instances of the murrain in this district. This is also the case here with only such as Lee's Hammersmith Kidney and Alpha—sufficient, however, to create alarm as to the state of ensuing crops. *William Gardener, Eatington Park.*

Beds.—Potatos in this neighbourhood look strong, and promise heavy crops. Disease is breaking out in many places, both in the haulm and tubers. *A. McKay, Woburn Abbey, July* 28.

—— The crops are looking well at present, but the disease has made its appearance in places. A dry time will now be very beneficial. *G. Ford, Wrest Park, Ampthill.*

Bucks.—We have already lifted early plantings of such sterling sorts as Veitch's and Rivers' Ashleaf Kidney, also another named Princess Louise, "Gilbert," and found these kinds to be wholly free from disease, and the crop and quality to be all that can be desired. The appearance of later kinds are also still promising, but there are evident traces of the presence of disease alreadyin the haulm of some kinds, especially in the American varieties. In the surrounding district the disease is unfortunately very rife, and the tubers already much affected, Early Rose being amongst the worst in this way. We shall proceed to lift all early kinds which were planted at the ordinary time without delay, in order to avoid contagion. *Geo. T. Miles, Wycombe Abbey.*

Herts.—Potatos look well everywhere in this neighbourhood up to this time. *Anthony Parsons, Danesbury, Welwyn, July* 26.

Oxford.—Within the last few days some of the American sorts, particularly Early Rose and Snowflake, show unmistakable symptoms of the disease. The leaves have got much spotted, and even at a distance smell disagreeably. *John Greenshields, Sarsden House, Chipping Norton.*

—— Early Potatos were fully ten days later than usual, and on the whole an inferior crop. We had them all cut down to the ground with spring frosts. Later kinds grown in the fields look very promising, and there is no sign of disease at present. *Isaac Watson, Nuneham Park.*

—— A large portion of the early Potato crop suffered much by the severe frosts of the first week in May. Such as escaped are an excellent crop of fine quality — Veitch's and Myatt's Ashleaf well sustaining their standard reputation. Rector of Woodstock, Early Market, and other of Mr. Fenn's seedlings, are also a grand crop. Their skins are quite clear, and up to this time we have not found a diseased one. This may be the result of the good dressing of gas-lime with which the ground was dressed previous to planting, as I hear of disease being found in several places in the immediate neighbourhood—indeed one's nasal organ corroborates this. Late kinds all look remarkably well in fields and cottagers' allotments alike. *W. Crump, Blenheim Palace Gardens, July* 30.

Northampton.—Potato crops are looking very well, and there is every appearance of a very heavy yield. Myatt's and Victorias are the principal sorts grown here. Last year I lifted my Victorias the third week in August, and laid them in small lots, and out of a large quantity I had not a dozen bad Potatos. Others in this neighbourhood that left them in the ground until the autumn lost nearly all. *John Smith, Althorp Gardens, July* 28.

Rutland.—Our crops are very good indeed, with no trace of disease at present, but I am afraid, from the heavy fall of rain which we have had in this neighbourhood during the latter part of last month (July), which amounted to nearly 4 inches, that we shall hear of the disease before long. *F. Clarke, Barleythorpe.*

—— Good. *Mark Hull, Ayston, Uppingham.*

Eastern Counties.

Lincoln.—Potato crops are very promising in this neighbourhood, some slight cases of disease have been seen, but not of any importance as yet. Early Potatos have turned out well, although they were cut down to the ground by frost in the beginning of May. Early Alpha, Early Sovereign, and Vermont Extra Early very heavy crops; Veitch's Improved Ashtop, a first-class early Potato; Early Bird, a new Potato, very early, with me the earliest of all Potatos and a fair cropper. *D. Lumsden, The Gardens, Bloxholm Hall.*

—— All kinds of Potatos here, both in the garden and field, are good, and show no signs of disease at present. *Isaac Dell, Stoke Rochford, July* 31.

—— The first and second early Potatos yield abundantly, and are free from disease. The late crops about here are very thin in the rows, and the haulm very wiry. *Wm. Hurst, Sowerby Park, Gainsborough, July* 30.

Norfolk.—The crops looked remarkably well until the end of this month, but after heavy rain and damp, cold nights, succeeded by hot sunshine, the old cry is out again. *J. Wighton, Cossey Park Gardens, Norwich, July* 28.

—— Early Potatos are being taken up with an over average crop of good-sized tubers, clean and free from murrain. The Early Rose has been in a great many places arrested in its growth through the haulms being attacked by the disease as in the last two seasons, but the tubers are clean and of a good size; all late varieties are looking extremely well, promising a great crop. They are clear at the present from the effects of the Peronospora, excepting in very damp localities. *Wm. Bishop, Bylaugh Park, July* 27.

Suffolk.—The early sorts of Potato are a fair crop, and free from disease; but I hear that on some of the heavy lands disease is showing itself. The most promising kinds are Snowflake, Vermont Beauty, Peerless, and Early Rose. All the sets came up, have grown well, and, from appearance, I expect a good crop. The showery weather has kept them growing, and as there is no probability of a check for want of moisture we are not likely to have a second start from the tubers, which has been so prevalent for some years past. *Thomas Blair, Shrubland Park, Aug.* 1.

—— Owing to the wet state of the ground, and the cold, unpropitious spring, early Potatos have not been so good as usual, either in quantity or quality, as they were greatly checked in their swelling, and had not sufficient leaf and haulm to develope fine tubers. Late ones, however, have not looked so well for years, as the warm weather and genial rains came at the nick of time to send them rapidly into growth, and since then a fresh heavy fall has taken place that will be sufficient to carry them through, as the tubers are now getting to a good size. Unfortunately disease has again made its appearance, but if the present weather continues it is to be hoped that crops will not suffer to any great extent. Should the spread of this malady be arrested an abundant supply of first-class quality now appears a certainty. *J. Sheppard, Woolverstone Park, Aug.* 1.

—— Ours were all dressed with Salus; they came up very slowly, and with more blanks than usual. Most of them were cut off level with the ground in May, afterwards the east winds and the long drought held them in check, but for the last six weeks their growth has been extraordinary. There is an immense crop of tubers, and a full average of tops at present, all sound, in these gardens. But the disease is abroad in the neighbourhood in rather a new phase—it has made little or no progress on the stems but completely destroyed the tubers in many cases. More of the plants have also died off than usual, though this seems quite different from the disease. *D. T. Fish.*

—— I have not up to the present seen any appearance of disease among our Potato crops; all the early sorts yield well, are good in quality, but rather small, which I attribute to their being cut down by the frost and the long drought which we experienced here after the crops started into growth again. *J. Mill, The Gardens, Rendlesham Hall, July* 30.

Essex.—The Potatos in this neighbourhood are a fair crop, the early ones rather small, being cut down with the frosts. Late ones very promising. The disease has made its appearance during the last few days on the second earlies. *J. Bryan, Audley End Gardens, Saffron Walden.*

—— Early Ashleafs good, and harvested; other second earlies (Snowflakes, Paragon, &c.) now developing a good crop. Rust has made its appearance upon many stocks, but we have only seen one where the real murrain has actually appeared in the tubers. *William Earley, Valentines, July* 30.

—— Very good. *W. Bones, Havering Park, Romford.*

SOUTHERN COUNTIES.

Berks.—The early crop of Potatos was a good one, and the later ones are very promising at the present time. *Thomas Jones, Royal Gardens, Frogmore, July* 28.

—— The crops about here are very good, especially early sorts, which are very clean and full-sized. Later kinds are not so good. Complaints reach us already respecting the disease, which seems to be making considerable progress in some soils. *A. Galt, Aldermaston Court, Reading.*

—— The disease showed itself nearly a month ago on the haulm, but did not spread much till about the 28th of this month, and now most of the American, and also the English varieties with smooth leaves, have got it; those sorts with rough or curled leaves are still clear of it. Very few of the tubers are yet affected. The mid-season and late varieties are much later this year than usual. *Charles Ross, Walford Park, Newbury, July* 31.

Middlesex.—The earlier planted sorts suffered somewhat by the frost. A great many blanks have been caused also by the "curl," or that form of disease on which the resting-spores of the Peronospora were found so abundantly two years ago. Of the true disease, the first spots were observed on July 23 on a plant of Regents. These having been gathered for investigation, no further trace has been observed up to this date. Two fully diseased tubers were, however, found, where no trace of it on the leaves could be found. The disease is spreading fast in the neighbouring market-gardens. Generally, the crop promises to be good. *A. F. Barron, July* 30.

—— At present the Potatos are looking remarkably well; no disease has, so far, shown itself. Early kinds are very good, dry, and of excellent flavour; Veitch's Royal Ashleaf especially so. *T.P., Stanmore.*

—— Potatos in many places came up badly—in some cases, with the early sorts, not more than one-half or two-thirds, and then very weak. On examining these I found that the seed was rotten, leaving the sprouts without any support. These, though they have grown, have few and very small tubers at them. I have seen no signs of disease. The crop is abundant and good in quality, but later than usual. *T. Baines, Southgate, July* 31.

—— The Potato disease has made great progress during the last few days. *John Woodbridge, Syon Gardens, July* 31.

Surrey.—At present the Potato crop presents a better appearance than for two or three years past. *Wm. Denning, Coombe Lane, Kingston-on-Thames.*

—— The crop here is very good; though the early ones were cut down by frost they broke again. We are now lifting some of the best tubers of Covent Garden Prolific, Early Fortyfold, Rivers' Royal Ashleaf, Victoria Kidney; Bresee's King of the Earlies and Fox's Seedling we have had for years. Late kinds are looking well here at present, but I hear rumours in the locality that disease has made its appearance in some damp places, and, as we are near the water, I fear we shall not escape. *William Kemp, Albury Park, Guildford, July* 30.

—— Are looking well, and promise a good crop. Early kinds show signs of disease in places. *J. Child, Garbrand Holl, Ewell, July* 30.

—— Potatos are an excellent crop round here, and very good, though quite a fortnight later than usual. The Potato disease has begun in several places in the haulm, but I have not yet observed any of the tubers touched. *J. Burnett, The Deepdene, Dorking, July* 30.

Kent.—All through this district these are looking very strong and healthy; the early sorts are coming out very clear from disease, and of good size and quality. *John Cox, Redleaf, Penshurst, July* 30.

—— Potatos are looking well. Tubers are already a great size. Early Rose lovely and quite ripe. *Henry Cannell, Swanley, August* 1.

—— Our Potato crops look very promising and quite free from disease as yet. *C. Haycock, Barham Court, Maidstone, July* 31.

—— The Potato crop will be an average one, but the size of the tubers is not expected to be very large. There is no disease at present, but I hear of it in adjoining districts. *Lewis A. Killick, Mount Pleasant, Langley, Maidstone.*

—— The crops look well at present. *R. Gray, Chevening Gardens, Sevenoaks.*

Sussex.—Early Potatos are very fine and free from disease, but I am sorry to say that it is spreading very much amongst late sorts. *John Wilson, Castle Gardens, Arundel, August* 1.

—— At present there is every prospect of a fine crop. *J. Rust, Eridge Castle, July* 26.

Hants.—Ashleaf Kidneys were a fortnight later than usual this year, but there is an average crop free from disease. The principal early kind grown in this part is the American Early Rose, and everybody seems to have a good crop of them, but the disease has made a general attack on the haulm of that variety. The tubers are not affected much at present. I am sorry to say traces of disease are also visible in the haulm of the second early kinds. The late varieties are looking remarkably well, and at present show no signs of disease. *James Taverner, Woolmer Lodge, Liphook.*

—— Early Potatos were very good, but rather small. The disease has just begun its work of destruction in many places, and the haulm of second earlies is fast going. Late sorts look well as yet, but it is too early in the season to make any report on them. *George Harnett, Cadland, Southampton, July* 30.

Wilts.—The Potato crop is light, and the disease in its worst form appeared before the later kinds had made much progress. According to present appearances, I anticipate a Potato famine here before winter. *Wm. Taylor, Longleat Gardens, Warminster, July* 27.

—— The Potato crops are very good indeed, but I am sorry to say they indicate disease in the haulm. *W. Phipps, Bowood Gardens, July* 26.

Dorset.—An excellent crop. Not much affected with Peronospora. *W. F. Radclyffe, Okeford Fitzpaine.*

—— The early sorts are a very good crop, and in most cases will be housed before the disease has done much damage. The late ones have suffered for want of rain; and, owing to their being so backward, and the disease setting in so early, the prospect must be a very poor one. *W. G. Pragnell, Castle Gardens, Sherborne.*

—— The Potato crop, until within the last fortnight, looked very healthy and promising; but a great change has occurred during the past week, the disease having made serious progress, many pieces being stricken down before the tubers are scarcely formed, so that there is every prospect in this neighbourhood of a great scarcity of the poor man's staple commodity. *Henry Munro, Clevelands.*

WESTERN COUNTIES.

Hereford.—Potatos are in very good condition. Some little disease has shown in the haulm, but we have not found it communicated much to the tubers. I have planted all my crop with Salus. Myatt's Prolific still holds its own; Yorkshire Hero is one of the best; Coldstream, though small, a good early round. *William Ward, Stoke Edith Park.*

—— Early planted Potatos having been cut off during spring frosts, the tubers are small, but good. Late planted kinds, including Lapstone Kidney, which I grow extensively, are promising. Disease on heavy soils and in low damp situations is now spreading throughout this district. *W. Coleman, Eastnor, July* 28.

Worcester.—Crops generally good, but slight traces of disease appearing in some of the early kinds. Should the fine weather of the last few days continue, early crops may possibly be taken up before serious damage is done. The success of the later sorts will much depend upon a continuance of dry weather, in which case we may hope for favourable results. *W. Cox, Madresfield Court, July* 30.

—— The early sorts are looking well, and are an abundant crop. The late sorts are looking promising. The tops of the American Rose are showing signs of the disease. *John Wyke, Kyre Park, Tenbury.*

—— So far the Potatos are free from disease, and the early kinds are producing heavy crops; but I hear much about the blight being on the move in neighbouring localities, and I fear it will be serious should the wet weather continue. So far I have not perceived a single diseased tuber. *Geo. Westland, Witley Court, July* 30.

—— Over an average crop, and very good, but the disease is very bad, more especially among the American sorts. *Geo. Holman, Gr. to H. Bramwell, Esq., Crown East Court.*

Gloucester.—In this district the Potatos appear to be very satisfactory at present. Although disease has made its appearance in several places, the early sorts have turned out very well, but later than usual. Should the disease spare them, some heavy crops may be expected. *W. J. Simpson, Kingscote Park, Wootton-under-Edge.*

—— The Potato crop is so far very satisfactory. The tubers are not quite so large as usual, but the yield is good; and at present I have not seen the slightest trace of Potato murrain. *Thomas Shingles, The Gardens, Tortworth Court, July* 31.

Somerset.—In this district the crops are very good, and so far tolerably free from disease. I am glad to find that a great many in this neighbourhood are beginning to adopt the plan of pulling the haulms as soon as the disease makes its appearance. I say glad, because I feel confident if done immediately it makes its appearance it will be the means of saving the crop. I have adopted this method here during the last five years, and have not lost a bushel-basketful by the murrain during that period, whilst some of my neighbours lost in some seasons the greater part of their crops. *Thomas Foote, Clevedon Court.*

—— The early kinds, although rather small, have been sound and good. Up to July 22 the main crops looked very promising, since then, however, the disease has set in, and is now very rife. *John Austen, Ashton Court, Bristol.*

Devon.—Early Potatos were in many cases cut back by late frost, and even where they escaped being nipped they made little progress in the early part of summer owing to the excessive cold and wet we experienced, and are, in consequence, a light crop, and very backward. I regret to report the appearance of the disease about three weeks ago in the Snowflake and other American sorts. It spread slowly at first, and confined itself to these sorts for a time, but for the last few days we have had a heavy fog, and it seems spreading rapidly now in the other sorts. I dread the ultimate result. *A. Ayson, Oxton Gardens, Kenton.*

—— Potatos, both early and late, look very bad, and if the weather continues so hot and humid the disease will be very bad indeed. In many places the haulm is quite black with disease now. *Alfred George, Bicton Gardens, July* 30.

Cornwall.—The disease has been very visible for five or six weeks past, and the late rains have developed it to the entire destruction of the stems. I fear the tubers of the late kinds will be small, inferior in quality, and badly decayed. *J. Tyerman, Tregoney, July* 31.

—— The early crops suffered from the east wind, the yield being in some instances a great loss. The late Potatos looked well a week or so ago, but the disease has made its appearance, and with the rain we are having it is hastening the decay of the haulm. *H. Mills, Enys, Penrhyn, July* 26.

WALES.

Anglesea.—A good many Potatos are diseased in this neighbourhood. *R. Webster, Glyn Garth.*

Brecon.—Potatos are late this season. Early ones were promising till about a fortnight ago, since then the disease has attacked them badly. Late ones looking well. *F. J. Ireland, Glanusk Park, Crickhowell, July* 31.

Carnarvon.—The Potato crops are in good order all round the county. *Allan Calder, Vaynol Park, Bangor, July* 30.

Denbigh.—Potatos have been very slow of growth, but look well, although the haulm is not so strong as usual; but no disease has as yet appeared out of sixteen sorts. The most abundant scourges of the garden have been slugs and mildew. *P. Middleton, The Gardens, Wynnstay and Llangedwyn, July* 26.

Merioneth.—Potatos this season are very good, and

have been much improved by the late rain. Rivers' Royal Ashleaf and Lapstone are splendid crops. Early Rose will be discarded after this season. It does not suit this locality at all. All late crops look well. No sign of disease at present. *James Bennett, Rhug Gardens, Corwen, July* 28.

Radnor.—The Potato crop is good both in quantity and quality, and no disease is to be seen. *John Weatherston, Boultibrook, Presteign.*

IRELAND.

Antrim.—Potatos are very inferior, and are about hree weeks later this season. *D. Taylor, Glenarm Castle, July* 30.

Armagh.—A good field of Potatos is the exception, and not the rule, in this county. Farmers for the most part were late in getting in the crop. Many of the fields appear thin, showing a considerable number of blanks. However, the late rain has improved the appearance of the crop a good deal, but if disease sets in early I fear the produce will be light. Tubers small and imperfectly matured. *W. Allan, Brownlow House Gardens, Lurgan.*

Cavan.—Everywhere around this neighbourhood the late Potato crop looks well. There is no sign of disease, and heat and dry weather are all that is wanted to bring the tubers to maturity. A most promising crop. Early Potatos turned out deficient in size and quality, owing to the cold, wet weather, which has continued since the time they were planted. *W. J., July* 27.

Cork.—Early Potatos are very much under the average. The late crop is promising a full yield, with the exception of some failures in seed. The disease is setting in very much. *J. Fraser, Bessborough, Aug.* 1.

Donegal.—The Potatos this year seem to be the worst crop we have had for many years past. They are three weeks later in this district than usual, and the disease has set in very badly, owing to the continual wet weather. *Armstrong Hamon, Drumboe Castle, July* 30.

Down.—The crop is quite three weeks later this season than usual, and by appearance will be but a light one in this district. Early Dons are not fit for using here yet. *James Taylor, Mountstewart, July* 28.

Dublin.—From the vigorous appearance of the Potato fields all through the country, and the fine samples of sound tubers coming into the market, we seem to be in a fair way for an abundant yield of the national root. Varieties of the Ashleaf section grown in old garden soil are frequently tainted with disease by the middle of July, but there are no appearances of it up to the present (July 30), but every indication of robust health. *G. Smith, Vice-Regal Lodge, Dublin, July* 30.

Fermanagh.—The Potato crops are looking very well, the tops are strong and healthy, but they are very late. Any that have been dry are small and soft, no doubt in consequence of the damp weather. *John McDonald, Florence Court, July* 31.

Kerry.—Early crops are bad, but late ones have at present a good appearance. No indication of disease yet. *A. Gilmour, Killarney House Gardens, July* 27.

Kildare.—The Potato crops, owing to the cold wet spring are very backward, although at present looking well and free from disease. Some of our neighbours met with great loss this season from the imported seed refusing to grow. One farmer in particular planted over 10 acres, which was a complete failure, and had to be ploughed up. What could be the cause? Would the salt water destroy the power of germination? *W. A. Emery, Kilkea Castle, Kildare.*

Kilkenny.—All early planted Potatos are looking well, and there is every prospect of a good crop. In garden varieties the blight has made its appearance, but not nearly so much as at this time last year. *G. Dodd, Woodstock Park, July* 30.

King's Co.—Early Potatos, notwithstanding the ill-treatment they had to encounter, being on one occasion cut down to the ground by frost, are turning out remarkably well, prolific, large, and good. Veitch's Improved Early Ashleaf, and Rivers' Royal Ashleaf, are all that could be desired. American Early Rose has got to an immense size, but are watery, and we are beginning to find a good many diseased ones amongst them. Late ones have looked very promising hitherto, but the stems are now showing signs of disease. *T. J. Hart, Birr Castle Gardens, Parsonstown, July* 30.

Leuth.—We hear from the farmers of this district a general complaint—the continuous wet having injured the crop, disease has set in both in field and garden. *Frank Fowler, Ravensdale Park, Newry, July* 31.

Meath.—Where very late in starting into growth and where they were above ground, the frost cut them down again. We had a few hot days in June, then they grew away for a time, then came more rain and very cold with it to, frosts several nights, and everything was at a standstill, ground cold and wet, nothing green but weeds. For the last few days it has been much warmer, Potatos are improving, but the haulm in some places is quite black; I have found several bad tubers, and the good ones are very soft. The best here are the Flounders, Early Rose and Climax. I expect a very bad season. *John Clews, Headfort.*

Queen's Co.—The crop is a very good one so far. I have only heard of one case of disease, and that of a slight nature. *J. Ennis, Emo Park, Portarlington, July* 30.

Sligo.—The Potato crops are a good average in this district, but I am sorry to say the disease is making its appearance in some places. *J. White, Hazlewood Gardens, Sligo, July* 27.

Westmeath.—The Potatos are looking well, but not coming to maturity as early as last year. The corn crops of all sorts are above the average. Meadows in general are very fine—far superior to anything experienced during the last ten years. *John Igo, Moydrum, Athlone, July* 31.

Wexford.—I was obliged to lift the early and second early crops of Potatos a fortnight ago, owing to the disease setting in so much earlier this season than usual: it made its appearance about June 22. Until the last week the Potato crop was in general good, more especially the late crop, but now the disease has set in in its worst form. I fear the produce will be small, on account of the very wet weather preventing the farmers from planting them until May. *P. Braund, Courtown House, Gorey.*

Wicklow.—Notwithstanding the late cold spring which caused many of the sets to rot, Potatos at the present time are looking well, and quite free from disease. Early kidneys were somewhat small, owing to the dry cold winds prevalent here when they should have been making rapid growth. Now the earth is well watered with the late rains, Potatos are making great growth, and promise to be a good crop. *Chas. Penford, Powerscourt, July* 27.

CHANNEL ISLANDS.

Guernsey.—Very good so far. *T. C. Bréhaut, Richmond House, July* 30.

Home Correspondence.

The Colorado Beetle.—The sublime Doryphora is fast degenerating into a *ridiculus mus.* Newspaper correspondents vie with each other in seeking to obtain for their respective localities the honour of first introducing the beetle to our Potato pastures, even their blind zeal converting the useful little ladybird into this terrible Colorado bogey. Dublin, Glasgow, and now Hereford, have wired the entomological intelligence all over the kingdom, only to raise eventually the jeers and laughter of the public. The cry of "wolf, wolf," will be raised too often, and when the real enemy does come people will be ashamed to make his *locale* known. Chambers of Agriculture are affected with the general scare, and madly call upon the ducal head of the House of Lennox to "stamp it out"—the agriculturist panacea for all ills—even before there is anything to destroy. What with cattle-plagues and Colorado beetles the Lord President must find the cares of office even heavier to bear than his quadruple coronet. Those who shout in alarm "Stamp it out!" should remember Mrs. Glass' celebrated advice "first catch your hare," and, difficult as that operation ofttimes is, they may expect catching the beetle to be considerably more so. If during the present session of Parliament some honourable member had brought in a measure to render the beetle subject to heavy customs' dues, we should have found his incursions effectually barred at every port in the kingdom by a noble army of Customs' officers. *D.*

The Crops in my District—Slugs are a good crop, both late and early. Snails are plentiful, and promise to be more so if not interfered with, which they probably will be. Worms looked well at one time, but were terribly nipped by the early birds, from which they have not recovered, and are not likely to do. Grubs, beetles, and woodlice are numerous and thriving. Green-fly is a very abundant crop, and cover the branches everywhere. Some people wish they didn't, but you can't have everything. If you have green-fly you can't have Roses; if you go for Roses you can't have green-fly—experience shows it. Weeds of all sorts are abundant, the late rains having brought them on like magic. It is a curious thing about weeds that they require neither top-dressing nor manure, bedding out, nor hanking up: leave them alone, don't mess them about, and the crop is perfection. Try Celery that way, and the result is entirely different. Why? Damsons are a good crop—we have one. We have not settled whether to pickle or preserve it: it will depend on the market price. Cherries none, but there are two in the next garden. A crop of that kind ought to be looked after, so the sparrows have undertaken the job. Pears were plentiful, so were the early frosts and east winds. The winds remained, the Pears didn't. As before remarked, you can't have everything. Apples are plentiful. When a market gardener thinks of his landlord he looks at his Apples. We have three; at least, we had three yesterday. I am not sure how many there are to-day; everything is so uncertain, you cannot even depend on Apples. Observation: A man who looks to pay his rent with three Apples and one Damson cannot expect much change, unless it is a change of quarters. Work is scarce; few people have more than two hands, and they not fully employed. *T. W. B.* [Our correspondent hails from the neighbourhood of Chiswick. His report is an unusual one, but so is the season. EDS.]

Black Currant Bud Disease.—Is there any known effectual remedy for this disease, caused by the Acarid as described in your articles in the *Gardeners' Chronicle* of 1869, p. 841, also 1876, p. 703? It is committing great havoc, and in some districts has entirely destroyed all prospects of fruit, and baffles all the usual remedies of compounds, washes, &c. A remedy if known would be a great boon more particularly to those small cottagers who, hitherto, have depended on this valuable fruit as a means of eking out their incomes, but who now find that source cut off. Of course I cannot state to what extent this disease prevails over the country, but I heard of it first in the Glasgow district, extending to Killearn, thence to Balfron and Fintry, and now I hear of it being seen in Stirling this year for the first time; and, unless a remedy be found, there is no saying how far it may spread. I have asked three of the leading gardeners in the Fintry district, as being a district in which it is very bad, but without success. Two could give no cure but to destroy the bushes, but then they did not grow the fruit to any extent. The third, whose proprietor utilises his surplus by sending it to market, told me he had been fighting the disease for about seven years, and had tried everything he could think of, transplanting, subsoiling, &c., thinking the fault lay in the soil, for, although he gets your paper, he did not know the cause until I called his attention to your article last year; and although he has been trying various remedies since, he has not hit upon anything effectual. *T. G. D.*

Summer Flowering Plants.—Amongst flowering plants to be admired at this season, for an evergreen climber nothing can surpass Escallonia macrantha. I send you some blooms from a plant, 6 feet by 4 feet, that is covered. Spiræa ariafolia is also covered with its fine white flowers; Deutzia crenata flore-pleno, pink; Magnolia glauca in fine bloom. Amongst Roses—Chamois, very little known, fawn colour; Souvenir de la Malmaison, Baroness Rothschild, Général Jacqueminot, Gloire de Dijon, and Maréchal Niel will always command a place. Clematis Jackmanni, C. Star of India, C. rubro-violacea, and Passiflora cœrulea deserve a place in every garden. *J. M., Bogshot, July* 25.

Destructive Insects in New Zealand.—I have lately received a letter from a friend in New Zealand, asking my advice how to deal with the larva of Blennocampa; he tells me that at Picton in the province of Marlborough it has become a most serious pest, so injuring Apple, Pear, Plum, and Walnut trees, as to entirely destroy the crop of fruit. Now of couse, although I have seen a few of these fellows on Pear trees before now, and got rid of them by dusting them with lime, I feel incompetent to give advice as to dealing with them on such a large scale. Is there not a change in the larva as it becomes well fed? Is not the slimy skin

moulted, and a smooth skin assumed? If so I fancy in that state they might be beaten off the trees, though of course they would already have done great harm; or would it do to dig round all the trees for the pupæ, or encircle the trees with troughs of water, &c., so as to catch the larva when descending for entering the earth? If this were done all over a district their numbers would be kept down. But if you can recommend any plan which has been found to succeed, I shall be thankful if you will insert it in the answers to correspondents in your next issue. *H.* [We are afraid this is a hopeless case. In this country no better plan has been found than that noticed by our correspondent himself, viz., dusting the leaves on which the larva are with slaked lime, but how to deal with whole orchards of standard trees is still a desideratum. On one or two incidental points which our correspondent queries, we can answer. The species is not a Blennocampa, it belongs to Hartig's third section of Tenthredo, which he calls Eriocampa. At its last stage the larva ceases to be slimy, becomes orange, and descends into the earth, where it makes a kind of cave or cocoon in which to undergo the metamorphosis. *A. M.*]

The Peaches at Scone Palace.—An eminent gardener and his successor having said that the pot Peach and Nectarine trees in the cast-iron structure here were all dead, I wish to say that their foliage never looked better than at present, and that there is a collective number of 727 fruit among ninety-two pots, twelve young ones bought in this spring not being reckoned, or about eight on the average. The poor fellows could not have known what they were talking about when they jumped at such conclusions and floated such a tale as that. This house still maintains its reputation, having sent the first Figs and second six Peaches to the International last year, as it did the first Figs and three pot Peach trees in fruit years previous at the same place on the meeting of the British Association. Lest to cover the first mistake another should be made by saying the plants must be dead and replaced by fruiting ones—a by no means impossible feat, and the less so as no fault would have been found had such been done—I shall be glad to show the stock to any of your district correspondents, and leave them to say whether such stock appears to be of recent acquirement. But for my information coming from high quarters I should have taken no notice of it. The pot plants are not so vigorous as when you saw them ten years ago, age beginning to tell on them. *John Halliday, Scone Palace, July* 31. [From a statement of the number of fruit on each tree, taking them *seriatim* as they stand in the house, we learn that five trees have over twenty fruits, the highest number being twenty-three; twenty-five have from ten to nineteen; twenty-six from five to nine; twenty-eight from one to five; and eight are fruitless. Eds.]

Roses: the "Amende honorable."—I am sorry that I left out these noble Roses from my late list—1, Sœur des Anges, most beautiful, daughter of the Duchess of Orleans, still one of the best light roses; 2, Lady Suffield, quite lovely. I named Star of Waltham, it is A1, and good in all respects. I have since had of Saint George (W. Paul), named in my lists (page 19), some extra blooms. I may say in passing that Mr. George Paul does not do justice to Lord Clyde (page 118): "Really these old Roses are not worth further fighting about." I cannot agree to this. The Duke of Edinburgh is nearly scarlet, and Lord Clyde is one of the best in the line of crimson. I have had the plants for years, they are as good as ever and better, and the blooms when "D." of Deal was here, and at this time, were and are most noble. I should not like to give up the authorship of Lord Clyde, but I agree with the Editors that "enough has been said." My opinion is, that in the line of crimson Lefebvre, Alfred Colomb, Marie Rady, Lord Clyde, Prince de Portia, Maurice Bernardin, Duchesse de Caylus, Dr. Andry, Annie Wood, Maréchal Vaillant, Madame Victor Verdier, Sénateur Vaisse, Lord Macaulay, Baronne Adolphe Rothschild, Lady Suffield, and George Prince are the best. The last is not much known. Mr. Turner gave it to me years ago with eleven others. I have only one plant of it, and have overlooked it. It is a grand Rose, and a survivor and free bloomer. It is in Van Houtte's Catalogue thus:—"George Prince (396), beautiful dazzling red, very large, full, and some 4 inches across." It is a globular Rose. I must caution the nurserymen, and advise them not to turn away Roses at the suggestion of every conceited fellow who thinks himself and is supposed to be a judge of Roses! Madame Knorr is one of the sweetest scented and the finest in bud for buttonholes. Don't turn her out! *W. F. Radclyffe.*

Reclamation of Land.—"Agricola's" land may be in much the same state as land called saltmarsh on the banks of a tidal stream, which is often left bare by alterations in the course of the river, and then enclosed by a sea-wall, and soon becomes first-class land, as, for instance, the marshes on the banks of the Medway. There the farmer first gets his land dry, and then sows it with a succulent grass, called there "Lamb's-tongue," but about Hampshire it is, I believe, called "Pen-grass." Nothing thrives on salt soils so well as this plant, and sheep are very fond of it. It is fed off with sheep, and gradually brought into first-class grass cultivation. I have walked in the Medway marshes on grass as high as my knees, and as thick as a Turkey carpet within ten years after being covered with the tide. *J. H., Ventnor, August* 1.

Orchid Sales.—I see some letters respecting the naming of imported Orchids in your last two or three numbers. I buy a good many of these, and I do not expect that they should all be true to the name given them. If I wish for accuracy in this particular I give a larger price than I expect to buy plants for at Mr. Stevens' auction room, to a nurseryman, whom I expect to be answerable for the correctness of the names given to the plants which he sells. I do not think that Mr. Stevens could possibly be responsible for the correctness of the names of the vast quantities of imported Orchids which go through his hands, but I am glad to see in the last catalogue which I have received from him a (?) to some doubtful lots, and I hope that Mr. Stevens will continue this whenever, either from his own knowledge of these plants or otherwise, he has any reason to doubt the accuracy of the names. *C. W. Strickland.*

Lilium cordifolium.—I feel muchobliged to Herr Max Leichtlin for his notice of the flowering of the above Lily. I believe I was privileged to flower Lilium cordifolium, L. sinicum, and L. Wallichianum the first time in Europe. All these bulbs were sent home by Mr. Fortune, and certainly the cordifoliums of that day seem to my memory as mighty giants compared to the cordifoliums of to-day. Whether a quarter of a century has dimmed my memory or not I cannot say, but in my mind's eye the leaves were something like 18 inches in diameter. It would be interesting to learn if the progeny of these two (there were only two bulbs brought home) still exist. If I remember rightly they were sold to Messrs. Thibaut & Keteleer, Paris. Lilium Wallichianum was lost soon after flowering; Lilium sinicum did well for some few years, but was afterwards lost, and partially forgotten until recently, when the love for these beautiful flowers re-introduced them. *Charles Noble, Bagshot.*

Red Rose for a South-Eastern Aspect.—Either of these four crimson Roses will suit your correspondent to climb against a white house with a south-eastern aspect:—1, Madame Clémence Joigneaux; 2, Glory of Waltham; 3, Vicomtesse de Vezins; 4, Madame Louise Carique. The last is not large, but it is most efflorescent, blooms late, and never gives deformed flowers. It is not large, but it is extra hardy. Some years ago Mr. Sturt, now Lord Alington, and Viscount Walden, now Marquis of Tweeddale, came here to spend the day; they were much struck with this Rose as an ornamental Rose, planted, like a leech-bite (three together, 8 feet high), between Conifers and Deodars. They said, "that is the prettiest thing we have seen." Mr. W. Paul, of whom I had my plants some years ago, can supply it. It is, in my judgment, though not a show Rose, the best red H.P. climber. The others are noble Roses; 2 is a free bloomer and sweet; 3 is a noble Rose, of great size, hardy, free bloomer, and sweetly scented. I have forgotten the scent of 2, but have a sweet remembrance of it. It is not here now. If size and scent were not required, the best red Rose for a white wall is the red Bengal. It blooms till Christmas. *W. F. Radclyffe, Okeford-Fitzpaine.*

Irish Yew seems to be an instance of that not very rare deformity in which a plant (especially a coniferous one), in place of forming any side shoots, produces nothing but leading shoots. All the plants that I have raised from Irish Yew berries are exactly like the common Yew. *C. W. Strickland.*

Reports of Societies.

Royal Horticultural of Aberdeen: *July* 19.—The annual summer exhibition of this Society was held on the Links, and, considering the very backward nature of the season, the show was a most successful one. The specimens exhibited in the amateur classes were especially commendable, and showed a marked improvement on former years.

The exhibits were arranged in two main divisions. The first was confined principally to professional gardeners, but it was open to amateurs, also to the working classes on certain conditions. The plants in pots in this division were divided into twenty-five classes, and, to non-professional visitors at least, were one of the main attractions in the exhibition. For nine stove or greenhouse plants the cup was carried off by Mr. Dalgarno, gr. to J. M. Paton, Esq., Links House, Montrose. Among Mr. Paton's collection was a Dipladenia Brearleyana worthy of notice, the colour being exceptionally rich and beautiful. A fine specimen of Allamanda Hendersoni was also very well flowered. Crotons Disraeli and majesticum were likewise included, and the collection was made up of a number of young plants, which have been apparently well managed. In the second class the 1st prize was awarded to Mr. Roberts, gr. at Granton Lodge. Amongst noticeable features in this lot was a pretty specimen of Anthurium crystallinum; an Alocasia metallica, bulky enough, but deficient in colour. There was also a well-grown plant of Clerodendron Balfourianum, but past its best. A fine specimen of New Zealand Flax, shown by Mr. Leiper, gr., Craigmyle, attracted some attention, and was included in the lot which came in for a 3d place. For the best stove or greenhouse plants, Mr. D. Kennedy, gr., Strichen House, carried off the prize. The Tree Ferns were a poor show. For the best collection of Ferns from the stove or greenhouse, Mr. Roberts, Granton Lodge, carried off the prize. Most worthy of notice in this group was an exceptionally meritorious Adiantum gracillimum. The feathery structure of this plant is very marked, and its general appearance is most handsome. The exotic Ferns generally, while not at all in advance of the standard of former years, were nothing behind it. The British Ferns deserve special notice. They improve yearly, and are becoming quite a feature in connection with this show. This is very gratifying, and indicates the prevalence of a spirit among exhibitors which ought to receive all encouragement. The number shown included some very pretty specimens sent both by practical gardeners and amateurs. The Pelargoniums on the tables presented no remarkable feature. Some of them had evidently been in better condition a week ago, but seemed now to be shorn of a good deal of their beauty. In the class of six Pelargoniums, variegated leaved, the half-dozen which carried the prize were without exception the finest that have ever been shown in Aberdeen. They were, indeed, something remarkable, and out-distanced by a long way all their competitors. With respect to Fuchsias, there has generally been a very good show in former years, but those on the tables on this occasion seemed in advance of any we have yet seen placed. While a general improvement was noticeable in the plants shown, the numbers were not quite so large as before. Orchids, which usually lend a peculiar grace to most shows, were rather conspicuous by their absence. There were a few on the tables, but they call for no special comment. Of Caladiums and Marantas it was gratifying to observe a good show, the former especially being remarkably well coloured. Lycopods were a poor display, as compared with last year, but some of the little specimens on the tables were almost perfect. The 1st prize was carried off by Mr. Grigor, gr. to Mr. Stronach, at Sunnybank. Among the plants for table decorations were some very tasteful displays, the best ten coming from Links House, Montrose. In this lot was a Cocos Weddelliana, which was quite a gem in its way. In the 2d prize lot there were some very well-grown plants from Strichen, but the quality possessed no special merit. Among the cut flowers the effects of the bad season were very noticeable. In the competition for twenty-four dissimilar Rose blooms, open to nurserymen only, exhibits were of very fair quality, but were not up to the usual mark. For eighteen Rose blooms, the cup presented by Messrs. Cocker & Sons, Sunnypark, was carried off by Mr. Donaldson, gr. to the Earl of Kintore, with a remarkably good collection considering the very adverse circumstances which have had to be contended with in rearing them. The cut Pelargoniums were of an average quality. Stocks were good, Mr. Roberts, Granton Lodge, being 1st. The bouquets were in advance of those shown last year. The great fault of those intended for buttonholes seemed to be that they were too large. Among the hand and table bouquets were some very carefully and tastefully arranged. Those composed wholly of wild flowers were exceptionally good. The 1st prize for the latter class was taken by Mr. W. Jaffrey, Banchory Gardens.

The backward season has, of course, told to a very considerable extent on the fruit. Strawberries were numerous, but quality was wanting. For best flavour Mr. Peckham, gr., Garthdee House, was 1st, and for size Mr. A. Westland. In the classes open to market gardeners only Mr. W. Davidson was successful in carrying off the two 1st prizes. Vegetables, for the season, were a wonderful show. For the best collection in baskets there were four entries by gentlemen's gardeners, and three by market gardeners. In the former Mr. Ogg, gr., Fintray House, was 1st, with a capital collection, the excellence of quality being noticeable in all the descriptions the basket contained. The Celery was remarkably mature, and the Rhubarb was splendid. Mr. J. Kinnaird, Outseats, Rubislaw, was 1st among the market gardeners with an excellent basket also. In fact, there was not a bad specimen

in it, and the judges were of opinion that a more uniform collection in point of superiority was never exhibited at any show in this part of the country. In the collections of round and kidney Potatos Mr. W. Smith, gr. at Rothie-Norman, was 1st with the best specimens in the tent. In fact, the judges were quite astonished at the superior quality of this exhibit. Mr. Ogg, Fintray House, was 2d. The Rhubarb was nothing remarkable in point of quality. The size of some of it was very noticeable, but the fibre, if one might use the expression, was remarkably coarse. Cucumbers were a good show, the 1st prize going to Keithhall House. There was a large quantity of Cabbages on the tables, but none of them were of more than average merit.

The number of exhibits in the second and third divisions was quite equal to that of former years—a fact which is very gratifying, and the quality on the whole was good. To stimulate a taste for the cultivation of flowers among the working-classes is a most laudable object, and it is to be hoped the Society will always continue to encourage it as far as possible. There was a large collection of plants in pots shown in these divisions. Among them were some very pretty Pelargoniums, and in this and other classes Mr. Mitchell, Leadside, carried off a number of prizes. He was both 1st and 2d for Petunias with excellent specimens, surpassing anything of the same kind shown by professionals. The exhibits of Clematis were very good. In the centre of the table was a towering Lilium auratum, shown by Mr. Mitchell in capital flower, which attracted considerable notice. The Rose blooms were of a very high order, and were quite equal in point of merit to those exhibited by the more practical competitors. Mr. Sadler, Banchory-Ternan, was 1st for a choice little group of six; and Mr. R. Watson, Stoneywood, for a group of four. There were few Pinks shown, but those on the table were creditable considering the season. Pansies were very much in advance of those placed last year. Stocks were a good show, and so were the herbaceous plants generally. The bouquets compared very favourably with those in the professional division, and showed no less taste and care in their selection and arrangement.

In the amateur department the vegetables call for no special comment. For the best basket of varieties, Mr. Forrest, Nigg, was 1st, and Mr. R. Watson, Stoneywood, 2d. The kidney Potatos shown by Mr. W. Milne, gr., Burnside, and the round by Mr. Watson, were especially fine specimens of their classes. The Shallots in the working-class section were the finest some of the judges had ever seen, and called forth their highest commendation.

There were a number of most attractive plants exhibited, but not for competition, by Messrs. J. Cocker & Sons, Sunnypark, and Mr. R. Connon, East Seaton, Old Aberdeen. For two most meritorious Gloxinias they received a First-class Certificate. Mr. Connon's collection embraced a specimen of the Cocos Weddelliana, Dracænas, a remarkably showy Begonia Vesuvius, with very fine foliage; a pretty little Achimenes Williamsii, and a variety of other plants. Some of the specimens in both the Messrs. Cocker's and Mr. Connon's collections were rich in flower, and their presence enhanced considerably the general appearance of the show.

Royal Horticultural: *July* 24.—A meeting of the Fruit Committee was held at Chiswick to examine subjects grown for trial there this season. Henry Webb, Esq., in the chair.

The Gooseberries, of which there is an extensive collection growing, were first examined, a small basket of each variety (200 in number) having been gathered for comparison and classification. The committee selected the following varieties as especially worthy of cultivation, viz.:—Reds: Red Champagne, Warrington, Monarch, and Starling. Green: Roseberry, Overall, Green Globe, Pitmaston Green Gage, Cheshire Lady, Shiner, and Gretna Green. Whites: Whitesmith, Orleans, Keepsake, Safety, and Top-gallant. Yellow: Sulphur, Rumbullion, Aston Hepburn, and Yellow Globe.

Red Currants.—These were examined with great care as to their nomenclature, so much confusion still existing amongst them in that respect. Of the most approved varieties noted, the earliest and the largest is the Red Cherry, which has the following synonyms:—viz., Bertin No. 9, Grosse Rouge de Boulogne, Fertile d'Angleterre, La Hâtive, La Fertile, Fertile de Bertin, Hâtive de Bertin, Chenonceau, Belle de St. Gilles, Fertile, Fertile de Palluau, and La Versaillaise.

The Red Dutch, which is the variety most generally cultivated in gardens, rejoices in the following synonyms:—Knight's Large Red, Knight's Sweet Red, Goliath, Fielder's Red, Palmer's Late Red, Pitmaston Red, Pitmaston Prolific, Large Sweet Red, Bertin No. 1, Dancer's Selected, and Jackson's Mammoth.

The Red Grape, a long-bunched sort, of a pale red. Synonyms:—Rouge Transparent, Queen Victoria, Fertile de Palluau.

Houghton Castle, the best constitutioned variety. Synonyms:—Houghton Seedling, Orangefield. A fuller report of these will appear in the Society's *Journal*.

Turnips.—An examination of the Turnips, of which about 150 varieties are this season being grown, was then made, and the earliest was the Green Strap-leaf (Carter & Co.) Tomatos were also examined, a very large collection of which is being cultivated in pots, the only one showing signs of ripening being Early Gem, sent by Messrs. Veitch & Sons. Of these a later examination will be made.

A meeting of the Floral Committee was held at Chiswick on July 25—George F. Wilson, Esq., in the chair—for the examination of the various collections of plants growing in the gardens for trial this season.

Zonal Pelargoniums.—Of these a large selection of the most approved newer varieties which were grown in pots last season have been bedded-out along with some of the best older sorts for comparison. First-class Certificates were awarded to Mr. J. R. Pearson for Atlas, a large-trussed crimson-scarlet Nosegay; Rev. A. Atkinson, crimson-scarlet. To Messrs. James Cocker & Sons for John Fraser, light magenta. To Mr. J. George for Mrs. J. George, rosy cerise; and Beauty of Surrey, crimson-scarlet, very free, and excellent habit. Of the older varieties conspicuous for their excellence were noted Vesuvius, Princess of Wales, Vesta, Cleopatra, Violet Hill Nosegay, and Claude de la Meurthe, &c. Of the newer varieties which have been sent out this season, and grown in pots under glass, First-class Certificates were awarded to Mr. J. R. Pearson for Rebecca, a very beautiful magenta-scarlet Nosegay; Louisa, a sort of shaded magenta-pink mottled with rose; Blanche Gordon, light pink. To Mr. J. George for Lord Mayo, bright scarlet. Specially noticeable also were Miss Wakefield, Lizzie Brooks, and Lord Giffard.

Bedding Violas.—A large collection of those reported on last year are again under cultivation, the most noticeable amongst them being Crown Jewel (Grieve), Blue Beard, Blue Bell, Queen of Lilacs, Lilacina, Rubra Lilacina, Princess Teck, and Pilrig Park. Of new varieties First-class Certificates were awarded to Mr. R. Dean for Vestal, a pure white variety of a fine free habit; to Messrs. Dickson & Co. for Holyrood, a very rich dark blue variety of good habit; to Mr. Fromow for Golden Prince, a clear yellow variety with distinct white eye.

Begonias.—A fair selection of these have been grown in pots, chiefly of the tuberous-rooted class, the most striking being Acme and Kalista (Veitch), Fœbeli, &c. A First-class Certificate was awarded to a seedling from rosæflora raised at Chiswick, and named by the Committee Mrs. Barron. It is of very robust growth, forming a large plant; flowers large, roundish, and produced freely, of a pale rosy pink: a very distinct sort. Moonlight, a hybrid raised by Col. Clarke and certificated last year, is exceedingly attractive. This, which is something of the habit of weltoniensis and producing long racemes of pure white flowers, will become a very popular decorative plant.

Fuchsias.—Of these a selected collection has been grown, occupying one house. A First-class Certificate was awarded to Messrs. Laing & Co. for Lord Beaconsfield, a hybrid from the old fulgens, and possessing a good deal of its character. As a free-blooming decorative plant it will prove very valuable. Very conspicuous amongst others is Champion of the World, a very large dark double sort—almost a monster.

Verbenas.—Only a few varieties of these are on trial. For habit Purple King still stands pre-eminent. Blue Bell (Smith) is very effective. A First-class Certificate was awarded to Mr. John Fraser for Carl Sieglig, an intensely dark blue variety of good habit.

Hardy Annuals.—Complete collections of Iberises, Clarkias, Godetias, Viscarias, Dianthuses, Stocks, Balsams, &c., are on trial this season, and when in full flower are exceedingly showy. Of Iberis First-class Certificates were awarded to Messrs. Vilmorin et Cie. for two splendid novelties, viz., I. coronata hybrida nana rosea, a variety of fine dwarf growth with large rosy salmon flowers, not unlike gibraltarica, and exceedingly beautiful; I. coronata hybrida nana alba, a variety of the same character, with pure white flowers. Amongst the Godetias, Lady Albemarle, which was certificated last year, is by far the finest. Of Viscarias none exceed in beauty the true V. cardinalis.

Mr. Charles Turner, Royal Nurseries, Slough, sent cut blooms of his seedling Roses Penelope Mayo and Harrison Weir. This latter variety is of a rich dark crimson colour, and is a promising variety. The committee highly recommended it, at the same time requesting that it be again brought before them, being unable to give a final decision from seeing only one bloom.

Kendal and District Horticultural: *July* 26.—The Kendal flower show takes high rank among the exhibitions held in the North of England; it is well officered and managed, and the committee work together with a will to make their floral festival a success. For a few years past two shows were held annually, but the committee have returned to the old and wise practice of having but one, and making that as attractive as possible. The present show was regarded as the most successful ever held in Kendal.

In the matter of stove and greenhouse plants there was a fine display, for handsome prizes were open to all comers for a collection of twelve plants, six at least to be in flower. The best group came from T. M. Shuttleworth, Esq., Preston (Mr. H. Thornber, gr.). Too much praise cannot be given to this splendid lot of plants, for they were in fine condition. The foliage plants comprised Cocos Weddelliana, Croton undulatus, Dasylirion gracilis, Cordyline indivisa, with a wonderful development of leaf; Phormium Colensoi (?) variegata and Cycas revoluta. The flowering plants were Erica Parmentieri, and also its rose-coloured variety; Statice profusa, Ixora Colei, Anthurium Scherzerianum, and Bougainvillea glabra. The plants were all of the freshest character, and as nearly perfect in development as plants could be expected to be at this season of the year. 2d, the Earl of Bective, M.P., Underley Hall (Mr. C. Sandford, gr.), who had Allamanda Hendersoni, Erica Aitonia superba, Ixora Williamsii, Dipladenia holiviensis, Bougainvillea glabra, Anthurium Scherzerianum, Croton Weismanni, Caryota urens, Latania borbonica, Dicksonia antarctica, Croton pictus, and one other. This was a good well-balanced group. 3d, H. W. Schneider, Esq., Bellsfield (Mr. C. Chaplin, gr.), who had Croton variegatus, C. angustifolius, Gleichenia flabellata and Davallia Mooreana in remarkably fine condition; but was weak in flowering plants, or he would have assuredly taken 2d place. As it was, Mr. Sandford only just gained 2d position. An extra prize was awarded to the Preston Nursery Company, who staged good examples of Cycas revoluta, Cocos Weddelliana, Eurya latifolia variegata, Allamanda Wardleiana, Dicksonia antarctica, and Stephanotis floribunda. There was also a class for four stove and greenhouse plants in flower, and here Mr. Sandford was 1st, Mr. C. Chaplin, 2d, and the Preston Nursery Company 3d. In the class for six exotic Ferns the Preston Nursery Company was 1st, Mr. Chaplin was 2d, and Mr. Sandford 3d. The best specimen was a fine example of Croton Disraeli, from Mr. Thornber; and Mr. Sandford and the Preston Nursery Company were equal 2d—the former with a well-grown and flowered Ixora Williamsii, the latter with Aralia elegantissima.

In the lake district generally hardy Ferns are a great feature, but at Kendal they are grown with marked success, and some very choice and singularly well-developed forms, both British and North American, could be found in the collections. The 1st prize twelve, staged by Mr. T. Wilkinson, Kendal, one of the Secretaries of the Society, were remarkably well done, and comprised Trichomanes radicans, three unique varieties of Scolopendrium vulgare, a fine crested Osmunda regalis, Athyriums, Polystichums, &c. Mr. C. Sandford was 2d, and Mr. J. Gott, 3d, both having capital collections. In the class for six and three varieties also Mr. Wilkinson was 1st, and the class for three British Ferns, distinct species, brought some charming forms from Messrs. W. Alexander, T. Wilkinson, and J. Gott, the two last being equal 2d,

The other plant classes were somewhat inadequately represented, but it must be borne in mind that the exhibitors about Kendal are amateurs in the strictest sense of the word.

Cut flowers were represented by Roses, Pansies, Stocks, hardy herbaceous plants, which brought Actæa racemosa, Greek Valerian, Thalictrum palmatum, Gaillardias, Martagon Lilies, Orange Lilies, Lychnis chalcedonica, Phloxes, Pentstemons, annuals, &c. Some boxes of cut Roses not for competition were staged by Messrs. Dickson, Brown & Tait, of Manchester.

Fruit was somewhat sparingly represented; and in the class for eight dishes Mr. C. Sandford was the only exhibitor, having a good lot comprising white and black Grapes, a fine Pine, Peaches, Nectarines, Strawberries, Melons, and Cherries.

Vegetables were plentifully shown in all the classes and generally very good, though the backward, sunless season which has prevailed in Westmoreland told sadly against them. A tray of vegetables of twelve varieties, staged by Mr. C. Sandford, was of a superb character throughout, and included Cauliflower, Cabbage, Artichokes, Cucumber, Peas, Longpod Beans, Tomatos, kidney Potatos, Turnips, Carrots, Onions, and Vegetable Marrows.

It is much to be regretted that while the committee appear to do everything in their power to give good prizes for exhibitors, and to take every possible precaution that they shall be properly awarded, that exhibitors who have never been able to take a defeat with equanimity should loudly impugn the judgment of the censors in the exhibition tents, and attribute incapacity and interested motives to the men called in to make the awards. One exhibitor in particular was

most obnoxious, and it unfortunately appears to be an annual failing. The reputations of judges are as nothing to such a person, and he is neither more nor less than an unmitigated nuisance, and should be excluded from competing till he has learned how to behave himself decently at a flower show.

Highgate Horticultural: *July* 12.—This Society, which stands amongst the most important and prosperous of the many immediately contiguous to the metropolis, has this year eclipsed anything it has previously accomplished both as regards the extent and merits of the different productions generally, of which the exhibition was composed, and what is of equal consequence to the future. The attendance of the public was such as to place the committee in a position to increase and extend the sphere of their exertions. The show was again held in the grounds of Edward Brooke, E q , Caen Wood Towers, which were unrestrictedly thrown open and were visited by not less than 10,000 people. When once the public find their way to a horticultural exhibition in anything like such numbers as this the success of the Society rests on a firm basis, as the committee have no financial difficulty to contend with—a matter that so often cripples the exertions of even the most energetic promoters. As heretofore, the beautiful position and well-kept garden where the show was held, and the attractive surrounding scenery, which is unequalled within a similar distance of London, had much to do with the attendance, independent of the merits of the show in itself from a horticultural point of view.

The special prizes offered here on this occasion as on previous years, were the greatest source of attraction. Those given by S. Cuming, Esq., for twenty plants, were closely competed for by Mr. Sheen, gr. to E. Brook, Esq., and Mr. Fuller, gr. to E. J. Nettlefold, Esq. Mr. Sheen's group, which was 1st, contained a fine Stephanotis, not quite in flower; Ixora aurantiaca, Erythrina crista-galli, a large Dicksonia antarctica, and Pœnix humilis. Mr. Fuller's plants were smaller, but very nicely grown; amongst others he also had a Stephanotis in exceptionally good condition—it was the best blooming plant in the show; Croton majesticus, and Dracæna Shepherdii. Mr. Newman, gr. to W. H. Michael, Esq., 3d. The prize given by E. Brooke, Esq., for twelve plants, six in flower and six fine-foliage, was likewise taken by Mr. Sheen. The Misses Brooke's prizes for six Palms were closely contested—Mr. Ayling, gr. to S. Cuming, Esq., 1st, having excellent plants of Cocos Weddelliana, C. nucifera, Dæmonorops palembanicus, and Areca lutescens; 2d, Mr. Fuller. Mr. Brooke's prize for fruit and vegetables, six varieties of each.—1st, Mr. W. Birse, gr. to J. H. Lermitte, Esq., who had a meritorious collection. Mr. Brooke's prize for centre-piece of cut flowers.—1st, Miss Bodkin.

The Society's prize for six Orchids was awarded to Mr. Brandrick, gr. to R. Prance, Esq.; 2d, Mr. Ayling.

Stove and greenhouse Ferns.—These were well shown. 1st, Mr. Sheen; 2d, Mr. Clarke, gr. to Sir Sidney Waterlow. Four stove and greenhouse plants.—1st, Mr. Brandrick; 2d, Mr. Sparkes, gr. to J. W. Jeakes, Esq.

Fine-leaved plants were contributed in quantity, and well done. For six, Mr. Ayling was 1st, having Anthurium crystallinum in beautiful condition; 2d, Mr. Brandrick. Four fine-foliage plants.—Mr. Clarke, 1st; Mr. Shepherd, gr. to H. Greening, Esq., 2d.

Caladiums were better shown than usual—stout and well-coloured.—Mr. Fuller 1st, Mr. Brandrick 2d.

Six Zonal Pelargoniums.—These were plentifully produced, and mostly well-flowered; but, as now often seen, the objectionable wire trellises they are trained upon were too large and offensively visible. 1st, Mr. Catlin, gr. to Mrs. Lermitte; 2d, Mr. Pope, gr. to G. Plucknett, Esq.

Single specimen flowering plant.—1st, Mr. Pope; 2d, Mr. Catlin.

Single specimen foliage plant.—Mr. Fuller was deservedly 1st with a large and beautifully-grown Todea superba; 2d, Mr. Ayling.

The cut flowers were a very nice feature, and forthcoming in sufficient quantities to produce an effect. Twenty-four bunches: 1st, Mr. Taylor; 2d, Mr. Weir; twelve bunches, 1st, Mr. Fuller; 2d, Mr. Ayling.

Twenty-four Roses.—1st, Mr. Eason; 2d, Mr. Silvester, gr. to J. A. Bethell, Esq. Twelve: 1st, Mr. Taylor; 2d, Mr. Shepherd.

Dinner-table decoration, three pieces.—1st, Mr. Winter, gr. to C. Goodall, Esq.; 2d, Mr. Atkins.

Fruit was well exhibited, and in generally good condition. Six dishes.—1st, Mr. Birse. Single Pine.—1st, Mr. Sparkes; 2d, Mr. Pope. Three bunches black Grapes.—1st, Mr. Clarke; 2d, Mr. Silvester. Three bunches white Grapes.—1st, Mr. Brandrick; 2d, Mr. Clarke.

At no place with which we are acquainted is there such inducement held out to cottagers, garden labourers, and mechanics to cultivate their gardens: in addition to the special prizes offered by the Baroness Burdett Coutts and the Society for well-kept gardens and allotments, there are over fifty classes for vegetables, hardy fruits, and flowers, in which the 1st prizes run from 20*s.* to 15*s.* each, and of which there are several, down to from 10*s.* to 2*s.* third, besides the children's prizes, with which collectively they amount to over £50. The produce shown under this head of the schedule annually fills a large tent, and is generally of very good quality, and which, independent of any consideration as to the prizes they get at the exhibition, cannot fail to be a substantial benefit to the large number who thus have an additional inducement to spend their spare time profitably. To those who take an interest in such matters the Highgate show is well worth a visit.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, August 1, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°	°			In.
July 20	29.76	0.00	72.2	55.2	16.9	61.7	− 1.5	56.4	83	W.	0.25
27	29.95	+0.19	71.1	53.5	17.6	60.9	− 1.3	53.7	77	WSW	0.00
28	29.97	+0.21	65.0	51.7	13.3	56.9	− 5.3	54.6	91	WSW	0.00
29	30.05	+0.30	84.0	65.0	19.0	71.7	+ 9.4	66.9	84	WSW	0.00
30	30.06	+0.31	83.7	59.5	24.2	68.2	+ 5.9	61.2	83	W.	0.00
31	29.75	0.00	86.8	60.2	26.6	71.8	+ 9.5	62.4	72	WSW	0.00
Aug. 1	29.71	−0.04	71.8	58.0	13.8	62.2	− 0.1	52.7	72	W.	0.00
Mean	29.89	+0.14	76.3	57.6	18.8	64.8	+ 2.5	58.2	83	WSW	sum 0.25

July 26.—Overcast, dull, with frequent rain till 11 A.M. Fine and bright after. Cloudless at night.
— 27.—A fine day, but very cloudy. Cool.
— 28.—A dull cloudy day.
— 29.—A very fine hot day.
— 30.—A fine but rather dull morning till 11 A.M., afterwards fine and bright.
— 31.—A fine bright and warm morning; very hot and fine afternoon.
Aug. 1.—A gale of wind during the early morning hours; the day was dull and cool Overcast at night.

London: *Barometer.*—During the week ending Saturday, July 28, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.97 inches at the beginning of the week to 29.53 inches by the night of the 23d, increased to 30 inches by the night of the 25th, decreased to 29.78 inches by the morning of the 26th, increased to 30.17 inches by the morning of the 28th, and was 30.16 inches at the end of the week. The mean reading for the week at sea level was 29.90 inches, being 0.19 inch higher than that of the preceding week, and 0.055 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 72° on the 24th and 26th to 65° on the 28th; the mean value for the week was 70°. The lowest temperatures of the air observed by night ranged from 52° on the 28th to 58° on the 23d; the mean for the week was 54°.6. The mean daily range of temperature in the week was 15°, the greatest range in the day was 18°, on the 25th, and the least 10°.9, on the 22d.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows:—22d, 58°.9, − 3°.4; 23d, 62°, − 0°.2; 24th, 60°.2, − 2°; 25th, 60°.1, − 2°.1; 26th, 61°.7, − 0°.5; 27th, 60°.9, − 1°.3; 28th, 56°.9, − 5°.3. The mean temperature of the air for the week was 60°.1, being 2°.1 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 134° on the 25th, 133° on the 26th, and 132° on the 24th; on the 22d the highest reading was 92°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, was 43°, on the 28th; the mean of the seven low readings was 49°.

Wind.—The direction of the wind was mostly S.W. and W.S.W., and its velocity moderately brisk. The weather during the week was fine, though generally dull, and the sky generally a little more than one-half cloudy.

Rain fell on three days, the amount collected during the week was 0.62 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 77° at Sunderland, 75°.1 at Cambridge, and 72°.9 at Sheffield; at Liverpool the highest temperature in the week was 66°.5. The mean value from all stations was 71°.8. The lowest temperatures of the air observed by night were 46° at Truro, 47°.7 at Eccles, and 49° at Wolverhampton; at Portsmouth the lowest temperature was 54°; the mean from all stations was 51°.1. The range of temperature in the week was the greatest at Truro and Cambridge: at both places it was 25°; and the least at Liverpool, 15°.6, and at Portsmouth 16°.3 The mean range from all stations was 20°.7.

The mean of the seven high day temperatures was the highest at Cambridge, 72°.8, and the lowest at Liverpool, 64°.8, and at Plymouth 66°.5; the general mean from all stations was 68°.8. The mean of the seven low night temperatures was the lowest at Eccles, 51°.9, and the highest at Plymouth, 56°.2, and at Portsmouth, 56°; the mean value from all stations was 54°.5. The mean daily range of temperature was the least at Liverpool, 9°.8, and the greatest at Cambridge, 19°.4; the mean daily range from all stations was 14°.3.

The mean temperature of the air for the week from all stations was 59°.9, being 1°.5 lower than the value for the corresponding week in 1876. The highest was 61°.7 at Sunderland, and the lowest 57°.4 at Wolverhampton.

Scotland: *Temperature.*—The highest temperatures of the air observed by day ranged from 69° at Dundee to 66°.6 at Glasgow; the mean from all stations was 68°.6 The lowest temperatures of the air observed by night varied from 48° at Dundee to 50° at both Greenock and Perth; the mean value from all stations was 50°.4. The mean range of temperature in the week from all stations was 18°.2.

The mean temperature of the air for the week from all stations was 58°.6, being 1°.3 warmer than the value for the corresponding week in 1876. The highest, 59°.2, occurred at Leith, and the lowest, 57°.8, at Greenock.

Rain.—The amounts of rain measured at the several stations varied from 1.4 inch at Greenock, to 0.3 inch at Dundee; the average fall over the country was 0.6 inch.

Dublin.—The highest temperature of the air was 69°.7, the lowest 48°, the range 21°.7, the mean 60°; and the fall of rain 0.45 inch.

JAMES GLAISHER.

Obituary.

Many gardeners will learn with regret that Mr. John Richards, gr. to Baron Lionel de Rothschild, Gunnersbury Park, Acton, died at Gunnersbury on July 18, at the age of 51, after a severe and wasting illness of some three months' duration. Mr. Richards commenced the profession of a gardener early in life by engaging himself to his uncle, who had a small nursery at Hatton, in Shropshire, and grew plants for market. From Hatton he went to the Botanic Gardens at Birmingham, and, after remaining there for a time, went next to Trentham Gardens, Staffordshire, for a period of nearly three years. On leaving Trentham he went to Shrubland Park, and was plant foreman there for two years, and then filled the post of plant foreman at Woburn Abbey, Beds, the seat of the Duke of Bedford, where he remained for four years. From Woburn he went to Grimston Park, Tadcaster, as gardener to Lord Londesborough, about the year 1854, and had the charge of the Grimston Gardens for the space of fourteen years. While there he made a great reputation as a cultivator and exhibitor of stove and greenhouse plants and Orchids at the York and other shows in the North of England. In 1868 Mr. Richards left Grimston, and took charge of the gardens at Stoke Park, Slough, the residence of E. J. Coleman, Esq., and after remaining there for the space of sixteen months was offered and accepted the charge of the gardens at Gunnersbury Park, where he remained till his death—a period of nearly seven years. Under his care the gardens at Gunnersbury maintained their old reputation, and at a meeting of the Royal Horticultural Society about three years ago Mr. Richards was awarded the Lindley Medal for some superb examples of Odontoglossum vexillarium.

He was buried at the cemetery, Ealing, on July 21, which is immediately contiguous to Ealing Park, formerly the residence of Mrs. Lawrence, of such fame as a cultivator and exhibitor of plants. *R. D.*

Natural History.

Season Ticket.—It may be interesting to some of your readers to be informed that on a small piece of frame-work underneath a third-class smoking carriage on the London and South-Western Railway a water-wagtail has built her nest and reared a young and thriving family of four. The train runs regularly from Cosham to Havant five times a day, in all about 40 miles, and the station-master informs me that during the absence of the train the male bird keeps close to the spot waiting with manifest interest and anxiety the return of his family from their periodical tours. *R. E. D., East Cosham, Hants, in the "Times."*

Answers to Correspondents.

Araucaria excelsa glauca: *E. N. Phillips.* This is not a hardy plant, and therefore ought not to have disqualified a collection of greenhouse plants in which it was shown. As to its being alleged to be "not a plant but a tree," that is a mere quibble. Are not all trees plants? It is certainly not hardy in the climate of London.

Balsams: *A. Dean.* A fine strain of Balsams, distinct in character from some other fine lots which have recently been exhibited. They are remarkable for the large size and doubleness of their flowers, the variety of their colours, and the dwarfness of their habit.

Bowling Green: *Bowler.* We cannot tell the exact state of your bowling green from the description. If only "slightly uneven" you might fill up the hollow places with fine earth, dressing oft carefully to the general level, and possibly the grass would grow up through the new soil, or if not these places could be re-sown in spring. If you keep it well cut in the growing season that will check the Clover. The roller will not be too heavy if not used when the ground is excessively wet.

Exhibitors: *J. Shaw.* We reply to your queries as follows:—1. If a man, not being a professional, but constantly employed by a gentleman to attend to a small garden and greenhouse with frames, &c., should wish to compete, in what class should he be placed? In the gardeners' class; he is to all intents and purposes the gardener to the gentleman employing him, 2. If a man, not a professional, has a large garden and greenhouse, and grows pot plants, fruits, flowers and vegetables for market, also keeps a small shop and sells seeds and other garden requisites, in what class should we place him, should he wish to compete? Being a dealer, he would go into the nurserymen's class. We should add that our replies are based on the supposition that your schedule recognises the usual distinctions of nurserymen, gentlemen's gardeners, and cottagers, but you have given us no information on this point.

Fittonias: *Herbaceous Acanthacea.* Stove plants propagated by cuttings.

Herbaceous Plants: *Herbaceous.* Anything reported to be hardy should grow in such a locality. See what your neighbours grow.

Hollyhocks: *A. D.* The leaves are infested with the Mallow Fungus (Puccinia malvacearum). Burn the plants at once.

Insects: *R. E. S. H.* Julus terrestris. Try Potato-traps—viz., slices of Potatos put down near the plants to attract the insects; but we know of no remedy. *A. M.—M. Y.* The larva of a sawfly named Lyda clypeata. *A. M.*

Insects on Wheat: *L. H. G.* The insect doing the mischief is Aphis cerealis (the Wheat Greenfly). Of course it will do a great deal of mischief to the crop, and no topical application to a Wheat crop nearly ripe is possible; but it is just such a case as I have lately advocated for a temporary cessation of the crop throughout the district. *Andrew Murray.*

Names of Plants: *J. J.* A magnificent specimen of Ammi majus.—*P. Middleton.* Probably Crinum ornatum, but the flowers were so rotten when they reached us that we cannot be certain.—*J. M.* Probably Achimenes coccinea. Send again when in flower. —*W. P.* Syringa Emodi.—*T. R. B.* Datura Stramonium.—*J. M.* The shrub is Calycanthus occidentalis. —*John Leman.* Cotoneaster vacillaris.—*F.* 1, Linaria sp., specimen insufficient; 2, Spiræa filipendula flore-pleno; 3, Sedum album. The fungus is not a Truffle, but a small Puff-ball, Lycoperdon.—*Z. Y. X.* Epidendrum ciliare.—*W. Geddes.* 1, Campanula persicifolia, herbaceous; 2, Geum chilense; 3, Potentilla nepalensis var.; 4, Campanula latifolia; 5, C. carpatica; 6, Sisyrhynchium Bermudianum.—*J. M., Falmouth.* The parasite growing on the Gorse is the Common Dodder (Cuscuta europæa).—*W. D. F.* Doodia caudata.—*A. F.* 1, Hypericum quadrangulum; 2, Galeopsis Tetrabit; 3, Teucrium Scorodonia.

Pea: *T. J. & Sons.* Probably Superlative. Compare the growing plant with the published description, as we cannot be certain from a single pod.

Pears: *H. & W.* Your Pears are suffering from a complication of disorders. First a little four-legged Acarus attacked the leaves, then there was an extra growth of the hairs, and finally they were attacked by a fungus, Helminthosporium pyrorum. The spores of the fungus are so numerous, and the Acarus so minute, that it seems almost impossible to extirpate them. The fungus sometimes attacks the blossoms. *M. J. B.*

Roses: *Miss P.*—Do not remove the infected leaves, but by sprinkling sulphur over them, or syringing with Gishurst Compound, neutralise existing evil. Have a good layer of thoroughly decomposed manure well forked in amongst the roots next January, adding, if possible, a little lime; or, better still, superphosphate of lime. If your stiff soil is deep, and the instructions as to manuring are attended to, the need for artificial waterings should not occur.

Twin Cucumbers: *C. J. G.* The fusion of two flowers and ultimately of two fruits is by no means of rare occurrence.

Vine Leaf: *S.* No. There is not a trace of the Phylloxera, the warts on the under side resulting, no doubt, from the causes you mention.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

Catalogues Received.—Charles Turner (Slough), Catalogue of Strawberry Runners for Autumn and Spring Planting.—Vilmorin-Andrieux & Co. (4, Quai de la Mégisserie, Paris), Catalogues of Flower Seeds Bulbous Plants, and Strawberries.

Communications Received.—Dicksons & Co. (with many thanks).—D. T. F. (1, 2, 3, distributed; with many thanks. We will bear in mind what you say).—E. W. C.—E. W.—J. W. (next week).—J. J.—J. C. & Co.—C. C.—Cymro.—W. D.—A. W.—H. E.—J. H. K—C. Y. M.—H. G.—J. L.—W. E.—J. W. S.—R. P.—G. Cooling.

DIED, at Bath Lodge, Luckenam Park, Chippenham, Wiltshire, on July 12, William George, gardener and forester (a native of Orton, Morayshire), aged 74.

Markets.

COVENT GARDEN, August 2.

The London season being now over, all kinds of hot-house fruits are considerably lower, Melons alone being inquired after. Nearly all the soft fruit has come to market, and buyers are pretty well filled up, but the demand for black Currants and Raspberries still keeps good. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	3 6– 4 6	Melons, each	4 0–10 0
Apricots, per box	2 0– 3 0	Oranges, per 100	12 0–20 0
Cherries, p. ½-sieve	6 0– 8 0	Peaches, per doz.	3 0–18 0
Currants, red, ½-siev.	3 0– 3 6	Pears, per doz.	.. .. ..
— black, p. ½-sieve	5 0– 5 6	Pine-apples, per lb.	2 0– 6 0
Grapes, per lb.	1 6– 6 0	Strawberries, p. lb.	0 4– 1 6
Lemons, per 100	8 0–12 0	Figs, green, each	0 4– 1 0

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	2 0– ..	Mint, green, bunch	0 6– ..
Beans, French, per bushel	6 0– ..	Mushrooms, per pott.	1 0– 3 0
Beet, per doz.	1 0– 2 0	Onions, 12 bunches	9 0– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 7– 0 10	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	3 0– ..
Leeks, per bunch	0 2– 0 4	Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	2 0– 3 0

Potatos (new):—Jersey Kidneys, 10s. to 14s. per cwt.; Rounds, 9s. to 10s. per cwt.

Plants in Pots.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	4 0–12 0	Fuchsias, per dozen	4 0–18 0
Bedding-out plants, per doz.	1 6– 3 0	Heaths, variety, doz.	12 0–60 0
— in boxes, each	1 6– 2 6	Heliotrope, per doz.	6 0–18 0
Begonias, per doz.	6 0–12 0	Hydrangea, per doz.	6 0–24 0
Bouvardias, do.	12 0–24 0	Liliums in var., each	1 6– 6 0
Calceolaria	6 0–18 0	Mignonette, per doz.	3 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	4 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargoniums, p. doz.	9 0–36 0
Cyperus, do.	6 0–12 0	— scarlet, per doz.	2 6– 9 0
Dracæna terminalis	30 0–60 0	Petunias, per doz.	6 0–18 0
— viridis, per doz.	18 0–24 0	Rhodanthe, per doz.	6 0–12 0
Ferns, in var., p. doz.	4 0– ..	Roses, per dozen	18 0–60 0
Ficus elastica, each	2 6–15 0	— fairy, per dozen	4 0–12 0
		Valotta purpur., doz.	12 0–18 0

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	1 0– 2 0	— zonal, 12 sprays	0 3– 1 0
Carnations, per dozen	0 6– 2 0	Pinks (white and coloured), 12 bun.	6 0–12 0
— 12 bunches	3 0– 9 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Rocket, 12 bunches	3 0– 6 0
Eschscholtzia, dozen bunches	2 0– 6 0	Roses (outdr.), 12 bun.	2 6– 9 0
Eucharis, per doz.	4 0–12 0	— (indoor), per doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	— moss, 12 bunches	6 0–12 0
Heartsease, 12 bun.	1 6– 6 0	Stephanotis, 12 spr.	2 0– 9 0
Heliotropes, 12 spr.	0 6– 1 0	Stocks, 12 bunches	4 0– 8 0
Lilies (in variety), 12 sprays	1 0– 2 0	Sweet Peas, 12 bun.	3 0– 9 0
Mignonette, 12 bun.	4 0– 9 0	Sweet Sultan, 12 bun.	4 0–12 0
Myosotis, 12 bunch.	3 0–12 0	Tropæolum, 12 bun.	1 0– 4 0

SEEDS.

London: *August* 1.—The seed markets this week have shown a good seasonable attendance of buyers, and there has been a fair trade doing. For sowing white Mustard seed, in particular, there has been a brisk demand, under which the already scanty stocks of 1876 seed have been further materially reduced, and in fact nearly cleared off. New Rape of fine quality is now in slightly improved supply—values exhibit considerable steadiness, the yield having proved very disappointing. One or two handsome samples of new English Winter Tares have arrived on Mark Lane; but for these, as well as for Rye, prices are not yet definitely fixed. Trefoils, owing to the uniformly unfavourable reports of the new crop, continue to be very strongly held; occasionally a few parcels of yearling seed have changed hands at a heavy advance, but holders generally appear resolved to await the probability of a higher range of quotations rather than quit on present terms. There is also a better feeling as regards white Clover seed. For Trifolium incarnatum last week's currencies are well maintained; at the comparatively unremunerative rates now prevailing there is no great inducement for farmers to market their produce, consequently the supply to hand keeps in narrow compass, and a firm tone characterises the article. We have a good inquiry for Swede seed of the new crop. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade as regards Wheat was extremely heavy. English produce was 1s. to 2s. per quarter cheaper, while a similar decline may be quoted with respect to foreign. Some new Wheat grown at Headcorn, in Kent, was shown on the market, and as an illustration of what the season is likely to prove in point of quality it may be mentioned that its weight was equal to fully 62 lb. per bushel, while the total growth averaged about six quarters per acre. Barley was about 6d. dearer on the week. Malt was quiet, on former terms. In Oats certain descriptions retained an advance of from 6d. to 1s. upon the quotations of this day week. The same observations apply to Maize. Beans and peas were dull, at about late rates. Flour was heavy, all transactions being at less money.—On Wednesday the Wheat market, under the influence of fine weather, was heavy, and any pressure to sell was accompanied with a marked reduction in price. Spring corn was comparatively steady, although in Barley and Oats transactions now and then occurred at rather less money. Flour followed the movement of Wheat.—Average prices of corn for the week ending July 28:—Wheat, 64s. 6d.; Barley, 39s.; Oats, 27s. 10d. For the corresponding week last year:—Wheat, 47s. 5d.; Barley, 31s. 4d.; Oats, 31s. 2d.

CATTLE.

At the Metropolitan Market on Monday there was a short supply of beasts, and prices were for the most part the same as on Monday se'nnight. Sheep also were in short supply; trade was not very brisk for them, yet there was no change in price. Choice lambs were in demand, but other kinds were a heavy trade. The few calves on offer made a fair price. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 8d. to 6s. 2d.; calves, 5s. to 6s. 2d.; sheep, 5s. 6d., to 6s., and 6s. 4d. to 7s.; lambs, 7s. to 8s.; and pigs, 4s. to 5s.—On Thursday trade ruled quiet, and without special feature. There was a moderate supply of beasts on offer. The demand was hardly so firm, at drooping prices. Sheep were quiet, but tolerably steady. Lambs sold at late rates. Calves and pigs were quiet.

HAY.

At Whitechapel on Monday good old fodder was firm, but there was not much trade for inferior and new. Prime clover, 100s. to 140s.; inferior, 85s to 95s.; good new clover, 100s. to 120s.; prime meadow hay, 90s. to 124s.; inferior, 70s. to 85s.; new hay, 80s. to 100s.; and straw, 44s. to 60s. per load.—On Thursday there was a fair supply of fodder. Trade was good, and prices were firm. Quotations:—Clover, prime old, 100s. to 140s.; inferior, 85s. to 95s.; good new, 100s. to 126s.; hay, prime old, 90s. to 124s.; inferior, 70s. to 85s.; good new, 80s. to 100s.; and straw, 44s. to 60s. per load. — Cumberland Market quotations:—Superior old meadow hay, 128s. to 136s.; inferior, 90s. to 112s.; new hay, 90s. to 112s.; superior old Clover, 132s. to 140s.; inferior, 110s. to 117s.; new Clover, 90s. to 112s.; and straw, 58s. to 63s. per load.

POTATOS.

The Borough and Spitalfields reports state that the supplies of Potatos are moderate, and trade remains steady. Kent Regents, 140s. to 180s.; Essex do., 130s. to 160s.; Kent shaws, 120s. to 140s.; Essex do., 120s. to 150s.; kidneys, 160s. to 200s.; Early Rose, 120s. to 160s. per ton.—The imports into London last week comprised 1766 baskets from Rotterdam, 383 packages 394 baskets Antwerp, 104 packages 103 barrels Hamburg, 129 baskets 52 sacks 37 packages Boulogne, 198 baskets Bremen, 54 casks Dunkirk, and 12 packages Palermo.

COALS.

The prices obtained at Wednesday's market indicate an advance on those current on Monday. The quotations were:—Wylam, 17s.; Holywell Main, 17s.; Walls End—Haswell, 20s.; Hetton, 20s.; Hetton Lyons, 18s. 3d.; Hawthorns, 18s. 3d.; Lambton, 19s. 6d.; Seaton, 17s.; South Hetton, 20s.; Tunstall, 18s. 3d.; Chilton, 18s. 9d.; Kelloe, 18s. 3d.; East Hartlepool 19s. 9d.; South Hartlepool, 18s. 3d.; Tees, 19s. 9d.

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HORTICULTURAL BUILDER, AND HOT-WATER APPARATUS ENGINEER.

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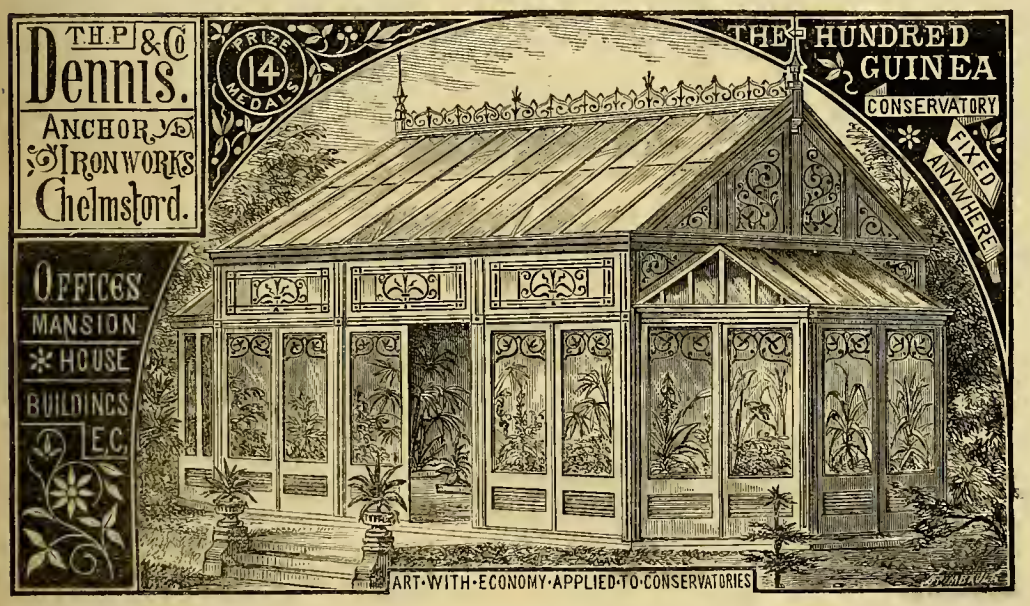

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secures almost entire immunity from Breakage of Glass, extreme facility for Repairs, and absolute freedom from Drip.

New "Registered" Acme Plant Preserver,
With "Truss" Hinge, and no Principals.
The Ridge always fits close, the interior is free from all obstruction, the corners are secured in iron angle plates: 21-oz. glass.

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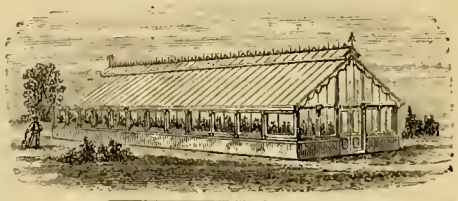

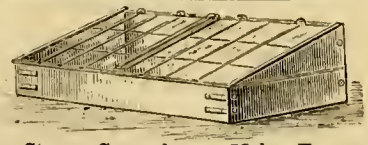

Extra Strong Cucumber or Melon Frames,
With 2-inch sashes and 1¼-inch red deal frames, secured at each corner with two wrought-iron strap bolts. Glazed, without putty, with 21-oz. glass.

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CALCEOLARIA.—Geo. Wheeler's Superb Strain, being in habit very compact, stout, and dwarf, of great variety in colour, and beautifully marked. Is inferior to none. Retail packets, 2s. 6d., 1s. 6d. and 1s. each. Trade packets, 21s. to 5s. each.

G. W. distributed his first raised hybrid Calceolaria in 1830, at 2 s. each in trade; and in 1832 supplied many sorts of 6 plants each to the trade at 42s. the set.

IMPERIAL CABBAGE.—G. Wheeler's Improved Genuine, after a test of about half a century, still maintains its character of first-rate Early. A limited quantity still on hand at the rate of 1s. 2d. per ounce.

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Come and See.

H. CANNELL begs to inform his Customers, Friends, and the Public generally that his AUTUMN CATALOGUE of all the New Soft-wooded Plants and the best older varieties is now ready, and will be sent post-free. H. C. wishes to draw particular attention to his 250 varieties of ROSE BUDS, cuttings of his unrivalled collection of Geraniums, Verbenas, Fuchsias, Coleus, Petunias, Lobelias, Lantanas, Dahlias, Chrysanthemums, Mimulus, Pansies, Violas, &c., all of which are supplied at this season very cheaply, and many thousands of Seedling Primulas, Cinerarias, 1s. 6d. per dozen, are now also ready to be posted off.

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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.

Fresh SPHAGNUM, 10s. 6d. per sack.

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GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY Limited).

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.

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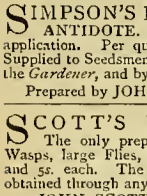
SCOTT'S WASP DESTROYER.—The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 1s. 6d., 2s. 6d. and 5s. each. The larger sizes are the cheapest. May be obtained through any Seedsman, or direct from

JOHN SCOTT, The Royal Seed Stores, Yeovil.

TEBBS' UNIVERSAL FUMIGATOR,



For Greenhouses, Conservatories, Ferneries, Frames, Poultry Houses Infirmaries, Ships, Bed-rooms, &c.

This cheap and thoroughly effective Fumigator requires no attention when once lit, no fear of flaming, no waste of material, every particle being given off in dense smoke.

Testimonial.—"I shall never think of using pots again."

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NEW SEASON'S ARCHANGEL MATS.—My first parcel has just arrived in excellent condition. Prices to the Trade on application. TAGANROG MATS, PETERSBURG MATS and DUNNAGE MATS, at the lowest prices.

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Wholesale Russia Mat Merchants.

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2 yards wide	..	..	1s. 10d.
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"FRIGI DOMO" NETTING, 1s. 6d. per yard.

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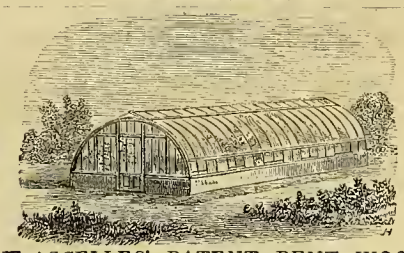

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The curved house is more durable, stronger, lighter in construction, and no bent glass is required.

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Indestructible Terra-Cotta Plant Markers.

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incure no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

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WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

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SILVER SAND, fine or coarse grain as desired. Prices by Post per Ton or Truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

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A liberal Discount to the Trade.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.

TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.

NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.

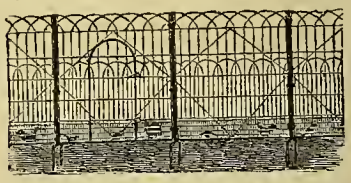
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.

EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

THOMAS'S NEW POULTRY FENCING,

No. 508.

Very strong and durable. Reduced Prices, 1877.



Galvanised after Manufactured, with Iron Standards, Painted Black, AND SPACED 2 FEET APART, rendering it the strongest and best Fence in the Market.

This ornamental Fencing is easily fixed or removed by any labourer, without extra cost.

PRICES:—

6 feet high, 6s. per yard; 7 feet high, 7s. per yard,

Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 3s. extra, except when 12 yards are ordered, in which case a door is included.

Five per cent. discount allowed for prompt cash on Orders amounting to 40s. and upwards.

Illustrated and Priced Catalogues of every description of Horticultural Wirework on application.

J. J. THOMAS & CO.,

PADDINGTON WIREWORKS,

285 and 362, EDGWARE ROAD, LONDON, W.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

Established over a Quarter of a Century.

Is in use over many thousand miles,

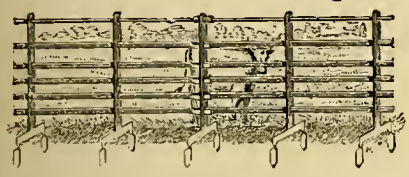
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

It is constructed with

FOWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS.

Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,

IN WROUGHT AND CAST IRON,

Designed for the Mansion, Villa, or Farm,

WICKET AND GARDEN GATES,
In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards,

FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.

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IMPROVED LIGHTNING CONDUCTORS,
With fittings complete, simple in construction, and easily erected by a careful mechanic.

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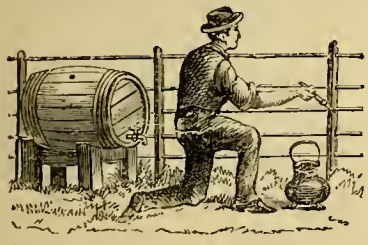
Oil Paint No Longer Necessary.



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Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

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"*The Ryleys, Alderly Edge, Manchester.*—Messrs. Hill & Smith.—Sirs,—For some 20 years I have used your 'Black Varnish,' and shall be glad if you will forward me another cask, *as I consider it the best thing known for the preservation of all outdoor work, either wood or iron,* that requires to be painted. —Yours respectfully, ALFRED LOWE, J.P."

Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained.

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

CARSONS' PAINT,

PATRONISED BY THE QUEEN,
H.R.H. THE PRINCE OF WALES,
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The British, Indian and Colonial Governments, 10,000 of the Nobility, Gentry, and Clergy, Railway and Canal Companies, Collieries, Ironmasters, &c., &c.,

Is extensively used for all kinds of

OUTDOOR WORK.

It is especially applicable to

WOOD, IRON, BRICK, STONE & COMPO.

CAN BE LAID ON BY UNSKILLED LABOUR.

Sold in all Colours.

2 cwt. free to all Stations.

Prices, Patterns, and Testimonials Post Free.

WALTER CARSON & SONS,
LA BELLE SAUVAGE YARD,
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And 21, BACHELOR'S WALK, DUBLIN.
No AGENTS.

JOHN MATTHEWS, The Royal Pottery, Weston-super-Mere, Manufacturer of TERRA COTTA VASES, FOUNTAINS, ITALIAN BASKETS, BORDER TILES, GARDEN POTS, of superior quality, from 1 to 30 inches diameter, stand the frost and seldom turn green. ORCHID, FERN, SEED, and STRIKING PANS, RHUBARB and SEAKALE POTS, &c. Price Lists post-free. Sheets of Designs, 6*d.* Books of Designs, 1*s.*

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Can be obtained in all sizes and qualities, of

BETHAM & SON,
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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14 in., 20-in. by 16-in., in 16-oz. and 21-oz.

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Garden Furniture
IN
GREAT VARIETY.

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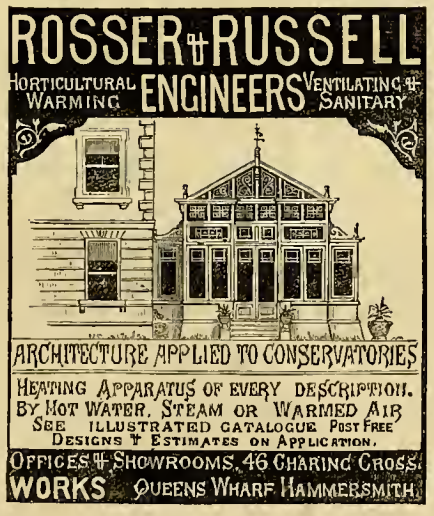

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J. B. strongly recommends the ALLERTON PRIORY BOILER as one of the most powerful for extensive work. He has fixed one capable of heating 10,000 feet of 4-inch piping. See *Gardeners' Chronicle*, p. 647. Also a WELDED WROUGHT IRON WATERWAY BACK for ordinary Saddle Boilers. These Backs can be fixed to any Boiler now in use, and are a great saving in fuel and labour. He is also prepared to fix any kind of Boiler made.

Manufacturer of the Registered LIVER FRONT for large Boilers, IRON and WIRE WORK in all branches. References from Noblemen and Gentlemen for work done.

Plans and Estimates given.

For Sale, a

STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to

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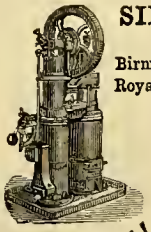

SILVER MEDAL
AWARDED AT
Birmingham Meeting, Royal Agricultural Society, 1876.

1876.
HIGHEST HONOR
AT THE
Centennial Exhibition, Philadelphia.

THE NEW PUMPING ENGINE

Specially adapted for Pumping in Gentlemens' Houses and Grounds. No Labor Required.

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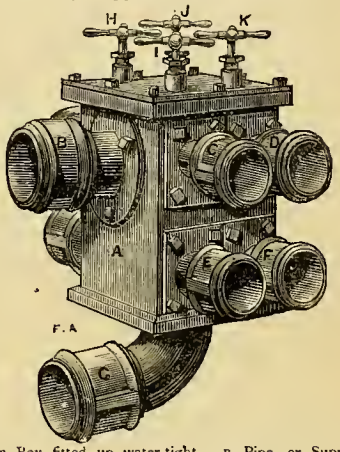
CRITCHLEY'S PATENT HEAT REGULATOR,

AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

The following Testimonial has been received :—

"Berkeley Castle, April 13, 1875.

"Gentlemen, — I am happy to inform you, now that the late severe winter is past, that the Hot Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve: in fact, I think it the greatest improvement that has come out for horticultural purposes.

"I am, Gentlemen, yours truly, "R. H. CRONK,
"Gardener to the Right Hon. Lord Fitzhardinge."

Estimates and Plans furnished for Warming Gentlemen's Mansions and Public Buildings. Orders attended to in any part of the kingdom, and guaranteed to answer their intended purposes. Prospectus and Price Lists post-free.

Messrs. CRITCHLEY & CO.,
Horticultural Engineers and Builders,
GROSVENOR WORKS, CHELTENHAM.

STEVENS' TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,

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HOT-WATER ENGINEERS, &c., &c.
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

LONDON AND COUNTY
BANKING COMPANY.

Established in 1836, *and Incorporated in* 1874 *under "The Companies' Act,* 1862."

SUBSCRIBED CAPITAL—
£3,750,000, in 75,000 Shares of £50 each.

REPORT ADOPTED at the HALF-YEARLY GENERAL MEETING, August 2, 1877.

FREDERICK FRANCIS, Esq., in the Chair.

The Directors, in presenting to the Proprietors the Balance-Sheet of the Bank for the Half-Year ended the 30th June last, have the satisfaction to report that, after paying interest to Customers and all charges, allowing for Rebate, and making provision for Bad and Doubtful Debts, the Nett Profits amount to £122,889 11s. 10d. This sum, added to £11,166 8s. 3d. brought forward from the last account, produces a total of £134,056 0s. 1d.

They have declared an Interim Dividend for the Half-Year at the rate of 16 per cent. per annum, which will absorb £120,000, leaving a balance of £14,056 0s. 1d. to be carried forward to Profit and Loss New Account.

The Dividend, £1 12s. per share, free of Income Tax, will be payable at the Head Office, or at any of the Branches, on or after Monday, 13th instant.

BALANCE SHEET OF THE LONDON AND COUNTY BANKING COMPANY, JUNE 30, 1877.

DR.	£ s. d.	£ s. d.
To Capital paid up		1,500,000 0 0
Reserve Fund		700,000 0 0
Amount due by the Bank for Customers' Balances, &c.	22,364,730 1 5	
Liabilities on acceptances, covered by Securities ..	2,233,925 2 10	
		24,598,655 4 3
Profit and Loss Balance brought from last Account	11,166 8 3	
Gross Profit for the Half-year, after making provision for Bad and Doubtful Debts, viz.:	349,679 0 7	
		360,845 8 10
		£27,159,500 13 1
CR.		
By Cash on hand at Head Office and Branches, and with Bank of England ..	2,715,601 9 2	
Cash placed at Call, and at Notice, covered by Securities	2,731,937 2 8	
		5,447,538 11 10
Investments, viz.:—		
Government and Guaranteed Stocks	2,822,997 18 9	
Colonial Government and other Stocks and Securities	279,317 12 6	
		3,102,315 11 3
Discounted Bills, and Advances to Customers in Town and Country ..	15,706,605 18 0	
Liabilities of Customers for Drafts accepted by the Bank (as per contra) ..	2,233,925 2 10	
		17,939,931 0 10
Freehold Premises in Lombard Street and Nicholas Lane, Freehold and Leasehold Property at the Branches, with Fixtures and Fittings		482,802 19 8
Interest paid to Customers		52,296 18 5
Salaries and all other Expenses at Head Office and Branches, including Income-tax on Profits and Salaries		134,615 11 1
		£27,159,500 13 1

DR. PROFIT AND LOSS ACCOUNT.	£ s. d.
To Interest paid to Customers, as above ..	52,296 18 5
Expenses, as above	134,615 11 1
Rebate on Bills not due, carried to New Account..	39,876 19 3
Dividend of 8 per Cent. for Half-year ..	120,000 0 0
Balance carried forward	14,056 0 1
	£360,845 8 10
CR.	
By Balance brought forward from last Account,	11,166 8 3
Gross Profit for the Half-year, after making provision for Bad and Doubtful Debts ..	349,679 0 7
	£360,845 8 10

We, the undersigned, have examined the foregoing Balance Sheet, and have found the same to be correct.

(Signed) MUNGO McGEORGE, WILLIAM NORMAN, RICHARD H. SWAINE, } *Auditors.*

London and County Bank, July 26, 1877.

London and County Banking Company.

NOTICE IS HEREBY GIVEN that a DIVIDEND on the CAPITAL of the COMPANY, at the rate of 8 per cent. for the Half-year ended June 30, 1877, will be PAYABLE to the Proprietors, either at the Head Office, 21, Lombard Street, or at any of the Company's Branches, on or after MONDAY, the 13th instant.

By order of the Board,
W. McKEWAN, *General Manager.*
21, Lombard Street, August 3, 1877.

Metallic Hothouse Builder to Her Majesty.

HENRY HOPE (late Clark & Hope, formerly Clark), HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER, 55, Lionel Street, Birmingham. Established A.D. 1818. BOOKS of DESIGNS, 5s. each.

☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

THE CULTIVATOR.—A Portuguese Monthly Agricultural Journal, which circulates in Portugal and her possessions, and in the Principal Towns of the Brazils.

This Paper offers an excellent medium for Advertisements of every description of industry and of every article of consumption in the countries and places above mentioned.

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Address, the Editor of the *Cultivator*, St. Michael's, Azores.

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H. J. VAN HULLE, Botanical Gardens, Ghent, Belgium.

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(By appointment to the Royal Horticultural Society.)

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☞ *ADVERTISERS are requested to note that although we do not object to receive Letters to be called for, we cannot undertake to forward them.*

PARTNERSHIP.—A Nurseryman, carrying on a successful business within 25 miles of London, is desirous of meeting with a Partner. Failing health causes Advertiser to wish to find a man, or men who in, say, one or two years would be able to take over from him the entire business. Money would be required, but every facility be afforded provided substantial guarantees were given. The fullest references given and required.—Address, by letter, giving outline of means and position, NURSERYMAN, Messrs. Norris, Allens & Carter, Solicitors, 20, Bedford Row, London, W.C.

WANTED, about the last week in August, a HEAD WORKING GARDENER, where an Under Gardener is kept and other assistance given; must understand Flower and Kitchen Gardening, Vines, Wall Fruit, and Houses. Cottage found.—C. GORDON, Newtimber Place, Hurstpierpoint.

WANTED (10 miles from Town), a respectable and industrious Married Couple, the Man as HEAD WORKING GARDENER—must thoroughly understand every branch of the profession, including Forcing—the Wife to undertake the entire Laundry of a large family, all washing materials found. Letters must state full particulars and wages required, or will not be answered.—F. P., Forest House, Chigwell, Essex.

WANTED, in Yorkshire, a thorough good industrious GARDENER. He would have the entire Management and Working of the Houses. Assistance given for outside work. Must be well up in Vines and Fruit Growing. Preference given to a total abstainer, and one whose Wife could make herself useful if required. Must have first-class references from last and previous situations. Wages 30s. a week and cottage.—A. B., care of Messrs. VEITCH AND SON, Chelsea, London, S.W.

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To the Trade.

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COLORADO BEETLE.

In order to enable our Readers to recognise this Insect should it appear in our Potato Fields, we repeat in this place the illustration given in our last number, at p. 113. The materials for the woodcut were furnished by Mr. ANDREW MURRAY, and were drawn from Nature by Mr. WORTHINGTON G. SMITH.

THE COLORADO BEETLE (NAT. SIZE).

The colour of the larva or grub is reddish or orange, that of the mature Beetle ochre-coloured with ten black stripes running lengthwise down the back. Once the identity of the insect is established beyond doubt, the most rigorous measures must be adopted to prevent its increase and spread. See the *Gardeners' Chronicle* for July 14, p. 38.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

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To the Trade.

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H. AND F. SHARPE have just harvested their new crop of WHITE-FLESHED TURNIP SEEDS, and are prepared to make special offers to the Trade at very moderate prices. The Seed is ready for immediate delivery.—Seed Growing Establishment, Wisbech.

GIANT ROCCA ONION.—The largest and best in cultivation for autumn sowing; frequently weighs from 2 to 3 lb. each. Sow at once. Seed, with complete cultural instructions, 1s. per ounce, post-free, 1s. 2d.

DANIELS BROS., Seedsmen to the Prince of Wales, Norwich.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Seedlings.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, North Britain, are now booking Orders for Seedling Forest Trees, &c., for the coming season. Their 1-yr. and 2-yr. seedling Larch are fine.

Quotations furnished on application.

The Formation and Improvement of

GARDEN LAWNS, CROQUET GROUNDS, &c.

Full information on the above may be had gratis and post-free on application to

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Invaluable for Filling-up Vacant Root Crops—

FOR PRESENT PLANTING AND SOWING.

GEE'S SUPERIOR BEDFORDSHIRE-GROWN CABBAGE PLANTS, Enfield Market, Drumhead, and Thousand-headed, all very fine strong plants, at 3s. 6d. per 1000. Terms Cash.

TURNIP, MUSTARD, COLE, CABBAGE, and all other kinds of Seeds and Plants of superior excellence, for the Farm or Garden.

See CATALOGUES, with lowest prices, Testimonials, Opinions of the Press, &c., on application to

FRED. GEE, Seed and Plant Grower, Biggleswade, Beds.

SALE BY AUCTION.

Preliminary Notice.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., DURING the MONTH of AUGUST, a quantity of RARE PALMS and OTHER PLANTS from Ghent, including :—Aralia filicifolia, A. gracillima, A. elegantissima, Cocos Weddelliana, Geonoma princeps, Pandanus Pancheii, Kentia Lindeni, K. gracilis, Pritchardia filifera, Calamus asperrimus, Croton Andreanum, Livistona Hoogendorpii, &c.

To Florists and Jobbing Gardeners.

FOR SALE, a SMALL BUSINESS, in main thoroughfare; very cheap, long lease.
Apply, FLORIST, Southampton Street, Camberwell, S.E.

To Nurserymen and Others.

TO BE DISPOSED OF, one of the oldest established NURSERY BUSINESSES in the North of England, with valuable connection.

The executors of the late Mr. John Harrison, of the North of England Nurseries, Catterick Bridge and Scorton, are open to treat with a gentleman possessing capital, for the disposal of the business, which has an established connection of nearly 50 years.

The Nurseries consist of about 60 acres of Freehold Land, about 40 acres of which are stocked with a choice Collection of Roses and General Nursery Stock. There are good Residences in the Grounds, and fine Ranges of Glass, close to the Catterick Bridge Station of the North-Eastern Railway, situate between Darlington and Richmond, and offering unusual facilities for doing a large and profitable business. A large portion of the purchase money could remain on security of the property at a reasonable rate of interest. Possession could be given at any time as a going concern. Principals or their Solicitors only may apply to the undersigned,

A. E. HARRISON, Solicitor, Church Yard, Rotherham.

Midway between Croydon and Streatham Common.

TO BE LET, a charmingly situate VILLA RESIDENCE, standing in the centre of about 2 Acres of Grounds laid out in Flower and Kitchen Gardens and Croquet Lawn, finely timbered; the House contains three Reception Rooms, six Bedrooms, Bath Room, and usual Offices. There are three Greenhouses, Stabling for Three Horses, Coach House, Man's Room, &c.

Orders to view to be obtained of Mr. NICKERSON, Auctioneer and Surveyor, 121, Cheapside, London, E.C.

Lordine Court, Ewhurst, Sussex.

TO BE LET, for Seven Years, from September 29, 1877, a very convenient RESIDENCE, approached by a Carriage Drive, containing Dining and Drawing Rooms, Office, Kitchen, Scullery, Pantry, Dairy, Cellar, Wine Cellar, Seven Bedrooms, Bath-room, and Three Attics; has Indoor and Outdoor W.C.'s, Well of excellent Water, Rain-water Tank, Wood-room, and Wood Lodge; Hot-house, Greenhouse, Two Pits, very large Garden, well stocked with productive Wall and other Fruit Trees, including Apples, Pears, Plums, Nuts, Peaches, Cherries, &c.; Summer-house, Croquet Lawn, Three-stall Stable, Coach-house, Harness Cupboard, Cow-yard, Lodge, Pigstye, Apple and Store Room, Potting Shed, and Outbuildings, with or without a Paddock containing 2a. 2r. 23p.

Lordine Court is situate about 6 miles from Robertsbridge and Battle Stations, and 10 from Rye.

For further particulars, and orders to view, apply to JAMES COLEMAN VIDLER, Auctioneer and Estate Agent, 26, Havelock Road, Hastings, and (postal address) Magdala House, Rye, Sussex.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, and the ERECTION of FARM BUILDINGS and COTTAGES.

The Land, Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

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The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

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Messrs. RAWLENCE and SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, and CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE and PATERSON, W.S., 81a, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
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Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

Strawberries.

CHARLES TURNER recommends the following for a continuous supply of fine flavoured fruit. Prepared Runners are now ready.

Those best adapted for forcing are marked with an asterisk.

Aromatic	*Auguste Nicaise
Beauty	British Queen
Dr. Hogg	Duc de Magenta
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Frogmore Late Pine	James Veitch
Keens' Seedling	*La Grosse Sucrée
Lucas	*President
Royalty	*Sir C. Napier
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Descriptive CATALOGUE on application.
The Royal Nurseries, Slough.

STRAWBERRY PLANTS, STRAWBERRY PLANTS.—Purchasers' selection from Fifty-five of the best sorts known. For LIST see large Advertisement in last week's *Gardeners' Chronicle*. 3s. 6d. per 100, our selection; 2s. 6d. per 100, 20s. per 1000, all true to name.

HARRISON'S MUSK, 2 plants 1s., 12 for 3s. 6d.

PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2s. per dozen.

WILLIAM CLIBRAN and SON, The Oldfield Nurseries, Altrincham.

NEW and CHOICE PLANTS.

ABUTILON TESSELATUM } Very beautiful var. green-
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GLOXINIAS, splendid collection, named varieties, 21s. per dozen, flowering plants.
POINSETTIA PULCHERRIMA PLENISSIMA, double Poinsettia, 5s. each.
PICOTEE, Princess of Wales, perpetual flowering, yellow, 5s. each.
CARNATION, Le Grenadier, perpetual flowering, scarlet, 1s. each.
MONOCHÆTUM ROBUSTUM, 2s. 6d. each.
MIMULUS MOSCHATUS HARRISONI, large plants, 1s. each.
TROPÆOLUM, Firefly, invaluable for winter flowering, 1s 6d. each.
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HYDRANGEA PANICULATA GRANDIFLORA, 1s. each.
PHLOX, Miss Robinson, pure white, very sweet, equal to Stephanotis to cut from 1s. each.

Any of the above, in strong healthy plants, postage or package free.

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Bedding Violas and Pansies.

DICKSONS and CO. invite inspection of their celebrated BEDDING VIOLAS and PANSIES, which for some months have been, and are now, in great beauty. The collection in their Pilrig Park Nursery numbers upwards of 130 sorts, so that intending purchasers have an opportunity rarely offered of making the best possible selection. Blooms can be sent by post on receipt of six stamps.

D. & Co. also call attention to their SEEDLING FANCY PANSIES, which are remarkably fine this season.

Seed Warehouse, 1, Waterloo Place, Edinburgh.
(Established upwards of a Century.)

NEW PELARGONIUMS.

PRINCE of WALES (Bull), 5s. each.
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LE 20 FÉVRIER
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PROGRESS
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RÉVEIL DE LA FRANCE
LA DEMOCRAT
} (Lemoine's) 2s. 6d. each.

The Collection of the above twelve splendid varieties for 25s., postage or package free.

LUCIE LEMOINE, double white Ivy-leaf, 2s. 6d. each.
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MDME. AMELIA BALTET, best double white, 1s. 6s. each.

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Arundinaria falcata (true).

BURGESS, KENT and SONS can supply fine Specimens of this lovely hardy Bamboo, raised from seed produced by plants which flowered at Trentham in 1872.

Plants in 6-inch pots, 2 feet 6 inches high, 5s. each; ditto in 10-inch pots, 10s. 6d. each.

Larger Specimens, 5 feet high, with 30 or more stems, 21s. to 42s. each.

Extra Strong Forcing Clumps of SPIRÆA JAPONICA, 20s. and 25s. per 100.

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New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
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STRAWBERRY PLANTS.—Strong well-rooted plants of the under-named varieties, 3s. 6d. per 100, purchasers' selection:—Aromatic, Amateur, Ananas Perpetual, Ascot Pine-apple, British Queen, Bicton Pine, Black Prince, Cockscomb, Comte de Paris, Cornucopia, Comte de Zans, Crimson Queen, Dr. Hogg, Duke of Edinburgh, Elton Pine, Eleanor, Exquisite, Early Prolific, Enchantress, Eliza, Fairy Queen, Filbert Pine, Frogmore Pine, Grove End Scarlet, Garibaldi, Haiquin, James Veitch, John Powell, Keens' Seedling, La Grosse Sucrée, Leon St. Lannier, La Constante, Lucas, Marguerite, Newton Seedling, Oscar, Prince of Wales, Prince Arthur, President, Premier, Princess of Wales, Royalty, Sir J. Paxton, Sabreur, Stirling Castle, Sir John Falstaff, Souvenir de Kieff, Scarlet Pine, Countess, Vicomtesse Héricart de Thury, Victoria, Unza Fritz, Wonderful, W. J. Nicholson. Our selection, 2s. 6d. per 100, 20s. per 1000, in ten or twenty sorts, all true to name.

HARRISON'S MUSK, 2 plants 1s., 12 for 3s. 6d.

PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2s. per dozen.

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HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

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Hyacinths, Tulips, Crocus, &c.

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C. G. VAN TUBERGEN, JUN., Haarlem, Holland.—Wholesale CATALOGUE of DUTCH BULBS, now ready, will be sent post-free on application.

G. G. Van T. has a quantity of fine fresh SEED of the magnificent LILIUM GIGANTEUM, which he now offers to the Trade at the following low prices, viz.:—In Packets of 100 Seeds, 1s. 3d.; 500 Seeds, 5s.; 1000 Seeds, 8s. 4d. Orders may be sent to his Agents,

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CALCEOLARIA.—Geo. Wheeler's Superb Strain, being in habit very compact, stout, and dwarf, of great variety in colour, and beautifully marked. Is inferior to none. Retail packets, 2s. 6d., 1s. 6d. and 1s. each. Trade packets, 21s. to 5s. each.

G. W. distributed his first raised hybrid Calceolaria in 1830, at 21s. each in trade; and in 1832 supplied many sorts of 6 plants each to the trade at 42s. the set,

IMPERIAL CABBAGE.—G. Wheeler's Improved Genuine, after a test of about half a century, still maintains its character of first-rate Early. A limited quantity still on hand at the rate of 1s. 2d. per ounce.

Prepaid Orders for the above will be sent post-free.

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E. G. HENDERSON and SON can supply Seed of the following; quality of strains are the best that can be grown:—

PRIMULA SINENSIS FIMBRIATA, mixed colours or separate, 2s. 6d. per packet.

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CINERARIA and CALCEOLARIA, 2s. 6d. each packet.

CYCLAMEN PERSICUM GRANDIFLORUM, 1s. and 2s. 6d. per packet.

PANSIES, best English, and blotched flowers, 1s. 6d. each pkt.

CARNATION and PICOTEE, 2s. 6d. each packet.

CHOICE FLOWER SEEDS

For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, Post-free on receipt of P.O.O. or Stamps.

	Per packet—s.	d.
AURICULA, choicest mixed, alpine .. .. 6d. and	1	0
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CARNATION and PICOTEE, from stage flowers 1s. ,,	2	6
HOLLYHOCK, Prize English .. .. .. 6d. ,,	1	0
INDIAN PINK, splendid double, mixed	0	4
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ROYAL NORFOLK SEED ESTABLISHMENT,
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TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

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,, Half Specimens, 5s. to 7s. 6d. each.

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HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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GRASS SEEDS

CARRIAGE FREE

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ROYAL BERKS SEED ESTABLISHMENT.

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CABBAGE.

Sutton's Imperial.

The best Cabbage for spring use. If sown the first or second week in July it will produce beautiful Cabbages for early spring use. Heads cone-shaped, very large, firm, and of mild flavour.

9d. per ounce.

ALSO

	Per oz.—*s.*	*d.*
Enfield Market	0	8
Nonpareil ..	0	6
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Sutton's King of the Cauliflowers.

May be sown in August, for transplanting in March and April for the first main crop.

Price, 1s. 6d. per packet.

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A valuable, new, and distinct variety, being the earliest of all Onions. Sown in March it comes to maturity in July, or sown in July it is fit for use the following autumn. It is of beautiful mild flavour, and strongly recommended.

Per packet, 1s. 6d.

The following varieties, sown in July and August, will come to a very large size during the following Spring and Summer:—

	Per oz —*s.*	*d.*
NEW GIANT ROCCA (the largest variety)	1	0
LARGE EARLY RED ITALIAN	1	0
LARGE EARLY WHITE ITALIAN	1	0
GIANT LATE RED ITALIAN	1	0
GIANT LATE WHITE ITALIAN	1	0

VEGETABLE SEEDS up to 12 ounces in weight sent by post with a charge of 4*d.* for the 12 ounces, or 20*s.* worth free to any Railway Station in England and Wales.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, in 4 bushel bags, at 1*s.*, bags included; or Truck-load, 25*s.* Delivered free to any rail in London.

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PEAT, good Brown, of the best quality, at £1 per ton, put on rail at Bracknell Station, South-Western Railway. Fresh SPHAGNUM, 10*s.* per bag. REIGATE SILVER SAND, four-ton trucks, 12*s.* per ton.
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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
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SALUS

IN SOLUTION.

All PARASITES sink under SALUS IN SOLUTION.
All PLANTS are at once greatly benefited by SALUS IN SOLUTION.
Can be used through the Syringe, Vaporiser, or Watering Pot.

A 14 lb. box of SALUS is sufficient for 100 gals. of water.
A 7 lb. box of SALUS is sufficient for 50 gals. of water.
A Sample Packet of SALUS is sufficient for 5 gallons of water.

14 lb. for 14s.; 7 lb. for 7s.; Sample by post for 1s. 4d.

SALUS is sold as an excessively fine powder, and can be used in a dry state if desired.

"I feel it a public duty, as well as a personal pleasure of the highest kind, to be able to record this fact, and heartily congratulate Mr. Smith on the success of his SALUS in eradicating the Cucumber and Melon Disease.

"The whole of our plants, old and young, soon got infested with the disease,—they are now in robust health, without speck or spot, and are swelling off and ripening fine crops.

"The early Melons, badly affected at one time, are now carrying an enormous load of fine fruit—about a hundred in a small house—so we have reason to be proud of the powers of SALUS and grateful to its discoverer.

"Melons treated with SALUS took the First Prize at the *fête* of the Suffolk Agricultural Society.

"Our POTATOS were all dressed with SALUS—for the last six weeks their growth has been extraordinary. There is an immense crop of tubers, all sound, in these gardens." *D. T. Fish.*

"Potatos are in very good condition. Some little disease has shown itself in the haulm, but we have not found it communicated much to the tubers. I have planted all my crop with SALUS." *William Ward, Stoke Edith, Hereford.*

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CAN BE SENT DIRECT TO

Mr. WORTHINGTON SMITH,
15, MILDMAY GROVE, LONDON, N.

A Microscopic Preparation of the actual Resting-spores of the Potato Fungus sent, post-free, on receipt of 2s.

SCOTT'S WASP DESTROYER.—The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 1*s.* 6*d.*, 2*s.* 6*d.* and 5*s.* each. The larger sizes are the cheapest. May be obtained through any Seedsman, or direct from
JOHN SCOTT, The Royal Seed Stores, Yeovil.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY Limited).

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WHOLESALE AGENTS

IN GREAT BRITAIN

FOR THE SALE OF THIS VALUABLE

FERTILISER AND DISEASE PREVENTIVE.

Boxes containing 7 lb. ... ... 7*s.*
" " 14 lb. ... ... 14*s.*

A packet (under 12 ounces) will be sent, post free, on receipt of sixteen stamps.

J. C. WHEELER & SON,
SEED GROWERS,
59, MARK LANE, LONDON, E.C.

GARDEN REQUISITES, NURSERYMEN'S and SEEDSMEN'S SUNDRIES.

Cocoa-nut Fibre, finest Kent and Hampshire Peats, Yellow Loam, Leaf-mould, coarse and fine Sand, Sphagnum, all Manures, Tobacco Cloth and Paper, Garden Sticks and Labels, Russia Mats, Raffia, Pot Covers, Hyacinth Glasses, Tiffany, Scrim, Tarred Twine, Coir Yarn, Garden Pots and Tiles, and every Horticultural Requisite. Write for free Price List. Liberal terms to the trade. Delivered free within 4 miles of Covent Garden at List Price. 4*s.* PER TON CARTAGE ALLOWED IF FETCHED FROM CASTLE STREET, LONG ACRE.

M. H. BENTOTE, Horticultural Sundriesman, 8, Castle Street, Long Acre, W.C.; 3 minutes from Covent Garden. Open at 4 o'Clock in the morning for Market Customers. Factory, Nunhead, S.E.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*s.* to 100*s.* per 100; superior close-wove, 40*s.*, 50*s.* and 55*s.* per 100; Packing Mats at 20*s.*, 30*s.*, and 35*s.* per 100; and all other descriptions of Mats at equally low rates, at
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RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
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Indestructible Terra-Cotta Plant Markers.

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MAW AND CO., Benthall Works, Broseley.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.

The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12*s.* 6*d.*; 21-oz., 16*s.* 6*d.* per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36*s.*; 3ds, 46*s.* per 300 feet;—21-oz. 4ths, 36*s.*; 3ds., 46*s.* per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

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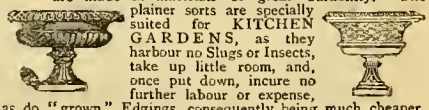

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"QUEEN OF BEDDERS"
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Fruit large and handsome, conical, occasionally flattened and Cockscomb shaped, seeds prominent, skin bright crimson, flesh firm, juicy, and exquisitely flavoured. This is a seedling raised by Mr. Douglas, of Loxford Hall, from a cross between British Queen and La Constante, and retains the rich flavour of the former with the sturdy robust growth and fertility of the latter. Awarded First Prizes at the Metropolitan Exhibitions.

9s. per dozen; 60s. per 100.

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Fruit medium-sized, obovate and conical, seeds rather prominent, very dark red, flesh firm, bright red, of a fine brisk rich flavour; plant of very vigorous growth, a great cropper, and very early. Received a First-class Certificate from the Royal Horticultural Society.

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All other kinds also ready in small pots, and runners from open ground.

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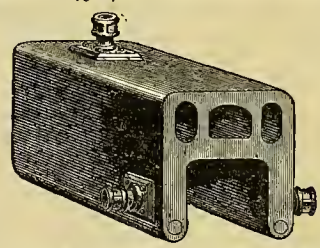

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FLOWER SEEDS FOR 1877.

Per packet—*s. d.*

CALCEOLARIA, Williams' Superb Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Capt. Cosens, *Aberystwith, May* 13, 1877.

"The Calceolarias, from the seed Capt. Cosens had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."

PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

From Mr. F. Denning, *Gardener to* J. Fenton, Esq., *Yardsley, February* 26, 1877.

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."

CINERARIA, Weatherill's Extra Choice Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Mr. J. West, *Gardener, Cheadon Park, May* 21, 1877.

"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

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VICTORIA and PARADISE NURSERIES, Upper Holloway, London, N.

SATURDAY, AUGUST 11, 1877.

RICHMOND HILL.

PAINTERS and poets have been busy on this spot for several generations with their brushes, pens, and pencils. Mr. Vicat Cole has recently added a very gorgeous painting to the previously existing store of matter descriptive of the landscape around Richmond Hill. We "hail" the picture cordially. "Hail" is the word which commences several poetical addresses to the Hill, as, for instance, "Hail, fair Parnassus of the British Isles;" "Hail, the hill which boasted Tempé shames!" In the *Heart of Midlothian* there is an unaffected description by a writer who never stood on tiptoe when he wrote, nor "smote a deep-toned shell" as a prelude to English verse. The Duke of Argyll is conducting Jeanie Deans to the touching scene of her interview with Queen Caroline. "After passing through a pleasant village, the equipage stopped on a commanding eminence, where the beauty of English landscape was displayed in its utmost luxuriance. They paused for a moment on the brow of a hill, to gaze on the unrivalled landscape which it presented. A huge sea of verdure, with crossing and intersecting promontories of massive and tufted groves, was tenanted by numerous flocks and herds, which seemed to wander unrestrained and unbounded through the rich pastures. The Thames, here turretted with villas and there garlanded with forests, moved on slowly and placidly."

Such a scene, ever changing in its aspect, must be always new. The Duke was familiar with the spot. He may have thought of the grander hills, the lake and glens of Inverary, but he delighted in Richmond Hill, and had himself a home on the banks of the Thames at no great distance. "This is a fine scene," he said to his companion; "we have nothing like it in Scotland."

Thomson, author of *The Seasons*, had his tree here in the park, and wrote some verses on Richmond. He was a very good poet on subjects that were congenial to his mind, but in tragedy was too comic to be quoted by any but an unkind critic. This is what he says of the purely English landscape—level, rich, and green—which Nature has produced here with the damp, tree and grass-forming brush which she uses in our climate:—

"Thy Hill, delightful Sheen! Here let us sweep
The boundless landscape; now the raptured eye,
Exulting, swift to huge Augusta send;
Now to the sister hills that skirt her plain;
To lofty Harrow now, and now to where
Majestic Windsor lifts his princely brow.
* * * * *
Slow let us trace the matchless vale of Thames,
Fair-winding up to where the Muses haunt
In Twit'nam's bowers, to royal Hampton's pile,
To Clermont's terrass'd heights and Esher's groves.
* * * *
Enchanting vale! beyond whate'er the Muse
Has of Achaia or Hesperia sung."

The reader cannot but feel complimented that the very obliging and polite poet should put on evening costume, and assume a pair of stilts before he begins to sing. The process shows respect for the reader's person, but it does not improve the verse.

As to the "boundless landscape," during a fog you may hear the steamboats puffing down the river some minutes before they emerge to view, and there is then no boundary between the invisible distance and that which can be seen; but on clear days the furthest horizon lies not much further than Maidenhead. You see from the terrace (or from the top of the "Star and Garter," which adds four storeys to the inconsiderable height of Richmond Hill), Cooper's Hill, St. Ann's Hill, and Windsor; and a few steps further on, within the gateway of the Great Park, St. Paul's comes into view across the level turf.

All the world knows that the view from Richmond Hill is perfect; but it is a short instead of long view, bounded by a low line of hills which rarely exceed 15 to 20 miles distance. Windsor is within 16 miles as the crow flies. The flatness of the country alone gives so low an elevation even such command of landscape as it possesses. Leith Hill and St. Martha's in the same county, and some other sandhills, as well as the chalk ridges between Dorking and Guildford, are higher than Richmond Hill, and command a far wider country, bounded by the South Downs, and far more varied prospect; yet Richmond is unrivalled to the Londoner coming out for the day in June, steeped in the luxury of repose after hard and profitable labour, and enjoying here a double prospect, including the scenery and the lobster salad and champagne which may be obtained in the hotel.

All English landscapes gain by the lights and shadows cast upon the scene by a changing sky. Chobham Ridges in the distance may be sponged out by a passing cloud till the shadow drifts, and tents and troops, and perhaps the raging of a mimic battle, are added to the picture. The curtain is continually falling and rising, and the distant villas or villages are seen and unseen according to the distribution of light and shade, and the "moving accidents" of the "field." The rivers' windings are concealed at this time of year, except for a short distance under the base of the hill, by the thick blind of foliage. The country appears an undulating forest, the eye being placed at too low a level to command the intermediate fields between the woods, the hedgerows, and the copses. An American "guessed the country wanted clearing!"

In one of Mr. Jesse's pleasant volumes he claims for the country which may be seen from Windsor Castle, the spot where three poets have resided—Milton, Pope, and Gray. To these great names two others may be added, including that of Thomson. Charles II., looking towards the spire of Harrow-on-the-Hill from the terrace of Windsor Castle, used to apostrophise it as "the visible church!" We may therefore add Byron, whose connection with the school at Harrow is known to readers of the poet's life. Thomson resided for years in a cottage close to the Queen's Laundry, and looking upon the old Deer Park; and Windsor Castle may be seen from any unobstructed spot near. He wrote *The Seasons* here. His little estate with the large garden came to be called Rosedale from Mr. Ross, who succeeded the poet, and enlarged his residence.

Thirty years ago the house was occupied by Lord Shaftesbury. It has now become a hospital, standing in a garden much diminished in size by the encroachments of dwellings, which now cover the site of the alcove beneath the Chestnut where the poet loved to meditate, and where, as a tablet once informed the visitor, he "sang the seasons and their change." The little old cottage has been enclosed and included in the larger building, as in the case of Mr. Cobden's birthplace. It is believed that the easy habits of an inactive life shortened the poet's days; he died at the early age of forty-eight, of a cold caught on the river, and was buried in the parish church A.D. 1748. *H. Eversheed.*

DENDROBIUM AINSWORTHII.

Some three or four years ago we published a figure, here reproduced (figs. 30 and 31), of this handsome hybrid Orchid, then blooming, we believe, for the first time. Even in this adolescent state it at once secured the award of a First-class Certificate when exhibited at South Kensington. We were greatly pleased and somewhat astonished at the late Whitsuntide show at Manchester to see what a splendid specimen this young seedling had formed in so short a space of time. Its appearance as there shown is represented in the annexed engraving from a photograph (fig. 32).

Dendrobium Ainsworthii is certainly one of the most ornamental of the Dendrobes, and one which will be sought after for general cultivation whenever it is obtainable. The white of the sepals and petals, and the rich rosy-purple blotching of the lip, present a most agreeable and pleasing combination, and these high decorative qualities are greatly enhanced by the profusion in which the flowers are produced. We reproduce the original figure for the purpose of contrast, and to show at a glance the progress it has made within so short a period.

A second seedling from the same hatch, called D. Ainsworthii roseum, has been flowered, and was exhibited at the Manchester show above alluded to in company with the plant here pourtrayed. This was noticed in our report of the show in question. It is much in the same way as the original, but has a broader purple spot covering a larger proportion of the lip, and is equally handsome and perfectly distinct. Mr. Mitchell may well be congratulated on the success of his hybridising experiment, and Dr. Ainsworth on the possession of two such rare beauties. *T. M.*

Fig. 30.—Dendrobium Ainsworthii (seedling plant).

Fig. 31.—Dendrobium Ainsworthii—flowers, nat. size.

New Garden Plants.

Vanda testacea, *Rchb. fil.*; Aerides testaceum, *Lindl. Orch.* 238; Aerides Wightianum, *Lindl. l. c., and Wall. Cat., No.* 7320; Vanda parviflora, *Lindl. B. Reg.* xxx., *Misc.* 57.

There is no doubt that this old species is nearer Vanda cœrulescens, Griff., than anything else, but it is distinct, however, in the colour of the petals, and the callus on the base of the lip. One might be doubtful as to the oldest name, since A. testaceum and Wightianum were published with descriptions at the same time. One might say that Aerides Wightianum, being a Wallichian name, had the priority. My opinion is that Wallich's *Catalogue* gives no authority for priority, for the names there given have not won sanction by an accompanying description. Let us add that there is already a Vanda Wightii, and that A. testaceum comes before A. Wightianum in Dr. Lindley's book. Those who keep the oldest name given in the genus may write Vanda parviflora. This question is a very difficult one. I believe one cannot give an answer for all cases. I feel inclined to believe it best to keep the oldest specific names of the plants for all things published at periods when the limits of genera were not well established. After such an arrangement, I would not acknowledge names recently given in the wrong place. Now the original Lindleyan genus of Aerides is very different from what the excellent author thought later to be Aerides; and for this reason, I believe, his older species were not so clearly understood, that we could accuse him of a fault when putting the plant under Aerides.

I have often undertaken the analysis and have at hand rich materials, including a fresh inflorescence recently sent by Mr. Bull. *H. G. Rchb. f.*

ROOT PRUNING.

Root-pruning of fruit trees has been so often noticed in your pages that I fear I may be out of place in calling attention to this all-important operation, but as fruit crops are so very light this season there could not be a more favourable opportunity than the present for operating on trees that may require it.

My attention was called to it the other day by a friend writing to ask my opinion about a lot of fruit trees he had taken charge of. His question was, "What shall I do with our Apple and Pear trees? They are as full of gross young wood as Willow trees." Before I notice old neglected ones, I will begin with a few remarks about the planting and training of young ones. I am no advocate for the use of the knife except in the formation of young trees, I prefer regulating their growth by root-pruning—the more we cut the more we get to cut. In large orchards, where the trees are left to take their natural habits, it is very little used.

Young trees for kitchen garden borders and quarters are generally trained as pyramids, and as such I will notice them. When planted, see that they are not planted over deeply, and their roots nicely spread out. Do not use any gross manures, only maiden loam, to give them a good start. Pears on the Quince should be planted out enough to cover the union of the stock and scion. I prune rather closely the first two or three years, according to their respective growths, not to encourage grossness, but to secure sufficient branches to lay the foundation for handsome symmetrical trees. In summer pruning I only remove superfluous laterals. In winter pruning I cut back the leading branches, according to their respective growths, shortening the leader well back to get plenty of lateral branches; I don't summer pinch the laterals of young trees—as for winter pruning, they are generally cut further back than they have broken. In bearing trees it is all the pruning required except the regulating of laterals, of which there is no great quantity in well root-pruned trees.

By the end of three or four years they will be getting nice trees, and well furnished with branches to form handsome pyramids. Early in the autumn I have them carefully lifted, open a trench round 3 or 4 feet from the stem, carefully follow the roots to within a short distance of the stem, then return the soil back to within 8 or 10 inches of the surface level, treading it firmly down, then cut any bruised parts of the roots, spread them equally over the surface, and cover them with some fresh loam. If the weather is dry I give them a good watering, and level the surrounding soil. As soon as the leaves drop, I have them nicely trained by driving a few stiff pegs into the soil 3 or 4 feet from the stem, then run a wire round the top of them, which is fastened by a few hooks. To this I tie the bottom branches as nearly in a horizontal position as possible. If the trees looked full of wood it is wonderful how this operation seems to lessen their number. If well done they look as if done by an expert in Azalea training.

From this time forward give up using the knife, unless you cannot find time to use your finger and thumb. In the course of a few years I again lift the roots back to where I left them at the last lifting, raising them nearer the surface. This periodical root-pruning, if performed early in the season, does not lessen the chances of a crop the following season.

I will now notice the old neglected trees. I would at once carefully remove all superfluous shoots, retaining a few where there was space for them. They generally form nice bearing wood. As soon as sap had risen into the eyes of the cut shoots I would begin root pruning—the earlier in the season the better, according to the age and strength of the trees. I cut a deep trench round them, deep enough to meet with all their roots; I then have the soil carefully forked away from the roots, following them nearly up to the stem. I find a few pegs useful to peg the roots out of the way of the workmen, so as not to bruise the roots more than possible; they are easier raised to the surface when retained a good length. The soil is now levelled back and well trodden in to within about 15 inches of the surface. I place 3 or 4 inches of good fresh soil on the top of this, then carefully prune all the bruised parts of the roots, spread them nicely on the fresh soil, a person with a spade placing some on the top of them, to keep them in their proper places, and when all is nicely levelled up the work is finished.

I may notice, that if the trees are at all tall, and in an exposed position, it is advisable to root-prune them at twice, two sides one year and the other two the following year, if the check has not been sufficient for a time.

The next time they are root-pruned I dig a trench round them a little further than where I left them at the last, and fork the soil away till I come to the former cuts. I then prune as before, and carefully cover up. It is not well to leave them till they show signs of grossness.

I think the labour bestowed upon them is amply compensated by the return and superior quality of the fruit. It takes very little more time to root-prune than it does to remove the faggot-wood out of them;

besides, in their neglected state they are only worthless cumberers of the ground. I question very much if there is any more useful fruits than good Apples and Pears; many prefer them when in good condition to Grapes and Pines, but when smothered up in dense masses of unnatural foliage they cannot attain either their proper size, colour, or flavour.

To persons about planting I would strongly recommend Apples on the Paradise stock for kitchen garden borders, or where there is but limited space; they are of a dwarfer habit, fruit earlier, and do not throw out such strong roots. This stock is not generally so much sought after as it deserves to be. *E. W.*

Fig. 32.—Dendrobium ainsworthii.

BAMBOO AND ITS USES*.

The simple words which constitute the title of this pamphlet form a sufficient foundation upon which might be built a book of much greater extent, and yet Mr. Kurz has managed to say a very great deal, and perhaps all that was necessary to say, on a group of the most useful and interesting plants to be found in the whole vegetable kingdom. Mr. Kurz says his own studies of this group were commenced in the Botanic Gardens, Buitenzorg, Java, many years ago, but owing to the difficulties experienced in procuring the different species of Bamboos growing in British India, and owing to his desire of studying them all in Nature instead of from dried specimens only, he has thought it necessary for the present to treat only of the Bamboos of those countries of which he had the best material at hand, and these are chiefly the Bamboos of the Malayan countries, of which a very fine living collection exists in the botanical gardens of Java.

Under the head of "Uses of the Bamboo Generally" we find a great deal of valuable information, not only the records of the author's own experience, but facts gathered from the writings of other travellers, which the author fully acknowledges. Though the Bamboo is used for almost every purpose in domestic use, its value as a building material is one of the most important. Houses, we are told, that are built in a similar manner to those of the Malays and Burmans are not only of good appearance but are also healthy, being raised as they are above the ground. They are usually built for a single family only, but the Dyaks of Borneo, like the Naga hill people and other tribes of the eastern frontier of Bengal and the Karens of Burmah, build large communal houses often 200 to 300 feet long by 50 to 100 feet broad. These are divided into as many compartments as there are families, which often amount to 100. Mr. Kurz says:—"I have often seen tays (this is the name by which the communal Karen-houses, or rather villages, are known) which were raised as much as 30 feet from the ground, and when the people therein rushed to one side the whole structure would hang over. One cannot look, then, upon the tay without thinking it in imminent danger of tumbling down, but the elasticity and strength of the numerous supporting Bamboo culms effectually prevent any such accidents. The space under these houses usually is used as sheds for cattle, pigs, fowls, &c. Fishermen often build their houses solely of Bamboo, on Bamboo or Palm poles, far out in the tidal rivers and sheltered bays of the sea, so that they stand in the water up to near the floor with every recurring tide."

For walking-sticks the Malayan and Indian

* *Bamboo and its Uses.* By Sulpiz Kurz, Curator, Botanical Gardens, Calcutta. Calcutta: Central Press Company.

Bamboos are not so much used as those of Japan, and are derived chiefly from various species of Arundinaria. The well-known Japanese Pepper-canes are the produce of a species of Phyllostachys. Those of Phyllostachys nigra are very elegant and smooth, but have, like a few other of the small kinds of Bamboo, their joints alternately semiterete. Mr. Kurz fully bears out the suggestion made in a paper recently communicated to the Linnean Society and published in its *Journal*, vol. xvi., p. 1, that the jointed walking canes imported from China and known as Whangee canes, and referred to a species of Phyllostachys, are the underground and not the aboveground stems. On this point he says:—"In some species of Phyllostachys (P. nigra) the shoots creep as rhizomes a long way under the ground before their ends come to day, and at the same time they send out lateral shoots from their joints at certain distances, which similarly burst from the ground, and finally grow out into dense shrubs. This species, therefore, covers in a short time large areas by this process, and it is often difficult to check its spread."

On the rate of growth of Bamboos Mr. Kurz enters rather fully, and refers to notes on the subject that have appeared in our own columns. The application of Bamboo for the manufacture of paper is a subject that has created a considerable amount of interest of late, and in the book before us it is pointed out that in China it is the principal material used for this purpose, for which it is cut while it is quite green and then scraped into shavings, the thickest of which are used for stuffing mattresses and pillows and the finer are macerated in water and made into a paste or pulp which is mixed with a certain proportion of isinglass, from which paper of various qualities is made and is of great strength. From these notes it will be seen that for information on the uses of Bamboo this work of Mr. Kurz is a veritable handbook.

THE ROYAL GARDENS, KEW.

(*Continued from p.* 142.)

Eucalyptus.—Hopes still appear to be cherished that the Blue Gum of Tasmania (E. globulus) will succeed in the plains of India, and in other tropical countries. This expectation has hitherto, as might have been expected, in every case led to disappointment. A paper by Dr. Brandis "On the Cultivation of the different species of Eucalyptus in Northern India," issued by the Indian Government, will no doubt be held conclusive as far as that country is concerned. Dr. Brandis remarks: "It seems to be acknowledged that in the open country in the plains of North India stations are improved and become more healthy by the planting of trees. If this is admitted, then obviously the object desired is gained in the shortest time by planting those species which grow most rapidly." Eucalypti are probably not better adapted for this purpose than other quick growing trees, but have the merit of producing very hard timber.

Gutta-percha.—Literally nothing is known as to the botanical history of the commercial varieties of Gutta-percha. Several kinds of different qualities and even exhibiting different properties are imported into England, and are in immense request, especially in telegraph cable manufactories, but neither the plants which produce them, nor the localities in which they are produced, are approximately known.

Inquiry has been made of us with respect to a gum indifferently known as Pulo-percha, Susu-toko, Pulo-secci, of which small quantities find their way to the London market, and which would be valuable for admixture with other gums for telegraphic purposes. Notwithstanding careful inquiry amongst our correspondents in the Straits Settlements we have failed in tracing its history in any way.

I attach great importance to the prompt investigation of gutta-percha-yielding plants. There is reason to believe that they are very local and restricted in their geographical occurrence. The collection of products of this kind for commercial purposes is shown by experience to inevitably lead to the destruction of the trees producing them, since these are recklessly destroyed, and never replaced. It is not merely, therefore, a matter of scientific interest to ascertain the exact nature of gutta-percha-yielding trees, but it is the first step in securing the perpetuation of the supply. The botanical investigation of a product or plant simply means getting such complete knowledge about it as to leave no difficulty in the way of recognising it at any time without uncertainty.

Liberian Coffee.—A strong desire being evinced in Ceylon to ascertain the conditions under which Liberian Coffee is cultivated, in the expectation that it may be successfully grown at a lower elevation than the ordinary Coffee, I had inquiries made both in Liberia and on the Gold Coast, the result of which was communicated to the Ceylon Government. I extract the following statement from the report from Monrovia, as likely to be of more general interest:—

"The Liberian Coffee grows equally well in the immediate neighbourhood of the sea, and at considerable distances from it. Under like conditions of soil and cultivation trees near the seashore in Monrovia are about the same as those at Careysburg, and other places 30 miles distant. The wild Coffee from which the cultivated comes is found at even still greater distance in the interior. Our nearest trees are 100 yards from the sea. At Bassa and Sinon, we are told, trees grow well still nearer the sea."

"Lowest temperature observed at Monrovia, near the sea, 62° Fahr. at 7 o'clock A.M. in the morning of the month of January during the prevalence of the Harmattan winds; highest temperature observed, 91° Fahr. These are exceptional cases. The general temperature ranges from 72° to 87° in the shade. In the country at the farthest point where Coffee is cultivated by the settlers, there is a difference of one or two degrees lower, owing principally to the rise of the land. Along the coast the Coffee tree thrives at only a few feet (say ten) above sea level; at Careysburg and at Mount Coffee it succeeds as well at an elevation of 550 feet."

Melons from Turkestan.—Dr. King forwarded to the Royal Gardens a collection of seeds of the best kinds of Melons grown at Kashgar. These were distributed partly to M. Naudin, the well-known monographer of the Cucurbitaceæ at Collioure, in the South of France, partly to the Royal Horticultural Society at Chiswick. Seeds from kinds which proved the best have been again distributed to several of the best Melon growers in England. They are at any rate likely to give rise to new strains, even if not of themselves of sufficient value for actual horticultural use.

Paper Materials. — A great demand exists amongst paper manufacturers for abundant and cheap materials for the manufacture of paper. Esparto-grass (Lygeum Spartum) when originally introduced for this purpose from Spain was treated with undeserved neglect. Its place is now almost entirely taken by the Alfa of North Africa (Macrochloa tenacissima), and both command a high and rising price, while the supply is steadily decreasing. The success of these materials has led to a variety of other vegetable products being brought into notice for the same purpose. Many of these have been sent to Kew for identification, whilst the merits of some have been experimentally tested by T. Routledge, Esq., of the Ford Works, Sunderland.

The following are some of the materials which have come under our notice:—

1. *Bamboo.*—This appears to be only really available for paper making when in a young state. The experience, however, of all persons acquainted with tropical vegetation establishes conclusively that cutting the young stems is the most effectual method of destroying the plants. The only possible plan of obtaining paper-material from this source is to cultivate it in the same manner as is pursued for the Sugar-cane, replanting after cutting the crop. Whether under these conditions, and considering the time that would be required before the plants would be mature, the material would allow the paper-maker a profit is extremely doubtful. Added to this, the large amount of water in the young stems would render it necessary to crush and press them in the country where they were grown, and send the "stock" only to this country.

2. *Baobab.*—Paper manufacturers speak with one consent of the magnificent qualities of the bark of this tree. The only drawback to its use is the apparent impossibility of introducing it into the English market in sufficiently large quantities to make it commercially important. Notwithstanding what is stated of the slowness of its growth, I am still of opinion that more might be done in promoting its cultivation in India and other tropical countries.

3. *Fimbristylis spadicea.*—This was the only plant capable of identification out of three proposed paper materials sent from Vera Cruz. Mr. Routledge thinks they may make "a fair paper."

4. *Heliconia Bihai.*—This is a large Scitamineous plant indigenous in Jamaica and Trinidad, and probably to be procured in considerable quantities. It had been brought under the notice of Mr. Routledge, who was supplied with specimens of the fibre from the museums of the Royal Gardens. He reported that it would "make fair paper."

5. *Lepidosperma gladiatum.*—Paper has been manufactured from this in Australia. It is not considered very promising.

6. *Phragmites communis.*—This well-known British Reed has been imported from Majorca as a paper material. I have no information as to its practical value; it is probably not great.

7. *Uniola virgata.*—A material from Jamaica which we had very great trouble in accurately determining, ultimately proved to be this locally abundant, but otherwise little known grass. Mr. Routledge reports upon it:—

"Altogether the bulky nature of the grass would preclude its coming to England in its raw condition, it might '*faute de mieux*' be made into stock in Jamaica. It is not so good for paper making as Esparto, but if Esparto should fail either from scarcity or other causes, it might be something to fall back upon."

Poisonous Grass in Kashmir.—Dr. Aitchison has sent specimens of a grass poisonous to cattle in Kashmir. It proves to be Stipa sibirica, and it is possible that its injurious effects are due rather to the mechanical irritation produced by fragments of the awns than from any noxious principle contained in it. A closely allied species of Stipa has been described by Dr. Hance as producing somewhat similar effects in Thibet (*Journal of Botany*, 1876, pp. 210—212).

Sugar-cane.—Inquiries have been addressed to me respecting an enormous and apparently little known variety of the Sugar-cane, called the "Elephant Cane of Cochin China," which has been stated to reach a height of 11 feet and a diameter of 7 inches in six months. At my suggestion the Superintendent of the Botanic Garden at Singapore has obtained from Cochin China plants of this cane, which he has succeeded in establishing. I was also indebted to M. Pierre, Director of the Botanic Garden at Saigon, for the following information, which I think may prove interesting to sugar growers in British colonies:—

"This variety is only cultivated for eating or chewing. I do not think it would prove a good sugar-producing cane. . . . But varieties, especially in the case of Sugar-canes, often improve by change of climate. Perhaps this might have the good fortune to succeed better elsewhere. The dimensions as to diameter and height which this variety attains, depends on the length of time during which its growth continues. It requires in a good soil two years to reach 10 feet in height. After five or six years it may reach 16 to 32 feet; such specimens may be seen near native houses, where it is allowed to grow undisturbed as an ornamental plant. In the province of Mytho this variety is cultivated in humid alluvial soils on a considerable scale, but simply for sale in the bazaars and for chewing. It has the peculiarity of possessing a very brittle epidermal layer; so that, instead of becoming pressed out and giving up its juice when passed through the wooden mills employed here, it breaks up into small fragments."

In Demerara the Sugar-canes have suffered from the ravages of the larva of a moth. Mr. McLachlan has been good enough to examine the specimens sent to this country, and he has little doubt that it is identical with the Phalæna saccharalis of Fabricius, which is the same as the Diatræa sacchari of Guilding. The ravages of this insect in Mauritius, from which it has perhaps been introduced with canes into the West Indies, are referred to by Westwood in the *Journal of the Linnean Society* (Zoology, vol. i., pp. 102, 103). The cocoons are spun among the dead leaves of the plant; the best plan of extirpating the insect seems to be an organised system of burning the infested canes, as well as all loose rubbish and leaves in the plantation.

In Queensland the Sugar-cane has suffered much from the attacks of a fungus or "rust." We have received numerous printed communications with respect to it, but from none of these does it clearly appear what the real nature of the fungus may be. This, at least, can probably be ascertained in this country without difficulty, and I am anxious to receive specimens, whether dried or preserved in spirit, which will enable this point to be solved.

(*To be continued.*)

REPORT ON THE CONDITION OF THE FRUIT CROPS.

[FROM OUR OWN CORRESPONDENTS, JULY, 1877.]

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
SCOTLAND.										
ABERDEEN	Under	Under; Victorias very good	Under; Morellos very good	....	Average	Under	Average	Abundant	....	George Donaldson, Keith Hall, Inverurie
	Under	Average	Average; good	....	Under	Scarcely average	Average; and of superior quality	Average; good	Average	R. Farquhar, Fyvie Castle Gardens, Fyvie
ARGYLL	Average; very good	Under average	Average; very good	Not grown outside	Over average; very good	Under average	Average; very good	Average	Under average	John Caie, Inverary Gardens
BANFF	Under average; trees much blighted	Nearly all sorts under average	Under average	Under average	Much under average	Most sorts under average	Over average; good	Average; good	....	John Webster, Gordon Castle
BERWICK	....	Under	Under	None outside; average in houses	Under	Under	Average	Average	Under	Peter Loney, Marchmont House, Dunse
CAITHNESS	Under; bad	Average; good	Average; good	Under; bad	Under; bad	Under; bad	Very good	Average; very good	Under; bad	John Sutherland, Langwell, Berriedale
CLACKMANNAN	Under; bad	Under; good	Very good; good	Under; bad	Very good; good	Average; good	Very plentiful	Average; bad	Not much grown	Thomas Ormiston, Alloa Park Gardens
CROMARTY	Under	Average; good	Average	Under	Average	Under	Over; good	Over; good	....	James Laing, New Tarbat Gardens, Parkhill
DUMBARTON	Very fine	Victorias good; others scarce	Below average	Very few	Fair; below average	Below average	Below average	Below average	....	J. Mitchell, Camis Estean, Helensburgh
EAST LOTHIAN	Under	Average	Over	....	Under	Under	Over, except of Gooseberries	Over	....	Alex. Shearer, Yester Gardens
FIFE	Average; good	Under; bad	Average; good	Under; bad	Under; good	Under; bad	Average; good	Over; very good	Under	Robert Foulis, Fordell
FORFAR	Under average	Very good	Under, except Morellos	Very good under glass	Average	Under	Average	Very good	Under	Geo. Johnston, Glamis Gardens
KINROSS	....	Under	Nearly average; good	....	Under	Under	Average; bad	Average; bad	....	John Fortune, Blair Adam
KIRKCUDBRIGHT	....	Under	Early sorts, under; late, average	Under	Under	Under	Currants and Raspberries average	Average	....	James Johnston, Terregles Gardens, Dumfries
LANARK	Very thin; few grown in this district	None, excepting a thin crop of Victorias.	Thin, and not swelling well	Almost a failure; trees greatly injured by cold	Very irregular, and decidedly below an average	Very few	Good, excepting black Currants	Very abundant	....	Andrew Turnbull, Bothwell Castle, Bothwell
MIDLOTHIAN	Much under average; good	Average; good	Average; Morellos heavy, very good	Scarcely any	Full average; very good	Average; very fine	Abundant; very good	Heavy crop; very good	Scarce	Malcolm Dunn, Dalkeith Gardens
MORAV	Good	Under	Good	Average	Bad	Average	Average	Good	....	Donald Cunningham, Darnaway Castle Gardens
NAIRN	Under	Under	Under	Under	Under	Under	Average	Average; good	....	James Maitland, Cawdor Castle, Nairn
ORKNEY	Moderate crop	Fair	Good	Very good	Good	Moderate	Fair	Very good	....	Thomas McDonald, Balfour Castle, Kirkwall
PERTH	Poor crop	Poor crop	Under the average	Not grown out-of-doors	Under the average	Under the average	Average crop	Abundant, but spoiled by wet	Under the average	John Browning, The Gardens, Dupplin Castle
	....	Very light crop	Average crop	None grown outside	Good average crop	Under average	All average crops	Very plentiful	....	George Croucher, Ochtertyre, Crieff
RENFREW	Under average	Under average	Under average	Under average	Under average	Under average	Average; good	Average	....	John Methven, Blytheswood Gardens
ROSS	Under	Under	....	Under	Under	Under	Average	Average	....	Robert Massie, Ardross Castle
SUTHERLAND	....	A sprinkling of Damsons, scarcely any on walls	Under average	....	Over average, but too late to ripen well	Under average	Average, except black Currants, which are thin	Early sorts under average; late sorts, average	Average	D. Melville, Dunrobin Castle Gardens
WIGTON	....	Under; good	Average; good	....	Average; good	Under; bad	Average; very good	Average; good	....	Archibald Fowler, Castle Kennedy
NORTHERN COUNTIES.										
NORTHUMBERLAND	Under average	Under average	Average crop	Under average	Under average	Under average	Abundant	Good average	Plentiful in woods	Alex. Ingram, Alnwick Castle Gardens
	....	Under	Average	Under	Average	Under	Average	Over	Under	William Turner, Capheaton, Newcastle-on-Tyne
CUMBERLAND	Few grown	Under	Average	Few grown in open air	Average	Under	Average	Average	Few grown	Joseph Williamson, Castle Gardens, Whitehaven
WESTMORELAND	Under average	Under average	Under average	Under average	Under average	Under average	Average	Average	Under average	John Taylor, Isel Grange
	Under	Under	Under	None outside	Average	Under	Over	Average	....	William Shand, Lowther Penrith
	....	Under	Average; good	Few grown outside	Average; good	Under	Over average; good	Average; good	Over average; very good	C. Sandford, Gr., Underley Hall, Kirkby Lonsdale
DURHAM	Bad	....	....	....	Under average	Bad	Good, except Gooseberries	Very good	....	Richard Graham, Darlington
	....	Bad	....	....	Under	Bad	Good	Good	....	Robert Draper, Seaham
YORKSHIRE	Bad	Bad	Sweet sorts light, Morellos average	Under average	Under average	Bad	Average, except black Currants	Average	Good	Michael Saul, Stourton, Knaresborough
	Under	....	Under	Under	....	Failure	Average	Plentiful and good	Plentiful	James Fowler, Harewood House, Leeds
	....	Poor crop	Average	None outside	Very few	....	Average	Average	Not a Nut district	J. Simpson, Wortley Hall Gardens, Sheffield
	Under average	Under average	Under average	Under average	Under average	Under average	Average	Average; good	Under average	Robert C. Kingston, Brantingham Thorpe
	None; trees healthy	Under average	Under average	Very few; trees healthy	Under average	Under average	Average; very good	Average	Under average	H. J. Clayton, Grimston Park Gardens, Tadcaster
	Under	....	Under	....	Under	Under	Average; good	Average; good	....	John Young, Wentworth, Rotherham
	Bad	Bad	Average	Bad	Bad	Bad	Average	Average	Bad	W. Lewio, Aske Gardens, Richmond
LANCASHIRE	Medium	....	Very good	Medium	Average	....	Plentiful	Very good	....	F. Harrison, Knowsley Gardens
	Only a few grown, and crop poor	Completely destroyed with spring frost	Fair crop of Morellos	None out-of-doors	A very patchy crop	Almost a complete failure	Good; especially Gooseberries; Currants infested with aphis	Moderate crop; much destroyed by wet	....	W. B. Upjohn, Worsley Hal Gardens
	....	....	....	....	Over; good	Scarcely any	Generally an average; good	Over; very good	....	A. Jamieson, The Gardens, Haigh Hall, Wigan
	A thin crop	....	None but Morellos	Average where protected	....	....	Heavy crops	Average crop; very late	....	Henry Lindsey, Huntroyde Gardens
	Under; good	Under	Under	Under; bad	Average; very good	Under	Average; very good	Over; very good	....	W. Hinds, Otterspool
MIDLAND COUNTIES.										
CHESHIRE	Average	Much under	Under	Average	Under	Much under	Over; good	Over average; good	Average	Wm. Whitaker, Crewe Hall
	....	....	....	....	....	....	Good crops	Average	....	R. Mackellar, Abney Hall, Cheadle
	Bad	....	Bad	....	Bad	Bad	Abundant	Good	Under average	W. Muir, Oulton Park, Tarporley
	Under	Under	Under	Under	Under	Under	Over	Average	Over	Thos. Selwood, Eaton Hall Gardens

CONDITION OF THE FRUIT CROPS—(*Continued*).

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
MIDLAND COUNTIES.										
CHESHIRE	Under; bad	Under	Under	....	Under	Under	Over; very good	Average; good	....	Alfred J. Grant, Withington Hall
DERBYSHIRE	....	Complete failure	Morellos good; others failure	None out-of-doors.	Very few	Complete failure	Good	Very fine crop	A fine prospect	Thomas Speed, The Gardens, Chatsworth
	Under; bad	Under; bad	Average; good	Under; bad	Under; bad	Under; bad	Average; good	Over; very good	Average; very good	J. H. Goodacre, Elvaston
	Under	....	Average	....	Under	On walls average	Plentiful	Very fine	Very thin crop	James W. Bayne, Kingston Hall Gardens.
	Under average	Total failure	Failure	Failure	About the third of a crop	A few on walls only	Full crop, but small	Full crop	A long way under average	William Brown, The Gardens, Bretby Park.
NOTTINGHAM	Much under where not protected	Under; total failure	Under, except Morellos on the walls	Much under where not protected	Under	Under	Average	Over	An average crop in the woods	William Tillery, Welbeck Abbey, Worksop.
	Under	....	Under	Under	Under	Under	Average	Average	Average	Henry Gadd, Wollaton Hall Gardens
	Under	Bad	Average	None out-of-doors	Under	Under	Very good	Very good	....	A. Henderson, Thoresby Park
SALOP	Under	....	Plentiful	Average crops indoors	Under	Under	Abundance	Plentiful	Plentiful	William Pratt, Hawkstone Gardens
	Under average; bad	Under average; bad	Average; good	Under average; good	Under average; good	Under average; good	Average; very good	Average; very good	Over average; very good	A. S. Kemp, Haughton, Shifnal
	Under	Under	Morellos average, others under	Under	Under	Under	Average	Over; good	Over	George Pearson, Attingham Gardens, Shrewsbury
STAFFORD	Light crop	Very light crop	Plentiful	Very poor crops	Early varieties scarce; late, fair crop	Few, and not swelling off well	Very plentiful	Good crops and very fine	Very abundant	T. Bannerman, Blithfield, Rugeley
	Under	Total failure	Under	None grown outdoors	Much under	Much under	Very good	Very good	Very good crop	Owen Thomas, Drayton Manor, Tamworth
	Under	Very bad	Bad	Under	Very bad	Very bad	Very good	Average	Very good	Thos. H. Rabone, Alton Towers, Cheadle
	Under	Under	Under	Under	Under	Under	Over	Average; very good	Over	E. Simpson, Wrottesley, Wolverhampton
LEICESTER	....	....	Under average; bad	Under average	Under average	Under average	Over average except Gooseberries	Average; good	Above average	William Ingram, Belvoir Castle Gardens
	Under	Under	Under	Under	Under	Under	Over; very good	Over; very good	Average	M. Henderson, Cole Orton Gardens
RUTLAND	Under	Under	Under	Under	Under	Under	Very good; average	Good; average	Under	F. Clarke, Barleythorpe Gardens, Oakham
	....	....	....	....	Half crop	....	Half crop	Heavy crop	Half crop	Mark Hull, Ayston, Uppingham
WARWICK	....	....	Very few	A sprinkling	Far between	Far between	Pretty fair	Plentiful	Hazel plentiful	Wm. Miller, Combe Abbey Gardens
	Under; good	Under; bad	Under; good	Under; good	Under; very good	Under; good	Average; very good	Average; good	Over; very good	Wm. Gardiner, Eatington Park Gardens
NORTHAMPTON	Under average	Under	Average	Under	Under	Under	Very good, except Gooseberries	Very good	Very good	John Smith, Althorp Gardens
	Under	....	Bad	Bad	Under	Under	Good	Good average	Under	J. Worraker, Milton Gardens
BEDS	....	Under average	Under average; Morellos average	....	Under average; home garden average	Under average	Average	Average	Average	A. McKay, Woburn Abbey
	Scarce; no sun when in blossom	Partial on walls, none on standards	Moderate on walls, few on standards	Very thin crop; trees healthy	Partial crop; very few in places	Very thin on walls and standards	Gooseberries and Currants plentiful	Plentiful and good	Filberts and Nuts plentiful; Walnuts scarce	G. Ford, Wrest Park
OXFORD	Under	Under	Under	Under	Under	Under	Average; good	Average; good	Under	Isaac Watson, Nuneham Park
	....	Under average	....	....	Under average	Under average	Over average; very good	Over average; very good	Average	J. Greenshields, Sarsden House, Chipping Norton
	Much under	Under; bad; good under glass	Under; bad	Under; bad outdoors, good under glass	Under good	Under; good	Average; very good	Over; very good	Over; good	W. Crump, Blenheim Palace Gardens
	....	Under	Under	Under	Under	Under	Over, and very good	Over, and very good	Average	W. Finlay, The Gardens, Wroxton Abbey
BUCKS	Very few indeed generally about here	An utter failure	Of choice kinds about a fourth; fair crop of orchard varieties	Almost a complete failure	Variable; plentiful here, generally very thin	Not a fourth of a crop altogether	Abundant, and of excellent quality	Plentiful and good	Plentiful; Walnuts very thin	G. T. Miles, Wycombe Abbey
	Failure	Failure	Moderate	Failure	Under average	Failure	Over average; very good	Over average; very good	Under average	J. Smith, Mentmore Gardens
	Very light; in many places none	Very scarce everywhere	Very scarce, and some places none	In general a failure	Some places fair; slight in general	A very inferior crop	Excellent crops of all kinds	Very good crops and very fine	A very heavy crop	Philip Frost, Dropmore, Maidenhead
HERTS	....	....	Under	....	Average	Bad	Average	Average	Filberts over; Walnuts none	Anthony Parsons, Dansbury, Welwyn
	Under	....	Average on walls; good	Under	Under	Under	Average; good	Average; good	Walnuts under; Filberts good	Richard Ruffet, Panshanger, Hertford
	Much under average	Very few	Under average	Poor; not worth growing here	Very few	Under average	Average	Average	Over average; quality good	George Sage, Ashridge Gardens
EASTERN COUNTIES.										
LINCOLN	Under	Under	Under	Under	Under	Under	Average; good	Over; very good	Over	William Hurst, Somerby Park, Gainsborough
	Almost a failure	Poor crop	Failure	Failure	Poor crop	Poor crop	Fair average crop	Full crop; fine	Fair crop	David Lumsden, The Gardens, Bloxholm Hall
	Very few	....	....	None outside; good indoors	Fair crop	Not worth naming	Abundant	Have been abundant	Plentiful	Isaac Dell, Stoke Rochford, Grantham
	....	Average crop	Average	Very few	Under average	Very few	Good	Very good crop	Over average	Thomas Wynne, Hemsby Hall, Great Yarmouth
	....	Few or none	Much under; bad	Few or none	Under average	Much under average	Under average	Under average	Average; except Walnuts, bad	John Wighton, Cossey Park Gardens
	Under average; bad	Under average; bad	Under average; bad	Under average; bad	Under average; very good	Under average; bad	Average crop; very good	Average crop; very good	Over average; very good	William Bishop, Bylaugh Park, East Dereham
SUFFOLK	Failure	Failure	Under average	Failure	Under average	Under average	Over average; very good	Over average; very good	Walnuts, under average; Filberts, average	Thomas Blair, Shrubland Park, Needham Market
	Under	Under	Under; good	Under	Under	Under; small and hard	Over; very good	Average; very good	Average; Walnuts under	D. T. Fish, Hardwicke House, Bury St. Edmunds
	None; trees injured by May frosts	....	Under average	Very few	Very thin	Under average	Plentiful and good	Average; good	Average	J. Sheppard, Woolverstone, Ipswich
	....	....	Morellos average; good	....	Over average; good	Under average; good	Abundant; very good	Over average; very good	Over average; good	J. Mill, The Gardens, Rendlesham Hall
ESSEX	....	Very few	Half a crop; very few Morellos	....	Very partial	Very few	Very heavy crops	Good crop	Sprinkling	William Earley, Valentines, Ilford, E.
	Very bad	Very bad	Very bad	Very bad	Very bad	Very good on walls	Very good	Very good	Very good	W. Bones, Gr., Havering Park, Romford
	....	....	Morellos average, others under	Under average	Under average	Under average	Average, except Gooseberries	Over average; very good	Over average, except Walnuts	J. Bryan, Audley End Garden, Saffron Walden

CONDITION OF THE FRUIT CROPS—(*Continued*).

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
SOUTHERN COUNTIES.										
BERKS	Very few	Under	Morellos good	Scarcely any	Under; bad	Scarcely any on standards	Plentiful and good	Average; very good	Average	Alex. Galt, Aldermaston Court, near Reading
	....	....	Under	....	Under	Under	Currants, except black, over; others under	Average; good	Walnuts over	Charles Ross, Welford Park, Newbury
	Under	....	Good	Under average	Average crop	Average on walls; standards under	All sorts very good	Fair average	Fair	James Tegg, Bearwood
	Very thin	Quite a failure	An average crop on walls; thin on standards	Nectarines plentiful, but a moderate crop of Peaches	Below average; some trees bearing heavy crops, others none	A moderate crop on walls; none on standards	A heavy crop and of excellent quality	Plentiful and of good quality; later than usual	Filberts plentiful; Walnuts thin, excepting on a few trees	Thos. Jones, Royal Gardens, Frogmore
MIDDLESEX	....	Almost *nil*	Under average; poor	Under average	Under average	Under average	Over average	Average; good	Over average; very good	A. F. Barron, Royal Horticultural Gardens, Chiswick
	....	....	Under average	Under average	Under average	Under average	Average	Over average	Over average	Charles Lee, Hounslow
	Under average	Under	Average; very good	Under	Under	Under	Average; good	Average; very good	Over	John Woodbridge, Syon Gardens, Brentford
	Under	Under	Under	Under	Under	Under	Average	Average	....	Robert Henderson, Fulham Palace
	Under	Under	Under; good	Under	Under	Under	Average; good	Over; good	Over; good	T. Baines, Southgate
	....	Failure	Failure	Almost a failure	Under	Bad	Abundant and fine	Abundant and very fine	Very heavy crop	T. P., Stanmore
SURREY	Very scarce	....	Very few	Very scarce	Under	Failure	Abundant and good	Average	All kinds plentiful	James Ollerhead, Wimbledon House, S.W.
	All cut by early spring frost	Few on walls; on standards failure	Half crop	Plentiful in houses, very few on walls	Half crop	Few on standards; half crop on walls	Very heavy crop of all kinds	Plentiful and very fine	Very plentiful; Walnuts very scarce	William Kemp, Albury Park, Guildford
	Under; very scarce	Under; good	Over; very good	Total failure	Average; very good	Under; good	Over average; very good	Average; very good	Cobs average; Walnuts under	J. Burnett, The Deepdene Garden, Dorking
	....	Under	Under	Under	Under	Under	Over	Under	Over	William Kidd, Tandridge Court, Redhill
	....	None either on standards or walls	Except Morellos none	A sprinkling where trees retained healthy foliage	Fair sprinkling—some old orchards carry a good crop	None on standards and very few on walls	Very good of all kinds	Very excellent crop; not over yet	Very heavy crop	W. Denning, The Gardens, Coombe Lane, Kingston-on-Thames.
	....	....	Average	Very scarce	Under average	Scarce	Average	Over average; good	Small nuts average, Walnuts scarce	Jas. Child, Garbrand Hall, Ewell
KENT	Almost a blank	Very partial, much under average; good	Under average; good	Very much under average; good	Partial, but under average; good	On walls fair, pyramids none; good	Average; good	Average; very good	Much over average; good	John Cox, Redleaf, Penshurst
	Scarcely any	Very thin	Average; good	....	Average; good	Very thin	Abundant; good	Average; good	Average	R. Gray, Chevening Gardens, Sevenoaks
	None scarcely	Scarce, except Prince of Wales and Victoria	Very few	....	King Pippins fair, others scarce	Very few	All kinds of Currants are very plentiful	Immense crops; Sir J. Paxton, President, Eleanor the best	Great quantities	Henry Cannell, Swanley
	Failure	Quite a failure	Very good	Very scarce	Fair average	On walls fair; on pyramids scarce	Good, and excellent in quality	Good	Very good	C. Haycock, Barham Court, Maidstone.
	Under; bad	Failure	Average	Under	Average; good	Under	Over; good.	Good	Over; good	Lewis A. Killick, Mount Pleasant, Langley.
	Failure	Bad	Bad	Bad	Under	Failure	Average	Fair	Good	F. Denxbury, Cobham Hall, Gravesend
SUSSEX	Very good	Thin in most places	Moderate; Morellos good	Thin; suffered from late frosts	Very good	Very good	Most abundant and fine	Average crop; good	Abundant	John Wilson, Castle Gardens, Arundel.
	....	Under average	Over average and good	Under average	Over average	Average on walls	Over average and excellent	Average	Over average	J. Rust, Eridge Castle.
HANTS	Very thin	Good on west wall only	Average crop	....	Half a crop	Good on walls only	Very good	Very good	Good	W. Wildsmith, Heckfield
	....	Very few	Very few	Very few	Very partial	Very few	Very good	Very good	Never saw so many	George Harnett, The Gardens, Cadland.
	....	Under average; bad	Average; good	Under average; bad	Average; good	Under average; bad	Average; good	Over average; very good	Over average	Jas. Taverner, Woolmer Lodge, near Liphook
WILTS	Very bad	....	Average crop	....	Under the average	Half a crop on walls	Average	Average crop	Under the average	W. Phipps, Bowood Gardens
	Under	....	Under	Under	Under	Under	Average; good	Average	Over	W. Taylor, Longleat Gardens, Warminster
DORSET	....	....	....	Hardly any	Bad	....	Good	Bad	....	William Frederick Radclyffe, Okeford-Fitzpaine
	Average	Under	Under	Under	Average	Under	Average	Average, but small	Average	Henry Munro, Clevelands, Lyme Regis
	Under	Under	Average; good	Under	Average; good	Under; bad	Over; very good	Average; bad	Average	W. G. Pragnell, Castle Gardens, Sherborne
WESTERN COUNTIES.										
HEREFORD	Under; good	....	Under	Under; good	Average; good	Under	Average	Average; very good	Over average	W. Coleman, Eastnor
	Average	....	Average	Under average	Under average	...	Over average; good	Over average; good	Over average; good	Alfred Bye, Hampton Court Gardens
	Average; very good	....	Kentish good; Morellos average	Nearly a failure	Under average; very good	Under average	Average; very good	A fine crop; very good	Average	W. Ward, Stoke Edith Park
WORCESTER	Very scarce	Failure	Under; bad	Average	Very scarce; bad	Failure	Average; very good	Average	Over; very good	Geo. Westland, Witley Court
	Bad	Bad	Under	Good	Under	Under	Good	Good	Good	William Cox, Madresfield Court
	Bad	Bad	Good of Morellos, others partial	Bad	Half a crop	Bad	Currants abundant; Gooseberries bad	Moderate	Good crop	John Wyke, Kyre Park, Tenbury
	Under average; good	....	Under average; bad	....	Under average; good	Under average; good	Over average; very good	Over average; very good	Over average; very good	Geo. Helman, The Gardens, Crown East Court
GLOUCESTER	Total failure	Almost a failure	Under; good	Much under	Much under; bad	Much under; good	Abundant; good	Over, and good	Very abundant	Thomas Shingles, The Gardens, Tortworth Court
	Under average	Under average	Average	Average	Under average	Under average	Over average	Average	Few grown	W. J. Simpson, Kingscote Park, Wotton-under-Edge
SOMERSET	Much under average	Much under average	Much under average	Very much under average	Under; very partial	Much under average	Abundant	Good average crop	Over average	John Austen, Ashton Court, Bristol
	Under	Bad	Half crop	Bad, except in orchard-houses	Average	Under	Under	Average	Average	William Hallett, Cossington Farm, Bridgwater
	Under	Very scarce	Under	Under	Average; very good	Generally thin	Average; good	Average; good	Average	Thos. Foote, Clevedon Court
DEVON	Total failure	Complete failure	Very few	Half crop	Much below	Almost a failure	Over; good	Average; good	Over	Alexander Ayson, Oxton Gardens, Kenton
	Almost a total failure	Under	Early under average; late average	Almost a total failure	Quite an average	Average	Average	Average	Average	Alfred George, Bicton Gardens
	....	Under	Average; good	Under	Average	Average	Over; good	Over; very good	Average	J. Gibson, Lupton, Brixham
	Under	Under	Under	Under	Average	Average on walls	Over; very good	Average	Over	John Garland, Killerton, Exeter
CORNWALL	....	Much under average	Best sorts under average	Under average	Much under average	Under average	Under average	Under average	Under average	H. M., Enys, Penrhyn
	....	Under	Under	Average	Under	Under	Average	Average	Over	J. Tyerman, Tregony

CONDITION OF THE FRUIT CROPS—(*Continued*).

COUNTY.	APRICOTS.	PLUMS	CHERRIES.	PEACHES AND NECTARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
WALES.										
ANGLESEA	Under	Under	Under	Under	Under	Under	Average	Average	Average of Filberts	Robert Webster, Glyn Garth, near Bangor
BRECON	Under	....	....	Average	Under	Under	Over	Average	Over	F. J. Ireland, Glanusk Park
CARMARTHEN	....	Much under	....	Under; very good in places	Under	Under	Over	Average, but late	Very few	J. Ticehurst, Dynevor Castle, Llandilo
CARNARVON	....	Under	Under	Under	Under	Under	Average	Average	....	Allan Calder, Vaynol Park, Bangor
DENBIGH	Under average; good	Under average; good	Under average; good	Average	Under average; good	Under average; good	Over average; very good	Over average; very good	Over average; very good	P. Middleton, Wynnstay and Llangedwyn
GLAMORGAN	....	Under	Under	....	Under average	Under	Fine crops; very good	Fine crop; good	Over average	Henry Battram, Cyfarthfa Castle
MERIONETH	Failure	Failure	Morellos average	Good average	Good average	Very much under	Over average; very good	Average; very good	Good average	James Bennett, Rhug Garden, Corwen
RADNOR	Under average	Under average	Under average	Under average	Under average	Very much under average	Under average	Under average	Over average; very good	John Weatherstone, Boultibrook, Presteign
IRELAND.										
ANTRIM	....	....	Half a crop	None growing outside	Thin crop	Next to none	Under, except Currants	Average	....	D. Taylor, Glenarm Castle
ARMAGH	Under average	Under average	Average	Under average	Under average	Under average	Average; good	Over average; good	....	W. Allan, Brownlow House Gardens, Lurgan
CARLOW	Under	Under	Under	Under	Under	Under	Average; good	Average; good	Average	Thomas Turner, Oak Park
CAVAN	....	Under an average crop	Under an average	Very poor	Average crop	Bad crop	Generally under	Bad	Bad crop	W. I.
CORK	....	A failure	....	....	Under	Scarce; none of some sorts	Heavy crop	Good	Good	J. Fraser, Besborough
DONEGAL	....	Bad	Good	....	Average	Good	Very good	Very good	Bad	Armstrong Hanlon, Drumboe Castle
DOWN	....	Bad crop	Under average	Few grown	Bad crop	Bad crop	Very good	Good average	....	James Taylor, Mountstewart
DUBLIN	Very scarce	....	Very few	Thin crop	Below average	A mere sprinkling	Heavy crop and good	Moderate crop	....	C. Smith, Vice-Regal Gardens
	Under average; bad	Under; had	Average; good	Under; bad	Under; bad	Under; bad	Average; good	Average; good	Average	John Ellam, Brenanstown Gardens, Cabinteely
	....	Under	Average	Under; bad	Under	Under	Over; very good	Average; bad	Over	D. Pressly, Knockmaroon Lodge
FERMANAGH	Scarcely any growing	Under; bad	Under; good	....	Under; bad	Under; bad	Under; good	Average; good	Average; good	John McDonald, Florence Court
KERRY	....	Under; bad	Average; very good	Average; good	Average; good	Over; good	Over; good	Over; very good	Average	A. Gilmour, Killarney House Gardens
KILDARE	Under average	Under average	Under average	Under average	Under average	Under average	Under average	Over average	Under average	W. A. Emery, Kilkea Castle
KILKENNY	....	Under average; very bad	Under average; quality good	Under average	Under average	Under average	Over average; quality bad	Average; good	Average; quality good	George Dodd, Woodstock Park
KING'S COUNTY	....	Under; bad	Average; good	Under; bad	Average; good	Under; poor	Over; very good	Over; very good	Average; good	T. J. Hart, Birr Castle Gardens, Parsonstown
LOUTH	....	Under average; good	Under average; good	Under average; bad	Under average; bad	Under average; good	Over average; very good	Average; good	Over average; very good	Frank Fowler, Ravensdale Park, Newry
MEATH	Under	Under	Under	Under	Under	Under	Average	Average	....	John Clews, The Gardens, Headfort
MONAGHAN	....	Bad	Bad	....	Bad	Bad	Middling	Middling	....	James Pattison, Rossmore Park
QUEEN'S COUNTY	Under	Under	Under	Under	Under	Under	Over; very good	Over; very good	Very good crop	J. Ennis, Emo Park, Portarlington
SLIGO	....	Under average; bad	Under average; bad	None; average under glass	Average; good	Average; good	Average; good	Over average; good	Average	J. White, Hazlewood Gardens
TIPPERARY	About half a crop	Very bad crop	Very bad; Morellos about half	Under average	Thin; not half a crop	Average crop	Very abundant and fine	Over average	Over average crop	Jesse Wilsher, Shanbally Castle, Clogheen.
WESTMEATH	Bad	Bad	Bad	Very light	Bad	Bad	Very good	Good	Splendid	John Igo, Moydrum Gardens, Athlone.
WEXFORD	....	Under; good	Over; very good	Under; good	Average; good	Under; bad	Over; very good	Average; good	Average; good	P. Braund, Courtown House, Gorey
WICKLOW	Bad	Under	Under	Bad	Under	Under	Very good	Under	Good	Charles Penford, Powerscourt
CHANNEL ISLANDS.										
GUERNSEY	Under; bad	Under; had	Under; bad	Under; bad	Under; good	Under; good	Under; bad	Under; bad	....	Thos. C. Bréhaut, Richmond House

REMARKS ON THE FRUIT CROPS.

WE supplement the tabulated report on the present appearance of the fruit crops, which is given in the preceding pages, with the following extracts from communications obligingly sent to us along with such reports. We have placed the counties from which we have received reports in the order of their importance as fruit producing centres, as shown by the Agricultural Returns for 1876, published by the Statistical and Commercial Department of the Board of Trade; which under the head of "Orchards, &c.," gives the acreage of arable or grass lands, used also for fruit trees of any kind. Thus the county of Hereford heads the list with 24,616 acres; Devon coming next with 24,097; and Somerset with 21,029. No other county has an acreage of over 20,000; and there are only three counties which have an acreage of above 10,000 and under 20,000, viz.:—Worcester, 14,178; Kent, 11,666; and Gloucester, 11,602. Cornwall stands next with 4372 acres to its credit; followed by Dorset with 3656; Middlesex, 2927; Salop, 2751; and Surrey, 2057. We defer the publication of the remarks which have reached us from other counties, until our next issue.

Hereford.—Fruit trees of all kinds produced a profusion of bloom, but owing to the mildness of the winter, followed by a late spring, sharp frosts prevailing up to the end of May, the trees had no proper rest, and produced a great number of imperfect flowers which could not set. Where fertilisation did take place the numerous checks in May caused Peaches and Apricots to drop until the end of June. Apples in this district are plentiful and good. Apricots are very thin, and the trees have suffered much. Peaches and Nectarines under glass copings required thinning, the trees are clean and free from blister; where boards only were used, with fishing nets in front, the crop is very light and the foliage badly blistered; growth late, but now kind. Cherries set well, but three-fourths of the crop were destroyed. Plums are a complete failure, many of the trees much injured last year did not produce a blossom. *W. Coleman, Eastnor.*

Devon.—There was a capital show of all kinds of fruit in the early part of the year—almost every tree was a sheet of blossom; but the severe weather we experienced in April and May not only destroyed every prospect of a crop of fruit, but also very much crippled many of the trees. Apricots, Pears, Plums, and Cherries, are almost a total failure; Peaches and Nectarines about half a crop, Apples about a quarter of a crop. Small fruits are plentiful, and of good quality. Filberts and Cob Nuts are abundant. I have been here nearly twenty years, and it has been the most trying season I have had to contend with. *A. Ayson, Oxton House, Kenton.*

—— Of cider Apples, which are mostly grown in this district, there are very heavy crops of particular sorts in some places. Some sorts of Pears carry heavy crops, but the tender varieties are thin, having dropped off after setting, owing to late frost. Owing to the same cause Plums are also very thin. Pears and Nectarines are very thin, and there was not a leaf on the trees outdoor on walls at midsummer, the blister being very bad. *Alfred George, Bicton.*

Somerset.—The fruit crops this season are mostly under, and, I believe, on account of the cold windy weather we experienced in the spring. The beginning of June was very cold; the Peach and Nectarine trees were looking wretched, and most of the leaves were blistered. There was plenty of blossom, but it did not set. In many gardens the trees will not recover. *W. Hallett, Cossington Farm.*

Worcester.—We have again to report unsatisfactorily as regards the condition of our fruit crops in so far as it applies to Apricots, Apples, Pears, Plums, and Cherries. Seldom was the destruction of these more complete, or the residue of so inferior quality. Truly there are exceptional orchards where moderate crops of Apples may be seen, but this is very exceptional. Apricots, Pears, and Plums are a failure. Weeks after witnessing the destruction of these we were in expectation of a better result in regard to the Apple crop, as they were so profuse in blossom buds, and unusually late in flowering; but in this we were again doomed to disappointment. The flower lacked in a remarkable degree that vigorous development attendant on thorough maturity, and dropped,

the young tissues being destroyed from excessive cold of so long duration co-operating upon an enfeebled development is, in my opinion, the main cause of our most seriously felt loss over Apple crops. Not only have the early sorts failed, but late kinds, such as Bitter Sweets, share the same fate. To place much reliance upon certain kinds that are bearing this season would be a mistake. With me the Ribston Pippin is bearing the largest crops, whereas Lord Suffield does not carry an Apple; neither are the Keswick Codlins, or King of the Pippins, carrying crops, though these sorts are grown in quantity. *Geo. Westland, Witley.*

—— As a general rule stone fruits of all kinds are very deficient—Plums especially so. Peaches and Nectarines a fair crop here but very late; the general average cannot be more than one-fourth of a crop. Apples of the best kinds very partial; cider fruits half a crop in sheltered situations. Pears very thin, a light crop on west walls. Bush fruits generally good, as also Strawberries. Nuts very abundant. Walnuts a few on some trees. Failure of crops generally may be attributed to the severe frosts early in May, and a long continuance of sunless weather and cold storms. *W. Cox, Madresfield.*

—— The poorest crops of fruit here for the last seven years. We generally have abundant crops on walls of Pears, but this year they are very thin. Peaches are all but a failure, and some of the trees will die outright. The later kinds of cider Apples appear to have escaped the severe frost, and there are a good quantity in places, but rather partial. There is a good crop of perry Pears in places, but partial. Plums and Damsons are all but a failure in this neighbourhood. *John Wyke, Kyre Park, Tenbury.*

Kent.—Never in my recollection was so fair a promise followed by so poor a performance. The blossoms in every way were as abundant as one could wish, but, without any very great severity of weather, the long continued low temperature, and almost entire absence of sun for so many weeks, caused the embryo fruit to fall off by thousands. At one time there was a promise of an enormous crop of Cherries, but so soon as the energies of the trees were taxed in the stoning process the greater portion fell off. Standard and pyramid Pears are also a blank, as are also most varieties of Plums in the open quarters; of these Victoria and Prince Engelbert have proved the hardiest. *John Cox, Redleaf.*

—— The Plum crop is the smallest known for many years. Pears are very short. Apples vary, some sorts bearing heavily, others a complete failure. Nuts a large crop. Under fruit has been plentiful. Taking it broadly, it is not a fruit year. *Lewis A. Killick, Mount Pleasant, Langley.*

—— Raspberries, although very much cut up with the unprecedented May frost in the valleys here, pushed fresh growth and bore a heavy late crop. Gooseberries, although many dropped off from being frozen through, are bearing a large crop of fine fruit. *H. Cannell, Swanley.*

—— In some of the orchards in this locality a few kinds of Apples are bearing heavy crops, such as King of the Pippins, Wellington, Blenheim Orange, Lord Suffield, Small's Admirable, and Golden Knob. Pears are everywhere scarce, on standards, pyramids, and bushes. Plums and Damsons are a complete failure. Gooseberries, Raspberries, and Currants are a good crop, and fine. Of Nuts both Filberts and Cobs are an excellent crop. *C. Haycourt, Barham Court.*

Gloucester.—In general most kinds of fruit trees grown in this district showed abundance of blossom, but the May frost proved very destructive. On standard Plums there are only one or two on many trees; a few more on the walls. Peaches and Nectarines suffered very much. Pears and Apples set moderately but dropped off, leaving dozens of trees with none; the earlier kinds chiefly have escaped with a few. *Thomas Shingles, Tortworth Court.*

—— In sheltered places the fruit crops appear to be an average, but in exposed situations quite a failure, with the exception of small fruits, which are in plenty, although the fly appeared to be very destructive in the early part of the season to the foliage, but the late rains have pretty well cleared them off. *W. J. Simpson, Kingscote Park.*

Cornwall.—Perhaps never was east wind more severely felt in this county than at the season just as the blossom and tender foliage opened. In exposed situations it carried away all prospect of fruit, and left a withered appearance on all trees both in fruit garden and forest. Owing to the nature of the soil—generally speaking—and also the influence of both east and west winds—which carries with it a salt spray across the county—dwarf trees in orchards and gardens are to be recommended. *H. Mills, Enys.*

—— Fruits of most kinds are far below the average. Nuts are an exception, being very abundant by the roadsides and in plantations. They are very little cultivated. Apples are an entire failure in many places, and everywhere thin. The Red Juneatings are now ripe. An Apple locally named "Polly" and Hawthorndens, are the most prolific this season. *J. Tyerman, Tregoney.*

Dorset.—The fruit crops in this neighbourhood are very bad. Apricots, Peaches, and Nectarines are a complete failure, and the trees are a perfect wreck. Apples will be very good in some places. Small fruits are very plentiful and good. Nuts in some places will be very plentiful, especially the common Hazel Nut. *W. G. Pragnell, Castle Gardens, Sherborne.*

—— The supply of fruit in this neighbourhood is decidedly much below an average, and not equal in quality to some years. Peach and Nectarine trees are suffering from mildew and gumming, probably the effect of the changeable and cold weather we experienced in the early part of May. The Pear crop is almost a total failure. The Apple crop is much below expectation, as the trees when in flower were perfect pictures, but subsequent cold south-east winds destroyed a large proportion. *Henry Munro, Clevelands, Lyme Regis.*

Middlesex.—Bright and cheerful were the prospects this season of an abundant fruit crop. How sad the result! Blossom was abundant and late. The actual frost was not so severe, and no material damage or loss could be traced to its direct agency, the loss must therefore be attributed to the long-continued low cold temperature, the absence of sunshine, and the almost perfect stagnation of vegetation during the flowering period. Plums are almost a blank, a few only on Rivers' Prolific, and Mitchelson's. Pears very scarce—Aston Town being the only variety bearing a full crop: Hessel, B. Hardy, Jargonelle, and some others half a crop. Apples are very partial—Cox's Orange Pippin, Hawthornden, Yellow Ingestre, Stirling Castle, Lord Suffield, Small's Admirable, heavily laden. Filberts are singularly abundant. Peaches on walls and in unheated Orchard-houses are alike scarce. *A. F. Barron, Chiswick.*

—— The fruit crop, with the exception of Strawberries, bush fruits, and Nuts is probably the worst ever known in the neighbourhood; most things bore a profusion of bloom, but the flowers individually were so small and weak when closely examined as to give little indication of setting. There was not sufficient frost here to account for the failure, 6½° being as much as was registered by a reliable instrument. My impression is that the weak indifferent character of a great deal of the fruit bloom is attributable to the late unseasonable growth that was more or less excited in deciduous trees and shrubs of all kinds, edible fruits included, by the copious rains that fell at the end of August and beginning of September—after the premature stagnation of growth suffered through the drought from the middle of June to near the end of August. Apples and Pears in many cases retained their leaves in a green state for a month beyond their usual time, and when they fell were of a brown or blackish colour, instead of the yellow fully-matured tint. *T. Baines, Southgate.*

—— Perhaps never was the prospect of an abundant fruit crop more promising than this season. The trees generally were covered with bloom, looking far more healthy and vigorous than usual; but those severe frosts (8°) we had for two successive mornings in the early part of May destroyed all our hopes. The Peach trees have been much injured by blister and black-fly; they are, however, now greatly improved. *T. P., Stanmore.*

—— A general failure of the fruit crop, with the exception of Apples, of which there is a good crop in some orchards, and a moderate one in others. *Chas. Lee, Hounslow.*

Salop.—Peaches and Nectarines are scarce, although a few trees carry a fair crop, and are healthy. Except Jefferson's and Victoria, Plums are a total failure hereabouts, and this holds good with regard to Damsons. Cherries on walls are plentiful, but the "earlies" have been sadly spoiled by the excessive wet. Morellos have not taken any harm. The amount of rain measured here during July was upwards of 5½—5.63 inches. Several trees of Apples are loaded, but upon the whole we have not half a crop, and it is the same with Pears, both standards and wall trees. Bush fruits are plentiful—Nuts a very heavy crop; a good many Walnuts are falling off. *A. S. Kemp, Haughton, Shifnall.*

Surrey.—All stone fruits are very scarce indeed in this neighbourhood, and in a great many places there are none at all. Apricots flowered profusely, but were destroyed by frost. In spite of a thick covering of canvas, the flowers and fruit just setting were blackened by frost, and very few indeed survived. Peaches and Nectarines set a prodigious crop, but they fell off at a very early stage of growth. There was no frost at the time, nor had not been for many days. I attribute the cause of their falling to the unripened state of last year's wood, and the cold, biting east winds which we experienced so long in the spring of the year. Our garden is on a level with the top of St. Paul's, consequently we are pretty much exposed to the influence of the winds—the east in particular. The Peaches commenced growth, and made nice shoots, but the east winds parched them up, and in a few days the trees had the appearance of having passed over a hot fire, and what green leaves were left were all blistered. For some time I was afraid the trees would never do any good any more, and it was not until midsummer that they made any progress at all. Pears may be considered a total failure, as what few fruits are scattered about on either wall trees or pyramids are not sufficient to call a crop, even if they were all on one tree. This year I had a quantity of pyramid trees covered with thick canvas and mats, the covering being put on at night, and removed every morning, but the trees have no more fruit on than those that were fully exposed. Of Apples we have a good crop on a few trees, viz., Ribston Pippin, Cockle Pippin, Fearn's Pippin, Lord Nelson, Claygate Pearmain, Mannington Pearmain, Summer Golden Pippin, Yellow Ingestre, Court of Wick, Cornish Aromatic, Gloria Mundi, Golden Reinette, Alexander and Devonshire Quarrenden. Other varieties are very scarce, and in many instances none at all. Mulberries are an abundant crop; Quinces none at all; Medlars none; Walnuts plentiful; Filberts, Cob, and common hedge Nuts, a most prodigious crop. *J. Ollerhead, Wimbledon, S. W.*

—— We have, on the whole, with the exception of wall fruit, such as Plums, Peaches, and Nectarines, a very fair crop. Apples look very well, though in some districts they are scarce. Small fruit has been very abundant, and of good quality. Hardy Grapes have a very good crop. Pears are a short crop, but of good quality. Strawberries have been inferior in flavour, owing to so much wet. *J. Burnett, The Deepdene, Dorking.*

—— Apricots were very early in bloom, set well, but owing to the spring frost and long continuation of east and north-east winds, they all fell, the Pears followed in the same way. Apples were later in bloom, and promised well; but for some unaccountable reason did not set well, and at one time looked even worse than last year, they have partially recovered, and the fruit that is left looks healthy, but late. *William Kemp, Albury Park, Guildford.*

—— This is one of the worst seasons for fruit that has been experienced in this neighbourhood for several years. *William Kidd, Tandridge Court, Redhill.*

ODONTOGLOSSUM VEXILLARIUM.

The appearance of the plants of this most beautiful Orchid in many collections leads me to believe that the conditions requisite for its successful cultivation are not altogether understood. On Tuesday last I sent two specimens to the Floral Committee of the Royal Horticultural Society, which have been so much admired for their health and vigour that a few particulars regarding them may not be unacceptable. They were bought at Stevens', in May, 1874, out of an importation by Messrs. Veitch, and were chance pieces bought for me by a friend. One is the pale, the other the rosy variety. The former has two young bulbs, bearing seventy-five flowers on thirteen spikes; the largest number of flowers on one spike is ten, and four spikes spring from the apex of one bulb. The rosy variety has also two young bulbs with fifty-five flowers on eight spikes, one of them branching.

The flowers measure 4½ inches by 3½ inches, some of them being of course smaller than others. On the latter plant both breaks are growing from the same side of one old bulb, one above the other, and in both plants this year's bulbs are at least twice the size of the largest of the imported bulbs. These plants have kept their foliage unusually long, that of 1875 being still fresh and vigorous. The leaves are all of them tinged with the bronzy purple characteristic of this Odontoglossum when in fine and vigorous health.

Odontoglossum vexillarium should be grown in winter in the coolest part of a Cattleya or Mexican house, with a temperature ranging from 55° to 65° Fahr. It should be moved without delay, as soon as the weather permits, into an Odontoglossum-house, where it should have abundant light without sun. At all seasons it requires a liberal supply of moisture. The result of too great heat is that the leaves spot and go off at their points, the growths are weak and unsubstantial, and the whole plant is of a less vigorous and sound constitution. These plants should be potted in a shallow compost of sphagnum with a little fibrous heat, well drained, and should be put into large pots, so as to give ample space for the roots they love to push long and far through their mossy bed. O. vexillarium is liable to yellow thrips, which disfigure it much, but it will stand a moderate smoking with pure tobacco. *Trevor Lawrence.*

Forestry.

Diseases of trees may be divided into two classes, namely, those that affect the roots and fibres, or part of the tree underground, and those that affect the stems, branches, and leaves, or part above-ground.

Upon the former I have to make the following general observations, without attempting to exhaust the subject. It is a well-established fact that some species of trees, as the Beech, grow best in dry soils, while others, as the Willow, grow best in moist, if not wet soils. The proverbial aquatic habits of the Willow, however, have led to not a few errors and mistakes, not only in connection with itself but also with several other species of trees. The common Alder, for example, is frequently planted in soft and boggy situations, as if it preferred these to those suitable for Ash, Elm, or Sycamore, which it does not. It is true that Willows, Alder, and Poplar generally, thrive comparatively well in damp, soft, and boggy situations, where Beech, Elm, and Sycamore would degenerate and decay. The former species, however, will not refuse to grow in any situation where the latter succeeds; hence it is to be inferred that one class of trees is more accommodating than another. I think it may be considered an established fact that such species as grow best in wet soils, make wood rapidly, and as quickly decay. Any one acquainted with the Alder knows that in wet situations, though it luxuriates in its young state, it seldom attains a medium size, or forty years' age, without indicating unmistakable signs of decay. The staghorn top, prematurely tinted leaves and dry branches, all show that something has occurred intercepting the flow of sap and vitiating its whole economy; and on investigation this is found to arise from the roots having lost their absorbing power through premature decay.

The Alder, therefore, in order to grow well and attain superior size and old age, should be planted upon dry soil of good quality in a sheltered rather than an exposed situation, under which circumstances it will attain its highest state of perfection, but may without breach of charity be suspected of heat rot in the lower part of the stem.

The Willow family is large, and its species probably the most accommodating of any trees. They grow in the wettest and also the driest of soils, in the arid land and marshy bog, on the bleak mountain top and sheltered valley. They may be grown as trees, or cultivated as bushes. They endure cutting or pruning to any extent, and submit to the roughest and rudest treatment with impunity. As a timber tree its best varieties even are unworthy of a site eligible for Oak, Elm, Spanish Chestnut, Ash, Beech, or Sycamore; not because its money value is less than that of many other species, but its roots decay at an early age, even on good soil. Consequently, as is almost universally the case, the Willow tree, instead of growing upright, is found in a reclining position, which greatly detracts from its beauty and symmetry. Willows are very tenacious of life, and very old specimen trees are to be met with all over the country; and though, as already stated, the larger roots decay at a comparatively early period, another class soon take their place and fulfil their office.

The Poplar belongs also to a comparatively numerous family, and, like the Willow, is a succulent and rapid grower. Some varieties, as the Aspen and Grey Poplar, grow with considerable vigour on the bleakest and barest situations; but the best tree varieties, as the Black Italian, White Egyptian, and Ontario, succeed only on good rich soils and in sheltered situations, and it is worse than folly to attempt to grow them on any other. A proprietor planted on Deeside an extensive district of moorland with Poplar (chiefly Black Italian, I am informed), and, as might have been expected, they nearly all died—doubtless for want of nourishment, both of kind and quantity. While it is to be regretted that the excellent and enterprising proprietor thus suffered by the bold and noble experiment, the arboricultural profession will to that extent gain by it, for it is a noteworthy fact that most of us learn only that which we are compelled to learn, and take notice only of what is forced upon our vision.

The Laburnum is a tree peculiarly liable to root decay, and this is all the more to be regretted on account of its otherwise ornamental qualities. Economically, except for turning purposes, the Laburnum is of comparatively little value. Regarding it, however, as a tree of beauty, it has few, if any equals, especially on account of its graceful pendent, tasselled flowers, colour and perfume. No tree, whether great or small, sooner or more perfectly forms and matures its heartwood, which is dark-coloured, strong and durable. The roots also, like the stem and branches, mature their heartwood readily, but unlike the former soon decay, thereby allowing the tree to fall over in the opposite direction, in which it not unfrequently remains to old age. While the stronger and principal roots which constitute the anchorage of the tree thus readily give way, in their place and as substitutes for them, young ones are formed which, although they can neither elevate nor sustain the tree in position, yet supply it with nourishment to the full extent of its requirements, and by which it is maintained often to old age. The only practical means of partially preventing existing trees from giving way under their imperfect root-anchorage is to lighten their upper and heavy parts. This, however, does not by any means entirely prevent the occurrence, nor have I yet seen or heard of any thoroughly effective means of doing it.

The Walnut, like the Laburnum, is also very liable to lose its anchorage-roots, and partially fall over from the same or similar causes, namely, the roots decaying.

Probably the most effective means of preventing this loss of the vitality of their anchorage roots, would be in all cases to plant them upon artificial mounds or hillocks. This inference is drawn from what I once saw in a Larch plantation, formed upon pure peat soil, upon which the trees would not have remained sound to the age and size at which I saw them, but for the mound planting. At distances of 12 to 15 feet apart, clay had been wheeled upon planks upon the soft surface, and the trees planted, one upon each hillock. The results were, that the trees grew much faster and larger than those upon the flat surface; and when cut down, were perfectly sound in every part, root and stem, while the others on the flat surface were, many of them, worthlessly rotten at the root and lower part of the stem. *C. Y. Michie, Cullen House, Cullen, July 29.*

Apiary.

Work for August.—It is a very needful caution to look out for robbers if your stocks are weak—bees belonging probably to your own apiary will be the chief robbers, although the worst thieves in many instances are wasps; if they once gain an entrance it is a very difficult matter to again drive them away. We were once asked to drive a few stocks owned by a widow lady, which were remarkably strong and active, at the early part of the season, but judge our astonishment when in the month of August we found every hive destroyed with wasps. There is only one remedy, though this is very successful if it is taken in time: make the entrance small, so that only two bees can pass and repass at the same moment. We always urge our bee-keeping friends every autumn to attend to this matter; a stitch in time saves nine. Many valuable stocks might be saved by timely care; the bees are the best defenders of their own treasure, and if they are helped they will well repay it. The best thing we have known after years of experience is a small block of wood cut to exactly fit the entrance, with a small opening to admit two bees at its base. Some beekeepers employ zinc slides; we do not object to these, for anything will answer if it only makes the passage small enough.

Destroy every wasp's nest you find in the vicinity of your apiary. This may be performed with ease and safety. Pour a small quantity of turpentine into the entrance after they are all quiet some evening, then quickly stop up the open entrance, and you will find them all dead next morning, when you may dig out the combs, and if you are fond of fishing preserve them for this purpose.

Swarms having in many parts of the country been far from plentiful we would, especially just now, advise all our friends not to hive every swarm, for probably we shall have them numerously this month. Second and third swarms, so-called, but which are merely casts, and not worthy of the name of swarm, should not be hived as separate swarms; but if it is wished to increase the stocks then hive two casts in the same hive, and afterwards feed them liberally. Many beekeepers hive every cast, then, leave them to their fate. In such cases we cannot but expect the almost inevitable result, for they seldom survive through the winter.

At this late season everything should be done to avoid swarming by giving the stocks plenty of room, though at times it is difficult to prevent swarming. Perhaps, all things considered, it is best to allow them to swarm, then either return them to the old stock or unite them to a weaker stock-hive which needs strengthening. *R.*

Drones.—Your correspondent "K." takes me up too literally. In proposing that drones should be kept prisoners in a separate hive, I never meant that they should be kept under such conditions as were inconsistent with life. If apiarians are not sufficiently ingenious to be able to devise a means of ventilation, or whatever else is necessary for life, while still keeping them apart, they must be less fertile in resources than I had imagined. *Andrew Murray.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—All the winter-flowering stove plants that are usually propagated from cuttings struck in the spring should now receive the attention they need, for upon being kept under such conditions as favour a strong sturdy growth will their ability to produce a maximum amount of bloom depend, much more than upon the mere size of the plants or the numbers grown. It is a very common occurrence whilst plants are small to forget the room they want when larger, and in this way it often happens in the spring that many more of these winter-flowering subjects are propagated and potted off than the space at command will admit of being grown without crowding to an extent that results in weak growth. Where this is the case it is far better now to go fearlessly to work and discard all that cannot be accommodated with enough room. The pits and frames that such plants generally occupy are very often of a character such as not to admit the full complement of light, and it should be borne in mind that these quick-growing subjects, such as under consideration, suffer to a far greater extent in an over-dark situation than plants of slower growth. Lean-to pits, such as are too frequently met with, with heavy back and front walls, and the surface on which the plants stand often consisting of a bed of ashes, or similar material, much too far from the glass, are about the worst structures that these plants can be grown in, though in many places they are all that are at command. Much may be done to benefit the plants by elevating them on temporary stages as near the glass as their heads will permit of. Every plant, however common or easily grown, should have enough room to stand clear of its neighbour. Plumbago rosea, Sericographis Ghiesbreghtii, Thyrsacanthus rutilans, the taller-growing Begonias, Scutellaria Mociniana, and any others that seem to require it, may have the points of their shoots once more pinched out, but this must not be done too late, or it will interfere with their flowering. Most of these winter blooming plants will be now getting their pots moderately filled with roots, and will be benefited by the frequent application of manure-water, through the use of which comparatively large plants may be grown in small pots, but where

this practice is carried out it should be remembered that it necessitates closer attention in giving water, as the greatly increased top-growth resulting, with the limited root-space to support it, causes the plants to become dry much oftener, and to suffer from the want of water. Should this occur to a much greater extent than where the amount of top-and-root growths is nearer proportionate—which will be the case where little or no liquid stimulants are used—less shading should now be given with more air, so as to solidify the growth during the processs of its formation. On this important matter I frequently meet with what I consider to be an erroneous idea, that is, that where plants of a quick growing nature have been pushed along rapidly a disposition to bloom freely can afterwards be given by subjecting them, when grown to the size they are required, to a ripening process by giving less water with a much lower temperature; which is a mistake. Late struck Poinsettias should now be kept growing freely in a genial temperature, or they will not acquire strength to make useful flower heads. Plants of Franciscea confertifolia that flowered early in the spring and afterwards were transferred to the stove will now be about completing their growth; as soon as the flower-buds are perceptible in the points of the shoots the plants ought to be moved to cooler quarters, or, where it is desirable to bloom them later next year than they flowered this, they should be taken out of heat directly the shoots have completed their extension before the flower-buds are formed.

Ataccia cristata occupies little room, and its unaccountably singular chocolate inflorescences is always attractive. Plants that have flowered for two or three years, as their lower leaves decay, usually throw out a number of roots from the bare portion of the thick fleshy stem; if the head of the plant is severed an inch or so below where these are emitted, and is potted sufficiently low so as to cover the roots attached, in the course of a month it will get established. It must not have too much room, a 5 or 6-inch pot will be large enough, filling it one-fourth with drainage material; the soil should be open fibrous peat with a fifth or sixth of sand intermixed, and some broken crocks or charcoal added. The crown thus taken off should be covered with a propagating-glass, but not so as to wholly exclude air, or, from the succulent nature of the stems, there might be some danger of its damping. This is much the best method of increasing the plant, as after the head is removed the stool will break up a number of eyes, which can be taken off and struck separately. Flowering stove plants that have now been for some weeks stood in conservatories, and consequently subject to a lower temperature than where they have been grown, if indigenous to hot countries should from time to time be examined to see that they are taking no harm; if the young growths flag or the leaves become disfigured, it is an evidence that they will suffer. Where this is the case, they should at once be moved to warmer quarters. Much may be done to accommodate tender subjects when temporarily located in such quarters by regulating the admission of air in accordance with the outside temperature; frequently after thunderstorms a day or two succeeds that readers a cool house quite unfit for stove plants, unless only a small amount of air is given. *T Baines.*

Orchids.—The fact that so few blooms are to be met with in these houses at the present time must be hailed as indicating that every endeavour must be made to forward and hasten on all the growths that are in various stages of development. When a quantity of blooms are open, and their rich and varied hues and delicious fragrance are making these structures gay and attractive, and causing many to visit them that would not in all probability do so if the flowers were absent, the treatment for many a day is in some degree more of a compromise than a regular and reasonable course; the fact being that in the endeavour to keep the blooms fresh as long as possible individual plants are often kept in a drier condition than they should be, and, providing blooming plants are taken into a cooler division, they often suffer on that account, for the change of temperature and atmospheric moisture is such that with many the root points close up again, the growth of the plants is checked, and on taking them back into their proper quarters, though they start growing again, they often take far into the autumn and winter months before the growths are made up, and as a consequence are often imperfectly ripened. That this may be prevented as far as possible, see that the whole of the collection is now in a pushing and growing condition—of course a small number have already finished their growths and will not be included under this head; and that a regular and careful application of water is given to the roots, an advance of from 10° to 15° by sun-heat in the East India, Dendrobium, and Cattleya house being given; air on the top and bottom also must be freely admitted, using however some caution in this matter; and then in the afternoon, about 3 or 4 o'clock—in this being guided by the position of the houses—giving all a gentle sprinkle overhead as well also as among the lower parts of the Aerides, Vandas, Saccolabiums, &c., so that with the blinds drawn up and the ventilators closed the temperature may be raised a little by the sun heat, which will have a stimulating effect on all the plants. The temperature will gradually lower during the evening and night, and must be allowed to come down to the usual morning readings. Thus with judicious treatment growths will come freely on; but bear in mind that by taking off the blinds as soon as it can be done with safety, and at the same time letting the night temperature go gradually down, the growths will strengthen and plump out as they are made, and by-and-bye with a little more sunlight will be thoroughly ripened. With the Odontoglossum-house, however, the method at present must in some respects be somewhat different; air must be given night and day—no fire-heat at present will be required, the object being to keep the temperature so that the range of night and day readings are not nearly so great as in the other houses; using moisture on the floors and stages, and withal an abundant supply at the roots. By this means the heat must be kept down, otherwise the young shoots are liable to be attacked with the yellow thrips, and then, through the foliage being weakened and bitten, the leaves are easily taken off with damp and rot, ultimately causing the young growths to be entirely lost. This house must have more shade than the other divisions, that the air may have the moisture retained and be less liable to fluctuations. Masdevallias must be stood in the coolest end of this house, and on no account be allowed to get dry. As a rule these are very free-growing, the chief conditions being that the soil should be sweet and open, the supply of water abundant, temperature very cool, and very little direct sunlight. Sophronitis grandiflora on blocks in this house will now require a little extra looking to, the young breaks with the flower-buds enclosed in them will be pushing up, and when the blocks are dipped the water must not be permitted to remain in the breaks, otherwise the tender buds are very liable to damp off. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

The beds are now well filled and in the height of their beauty. Where any of the stronger growers are getting out of their places, or showing a tendency to become too thick and crowded, they had better be cut back or the points of the shoots pinched out. Wherever cuttings can be had without in the least interfering with the appearance of the beds they may be put in at any time now. We generally commence with the variegated Pelargoniums, as they require longer time than the scarlets and stronger-growing sorts. All ours are struck in an open exposure in the full sun, and get very little water until the cuttings are rooted and growing. Phloxes, Pentstemons, and other choice hardy plants may be propagated in handlights or glasses on a shady border or in any convenient place; China Roses also do well treated in the same way. Cloves and border Carnations had better be layered without delay, in order to get the plants well established before the season gets too far advanced. Proceed with the budding of Roses as the Briers get ready; attend to tying and nailing climbing plants as they advance; those requiring sticks and supports should be looked to before they get broken over. The late showers are bringing up weeds in all directions, lose no opportunity of having them kept under. Let the walks be picked over, swept, and rolled, to keep them smooth and firm. The lawn will also require frequent mowing and sweeping to keep it always in first-rate trim. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Strawberries in Pots.—In this department, at this season, active operations will be required in the way of potting up those plants which are to be prepared for forcing purposes, and also in planting out others which are intended to form new plantations on open quarters or elsewhere. It is very desirable to have both these matters accomplished as expeditiously as possible after the layers are rooted and fit for such operation, and at this time other superfluous runners should also be removed from the plants; these means, which are of considerable importance in connection with the subject, will tend to concentrate the full force of the plant towards the development of leaves and formation of crowns for giving another year's supply of fruit. It is also highly essential to retain every leaf on the plant until its proper functions are fulfilled, instead of pursuing the barbarous practice, which is still indulged in at some places, of trimming up those plants, and exposing the surface roots to an arid and parching state, to their entire detriment. In potting use lumpy soil which has been moderately enriched with decomposed manure, free from worms, or that from spent Mushroom beds is very suitable. Have the pots made clean inside, and let them be well drained: 5-inch ones are most suitable for general purposes, but exception may be made in the case of such sorts, for instance, as Black Prince, which are required for very early work; 4-inch ones will suffice, or larger ones may with propriety be used for large-growing kinds which are intended for late work. As the potting proceeds let the plant be well watered at once, after which give no more water until the soil becomes dry. A little extra care in this matter until the roots have taken hold of the fresh soil is advisable, as the plants are liable to become too much saturated if indiscriminate waterings are persisted in. Eventually such plants will require copious supplies of water, it will therefore be prudent, if possible, to select a place suitably located for this purpose. With reference to making new plantations of these plants, by all means give them a good place and well-enriched soil, and allow ample space between the rows, so as to admit of a perfect development of the foliage and runners. We make the rows 3 feet apart, and plant 18 inches asunder, and on dry and exposed quarters or borders mulch the surface of the ground with about 2 inches of manure as soon as possible afterwards. *G. T. Miles. Wycombe Abbey.*

HARDY FRUIT GARDEN.

Excepting Peaches and Nectarines that suffered such a severe check through having their leaves so blistered, all fruit trees are showing a remarkable redundancy of growth, which in the case of those on walls needs frequent regulating and nailing or tying-in to prevent the wind acting on the branches and tearing them down. As there is now no fear of any of the back buds starting, all breast-wood should be kept stopped close so as to let in plenty of light and air about the spurs, and thus insure a thorough ripening of the same, which from the gross sappy state of most of the shoots will require all the assistance it is possible to give them. There is no fruit that is so much benefited and improved in flavour by exposure to sun as the Fig, and as these will now be approaching the ripening period, all superfluous wood should at once be cut away, and particularly that from the inside of the tree, or such as is coarse and long-jointed, as this rarely ripens or becomes sufficiently firm to stand through the severity of winter, and even should it do so is never productive. There is an old saying that a pruned Fig never bears, but that only applies when the pruning is confined to the top, and when it is done at an improper time, as would be the case after the leaves have fallen, as then they only grow the stronger during the following year unless a corresponding shortening of the roots should take place at the same time. Whenever Figs require the aid of a knife they should have it at this season, as it affords a salutary check by removing a portion of the foliage, and from letting in light and air helps to consolidate and harden the wood, thus rendering it more fruitful. Autumn-bearing Raspberries, always so useful, will be doubly valuable now that there is such a scarcity of Plums for culinary purposes, and, therefore, special attention should be paid them to induce as heavy a crop as possible, and to prolong their bearing as late as the season and the nature of the soil will permit. The best way to treat them is to mulch the ground heavily over with half-rotten manure, and then give a thorough good soaking of water, repeating the same if the weather sets in dry, and renders such a course necessary or desirable. In seasons like the present, with plenty of rain to force growth, it often occurs that the young suckers from the summer-bearing kinds break and bear fruit, as they are now doing with us, and come in most acceptable for dessert, as the berries are large and fine. It will be well, therefore, to look over plantations, and stake and tie up any showing this tendency, previous to which, however, all old canes should be cleared away, that the sun and air may have full play amongst them. Morello Cherries are not generally looked on as dessert fruit, but if allowed to hang till October they lose much of their acidity, and are then quite an acquisition at table. To keep them, however, till that time they must be closely netted up, as blackbirds have a special liking for them, and are most persevering in their efforts to get at them, and if the trees happen to be in a quiet, unfrequented part of the garden, they often clear off the crop without being observed. The most secure protection for these and Currants on walls is Haythorn's hexagon net, which will effectually keep off both birds and wasps. Fortunately the latter are not likely to be much trouble this season, for up to the present, I have not seen any about since the queens made their appearance in May. It is the practice with many to use mats to envelope their bushes of both Gooseberries and Currants, but from the way they exclude both light and air, the fruit soon deteriorates, and does not keep nearly so long as when it is more fully exposed, as then it dries quickly and rather improves by hanging than otherwise. As the kernels of Filberts are now swelling fast and filling their shells, a close watch should be kept for squirrels, or those active little rovers will soon strip off the crop, for, not content with appeasing their appetite and trusting the morrow to provide for itself, they garner up stores and thus look out for the rainy day. One hardly likes to shoot them, and yet that is the only course, as they are not intimidated by blank cartridge or any other device. *J. Sheppard, Woolverstone.*

THE

Gardeners' Chronicle.

SATURDAY, AUGUST 11, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, Aug. 14 — Clay Cross Horticultural Society's Show.

WEDNESDAY, Aug. 15 — Floral and Fruit Exhibition at Dover. Glamorganshire Horticultural Society's Show. Shropshire Floral and Horticultural Society's Show (two days).

FRIDAY, Aug. 17 — Norton Horticultural Society's Show.

SELDOM has it been our lot to chronicle a fruit report of more uniform character than that which now we lay before our readers by the courtesy of our numerous correspondents throughout the British isles. Unfortunately the uniformity may too often be described as uniformly bad. Neither latitude, nor protection, nor soil, nor elevation, seems, speaking generally, to have availed aught in securing a crop of fruit.

Apricots were almost uniformly below average, and in some cases utter failures. Two exceptions may be noted in Sussex and Herefordshire respectively, which lead to the inference that the localities in question are in some way specially protected from the onslaught of spring frost.

Plums are almost invariably much below an average, and may generally be registered as an utter failure—a striking proof of the inclemency of the flowering season. In one part of Kent, Victoria and Prince of Wales have done something to redeem the general disaster, and the loyalty of Plum growers is likely thereby to be enhanced.

Cherries were generally under the average, with the exception of Morellos, of which in many places the crop is reported to have been good.

Peaches and Nectarines, as might be predicted, are almost non-existent.

Apples in by far the large majority of cases are below average; in a few cases they are spoken of as average, while in certain localities in Lancashire, Buckinghamshire, Suffolk, and Sussex the crop is recorded as over-average. In those fruit orchards and gardens we have ourselves seen, while tree after tree is destitute, or nearly so, of fruit, here and there a particular tree is heavily laden. This seeming capriciousness is doubtless primarily dependent on the variety of Apple rather than on climate or soil.

Insect agency has so much to do with the setting of the fruit that it must not be overlooked that it is not the direct influence of untoward climate that has to be looked to, but also the effect of cold and wet in keeping insects at home.

Turning to small fruits, such as Currants, Gooseberries, and Strawberries, a different tale is told. The crop of these fruits has in general been large. Probably their blossoms were later in developing, and of necessity less exposed to the inclemencies of the weather. Nuts again are generally abundant, and in Kent, Surrey, and other southern counties, as also in the West, promise an abundant crop. The period of blooming, as well as the structure of the fruit, may perhaps account for this. The pollen, too, of such plants being carried by the wind, to a large extent, would render them to that degree independent of the agency of insects. Fortunately if our own supplies run short America and France will be able to help us.

It may be interesting to notice that good fruit years are the exception rather than the rule. Thus, taking the record from 1870 till the present time, we find that in 1870 the crop was generally speaking abundant; in 1871 scanty and late; in 1872 a complete failure; in 1873 it was under average; in 1874 it was reported to be average; in 1875 unusually abundant; in 1876 very unsatisfactory, while the wet autumn of last year, and the cruel spring of the present, have rendered the season of 1877 the worst of the series.

We have not of late heard much of the importation of tinned Cranberries from America, of which we had the opportunity of tasting some excellent samples a few years back—so excellent that we have been looking forward to their further importation. But our friends across the Atlantic have their woes as well as we, and the Cranberry submitted to cultivation is apt to suffer from disease, from which in a wild state, if not entirely free, it is relatively exempt. One source of consolation we may make the best of, and that is that the trees will have a season of fallow this year, which should give them a better chance next; and for the rest we may do worse than imitate the good humour of our correspondent in last week's issue who described the state of his fruit garden in such amusing terms.

—— FOR the photograph from which our illustration (fig. 33), p. 177, was taken, we are indebted to Prince PIERRE TROUBETZKOY. The plant represented is AGAVE SALMIANA, which has flowered in the Prince's garden at Intra, on the shores of the Lago Maggiore, without any protection. The plant was planted out in 1871, when not more than 18 or 19 inches in height; its present dimensions are:—flower-stem, 6.10 metres (about 20 feet) in height; circumference of flower-stem, 64 centimetres (= 2 feet); length of leaves, 1.70 by 30 c.m. in width. The circumference of the entire plant measures 50 metres. The flowers were fertilised with the pollen of A. Celsiana, A. maculata, and A. xalapensis, and the woodcut shows the process—about the first time, we suppose, that the marriage ceremonial has been thus represented. The flower-bud was first noticed in the beginning of February, and on July 5 the flower-stem measured 6.10 metres (= 20 feet, about), and all the flowers were then expanded. In the same garden are now in flower Dasylirion gracilis, tenuifolia, Beaucarnei. Beschornera mexicana and californica are in flower, the flower-stems being of a coral-rose colour with green bell-shaped flowers. Twenty-five varieties of Eucalyptus are also grown, some of which, as E. amygdalinus, have in eight years attained a height of 15 metres (= 49 feet) from the seedling stage, the trunks being now 1 metre 25 in circumference at 3 feet from the ground.

—— With reference to the forthcoming INTERNATIONAL FRUIT AND FLOWER SHOW, to be held at Carlisle, we are glad to learn that Lady MUSGRAVE, Eden Hall, has in the most handsome manner increased the prize offered by her ladyship for table decorations, and will present a most beautiful cup, valued at £25, to the successful competitor. The latest date for entries is now extended to August 30, and we have no doubt there will be a keen competition. The following ladies have very kindly agreed to act as judges:—Lady MUSGRAVE, Eden Hall; Lady LAWSON, Brayton; Mrs. PERCY WYNDHAM, Isel Hall. The many attractions of this great show will be still further increased by the presence during three days of the splendid band of the 2d Life Guards, by permission of Colonel A. C. H. STEWART.

—— We are informed that at a meeting of the committee of the NATIONAL ROSE SOCIETY, held at the Horticultural Club on Tuesday, it was determined to publish in or about November a Rosarian's Year-Book exclusively devoted to the Rose, and to contain a full report of the great show at St. James' Hall, to be issued free to members—price to non-members, 1s. Suggestions were made as to holding two shows—one in London and one in the provinces.

—— A *resumé* of the proceedings of the AGRI-HORTICULTURAL SOCIETY OF MADRAS from 1835—1870 has lately been issued by the Society, and is an interesting document from the numerous entries relating to WALLICH, WIGHT, GRIFFITH, CLEGHORN, MUNRO, and other botanists.

—— Among other signs of rejuvenescence in the ROYAL HORTICULTURAL SOCIETY we may mention the reappearance of the JOURNAL of the Society, under the editorship of Mr. ANDREW MURRAY, who has been appointed "scientific director of the Society." The part before us is a slim octavo of a single sheet, and is almost entirely taken up with Mr. MURRAY's papers on the flow of the sap. A portion of the report of the Floral Committee on the bedding Pelargoniums grown for comparison at Chiswick in 1876 is also given. We infer that it is intended to bring out a monthly part, though nothing is said directly on the subject. Perhaps the present sheet is published tentatively, and upon the way in which it is received by the Fellows will depend the future mode of publication. We believe that recent volumes of the *Journal*, though well edited and by no means unimportant as to their contents, were so little appreciated by the Fellows that an infinitesimally small number was applied for. We sincerely hope that a wider interest may be taken in the present series. On the cover we notice also some announcements by the Council, which show that an attempt is to be made to revive the 3 o'clock meetings, and to this end we notice that Mr. MURRAY has undertaken to treat of the subject of Silver Firs on the 21st inst., having discoursed on the red-spider on Tuesday last.

—— On the subject of making SELECTIONS OF FRUIT TREES for culture in any particular locality Mr. FARQUHAR, of Fyvie, Aberdeen, writes:—"Young gardeners in making a selection of fruit trees would find it more to their advantage to study the hardy sorts suited to the locality (more particularly in the North of Scotland), than the choice sorts frequently recommended for variety. This season I find trees of the more common sorts with a good crop, while many others have nothing."

—— The remaining parts of PRITZEL'S THESAURUS LITERATURÆ BOTANICÆ have lately been published by BROCKHAUS, of Leipsic. It may be remembered that Dr. PRITZEL died in 1874, before the second edition of his valuable catalogue was completed. Dr. CHARLES JESSEN has undertaken the laborious task of completing the volume, and the result of his labours is now before us. The concluding portion now issued contains lists of the several botanical books arranged under various headings, such as general botany, books in various languages, monographs of particular families, garden catalogues, geographical botany, fossil botany, floras of various countries, economic botany, physiological botany, indexes, &c. Working botanists will be so glad to get the book in a complete state that they will not be too exacting, albeit it seems to offer numerous occasions for adverse criticism; but, as we have said, errors of commission and omission will readily be condoned.

—— At a meeting of the Central Horticultural Society of France M. ALPHONSE LAVALLÉE showed fruiting specimens of NUTTALLIA CERASIFORMIS. As the name implies the fruits are like those of a Cherry, the colour yellow passing into reddish violet. In flavour they are acidulous and agreeable. This beautiful spring flowering shrub is not known as its merits deserve. It used to form a conspicuous object in the Wilderness Walk at Chiswick, unhappily lost to the Society. We never heard of its fruiting in this country.

—— We hear that it is proposed to open the charming gardens at HECKFIELD PLACE under the customary conditions on Monday, the 27th inst., and five following days, instead of on successive Mondays, as has been the case in previous years. Lord EVERSLEY's kindness in this respect is so highly appreciated that the usual opportunity to inspect the gardens is looked for with great interest in the surrounding locality. Visitors will find the bedding this year to be greatly varied in character, and as perfect and beautiful as ever—indeed, not only the bedding, but the entire place seems to grow in beauty. The recent rains have left the extensive undulating lawns in dense verdure clad, and the whole place is as neat as the proverbial new pin. The Grapes are superb, and well maintain Heckfield's old reputation.

—— The MARQUIS OF BUTE'S VINEYARD AT CASTLE COCH, near Cardiff, which has acquired something more than a local reputation, is just now looking remarkably well, and there is the promise of a very fair crop of fruits, the age of the Vines considered. The plants now average 3 to 4 feet in height, each has put forth from three to five strong shoots, and the most vigorous plants have from six to seven good bunches. The growth of the Vine is something

FIG. 33.—FLOWERING PLANT OF AGAVE SALMIANA IN THE GARDEN OF PRINCE TROUBETZKOY.

remarkable; the leaves are large in size, and as healthy and clean as any one could well desire to see them; there is not a trace of mildew or insect pests of any kind. The few Vines that carried fruit last year ripened their bunches thoroughly, and Mr. A. Pettigrew, the gardener at Cardiff Castle, who takes a great interest in the experiment, is very sanguine as to the crop of fruit likely to be harvested this season. The Marquis of Bute is so much encouraged in the matter that a considerable portion of land has been planted during the past winter, and it is computed that the vineyard now comprises some 6000 Vines. Mons. Chavenet, the proprietor of a large vintage at Côte d'Or, in the South of France, called at Bute Castle a few days ago, and expressed himself in sanguine terms as to the ultimate success of the experiment. He is sending a further supply of Vines for planting out at the proper season. The soil is kept gently hoed on the surface; it is so full of fibrous roots that it cannot be deeply moved without risk of injury. A good mulching of manure will be given in autumn, and each leading shoot will be cut back to three eyes at the proper time.

—— Our enterprising contemporary and for so long a time our associate—the *Agricultural Gazette*, will publish in its next number a coloured illustration of the Colorado Beetle in its various stages. In reference to this subject we may mention that there are now so many illustrations of the Colorado beetle that we trust our friends will not send us so many lady-birds! It is a great pity people do not know friend from foe.

—— The Pelargonium Society has just issued its report and balance-sheet for 1876-7, from which it appears that the annual subscriptions amounted to £88 12*s.*; that the amount of prize-money distributed amongst the various exhibitors on June 19 was £87 2*s.* 6*d.*; and the Society has a balance in hand of £42 6*s.* 8*d.* The annual meeting takes place at Chiswick on the 15th inst. at noon, when the arrangements for the ensuing year will be discussed.

—— On Monday last (Bank Holiday) no less than 58,000 persons visited the Royal Gardens, Kew, between 1 P.M. and sunset.

—— Judging of what we have seen in various places the Balsam does not prove ornamental in the open ground when grown on in pits and then turned out with balls of soil. The result would appear to be the undue development of side shoots and foliage that retard the production of flower and cover up the fine blooms that are first obtained on the centre stem. On the other hand, plants taken from the seed bed and dibbled out into the open ground soon produce flowers with but few side shoots, and the floral beauties of the plants are thus seen to the best advantage. Where seed is desired the soil should not be too rich; when necessary the plants should be stopped, and, if found needful, some of the side shoots should be taken out. Thus grown we have found the Balsam to be extremely beautiful in the open ground, and well worthy to be classed as a bedding plant.

—— Paragraphs have been going the round of the papers relating to the Floral Decorations on the occasion of a grand reception on the part of Madame MacMahon, and also on the costliness of modern entertainments in London. We are informed that at a ball in Belgrave Square on the 9th ult. Mr. Wills supplied and arranged in one day 59 large Palms, Dracænas, &c., from 12 to 20 feet high, including many splendid specimens of Cocos flexuosa, 15 feet high; 60 Palms, from 6 to 15 feet high; 188 various Palms and foliage plants, from 4 to 10 feet high; 1 extra large Seaforthia elegans, 25 feet high; 292 foliage plants and Palms, from 3 to 6 feet high; 10 large Phormium tenax, 6 by 10 feet; 107 plants of Wills' new hybrid Dracænas, from 3 to 5 feet; 72 large Ferns, from 3 to 7 feet high; 84 Cyperus, various, 683 Creeping Jenny (Lysimachia), 2880 Lycopodium denticulatum, 84 handsome foliaged Begonias, 209 Adiantum cuneatum, 109 A. farleyense, 50 Sedums, 50 Panicum variegatum, 60 large Ivies in pots, 10 feet high, 20 Cocos Weddelliana for centre of refreshment tables; 1416 choice flowering plants, 150 handsome Liliums (specimens), 72 Crassula coccinea (specimens), 48 choice Orchids, &c., 72 Isolepis gracilis, 72 Tradescantias, 150 various creeping and trailing plants; total, 7271 plants, 72 spikes Tuberoses, handsome; 6500 cut Roses, Stephanotis, cut Orchids, &c.; 22 tons of clear block ice, 5 tons of Derbyshire spar, 1 ton of virgin cork bark, 4 vanloads of green moss (equal to 1200 bunches). Large grottos were constructed, water for fountains, waterfalls, &c., laid on. The total cost of the above considerably exceeded £1000. Thus it will be seen that the cost of such entertainments has been much underrated by the general press. Of the taste and good sense that prompts such lavish expenditure we say nothing.

—— The twenty-second autumn exhibition of fruit and cut flowers at the Crystal Palace is announced to be held on September 21 and 22.

—— In reply to very numerous and still-continued enquiries, we beg to repeat that the Rose Supplement, with the coloured plate, presented to our subscribers with the number for July 7, is out of print, and will not be reprinted. We shall shortly issue a coloured plate of fruit, of which due notice will be given.

—— True Dichotomy, or forking of the growing point in flowering plants, is sufficiently uncommon to make it worth noticing that numerous specimens of the American Waterweed (Elodea canadensis) recently examined presented this peculiarity. Though rare in flowering plants, it is the common mode of division in Cryptogams.

—— Adverting to paragraphs in recent issues relating to certain alleged malpractices at Orchid Sales we have received the following communication from Mr. Stevens, who has also made known to us the facts of the cases alluded to by our correspondents so far as he knew them or was concerned with them as auctioneer. It is only just to Mr. Stevens to state that not one of the correspondents who has addressed us on the subject has cast the slightest imputation on the good faith and upright conduct of Mr. Stevens, which is indeed evidenced by his letter. Mr. Stevens writes:—

"I have read the correspondence and your editorial note of last week, on the subject of Orchid sales, and need hardly say that it is not only my wish but that it is greatly to my interest that my sales should be conducted in a fair and honourable manner, and that buyers should be able to rely upon the correct description of the plants which come under my hammer. At the same time it would be quite impossible for me either personally to examine and guarantee the thousands of plants which annually pass through my hands. Orchid growers are aware of the great difficulty in describing many of the species, and that they pay a price at auctions commensurate with the risk. But I shall always be glad to assist purchasers in obtaining redress from the vendors where there is just cause for complaint, and shall feel grateful to any gentleman who will draw my attention, either publicly or privately at the time of sale, to any plants about which he may have reason to suppose there can be a doubt."

—— The Messrs. Sutton are to be congratulated that whilst the Hollyhock fungus is working so much mischief in other places they are fortunate enough to have in their nursery a very fine plantation of this grand border flower, all the plants of which are in rude health and full of vigour. The varieties grown include all hues of colour found in the Hollyhock, and the flowers are of superb quality. Spring propagation, a deeply-worked soil, plenty of manure and room, seem to present the elements of successful culture.

A GARDEN LOUNGE.

The figure we give of a garden lounge may be useful, as it is easily made, is inexpensive, and readily adapted to the varying requirements of young and old, short or tall. The back, as will be seen (fig. 34), can be raised or lowered at will, and the foot-board can, by an arrangement of pegs, be adapted to the comfort of the lounger. The back measures 30 by 19 inches, the length of the seat 19 inches, of the leg-rest 15 inches, of the movable foot-board 8 inches. The extreme measurements of the supporting framework are from the front of the seat to the end of the supports in front, 27 inches, and from the front of the seat to the end of the supports behind, 44 inches. We are indebted to Mr. W. Earley, Valentines, for the sketch and measurements of this very convenient garden seat.

FUNGOID DISEASES OF FOREST TREES.

By M. C. Cooke, M.A., LL.D., &c.

Experience has taught us that fungi may exercise an injurious influence in at least three different directions, viz. (1), either by permeating the soil, and injuring or destroying the roots, or (2), by establishing themselves in the tissues of the plant, and developing themselves outwards as true endophytes; or (3), by a kind of external parasitism, more or less covering the leaves and young branches, choking the stomata, checking growth, destroying the healthy functions, and ultimately causing death. These three modes of attack suggest the classing of our remarks under the heads of (1), root fungi, (2), Endophytes, and (3), Epiphytes.

Root Fungi.—Horticulturists and foresters in Britain have long recognised the secret but deleterious influences of root fungi, as evidenced by the numerous and oft-repeated complaints which have appeared from time to time, over a period of many years, in the pages of the *Gardeners' Chronicle* and other journals devoted to horticulture. Vines have been described as suffering from attacks of root fungi. Shrubs withering and dying beneath the insiduous attacks of fungi at roots, and whole plantations of young trees being cut off by some unseen destroyer, which at length was discovered in the soil. Hundreds of instances are on record to substantiate the fact that conditions of fungi, mostly in the state of mycelium, or root-like threads and fibrils, can and do permeate the soil, and injure or destroy growing plants to a considerable extent. There is no external appearance of this enemy manifest, until the condition of the plant itself gives indication that something is going wrong. It is only by breaking and turning the soil that the cause is revealed, and it happens not unfrequently that the unaided eye is insufficient to detect its presence. Causes and cure are alike too little within the scape of human control.

Fungi of the Mushroom type are known to be developed from a mass of delicate fibrils which penetrate and interlace the soil, and to this filamentous material, which to fungologists is known by the name of mycelium, the common name of "spawn" is applied. It is just this kind of substance which accomplishes all the mischief comprised under the term of "root fungi." It is not a complete and perfect fungus, but the "mycelium" or "spawn" of some such fungus as an Agaric, a species of Polyporus or some Thelephora. This kind of mycelium, or incipient fungus, is almost certain of development from rotting wood, dying leaves, or vegetable matter of any kind during decomposition. Hence all soil containing vegetable substances in a state of decay contains the elements of root fungi. This may be illustrated by two or three recorded instances. Two Deodars were planted near the Director's house at the Royal Gardens at Kew, one grew, the other did not, and it was afterwards discovered that where the latter had been planted an old Cherry tree had been cut down; the inference was that the fungi on the dead wood left had attacked the living roots of the Deodar, causing the tree to fall into ill health. This was adduced as the true explanation why one tree often refuses to grow where another had stood before.*

A fine Wellingtonia gigantea, standing in the grounds of Portnall Park, was destroyed, and afterwards the cause of death investigated. A sickly hue spread over the branches, all that skill and intelligence could devise was done for it, but alas! its doom was fixed, and in a short time this much-cherished favourite was a dried stick. Fungous spawn had penetrated every part of its system, a white kind of network was found under the bark of all its roots, and it was believed that the enemy was some species of Polyporus or Thelephora, in the mycelioid condition. In commenting upon this incident the Rev. M. J. Berkeley remarks that he had a noble Cupressus macrocarpa affected in the same way. He recommended that in planting on the same spot it would be prudent to trench the ground deeply, and get out, if possible, every fibre of the deep roots, as each fragment might be affected, and would perhaps propagate the mischief, even if the new tree were planted at some distance.†

Shortly after the above was recorded another instance appeared in the same journal. The writer says that early in the year (1865) he had some hundreds

* *Gardeners' Chronicle*, 1865, p. 462. †*Ib.*, p. 1037.

of Conifers, which he noticed were rapidly losing health, and assuming a sickly hue, which steadily increased. He saw that they were attacked by fungi, and that some means must at once be taken to check the evil. Many of the plants were 11 and 12 feet in height. The greater part of them consisted of Deodars, Pinus excelsa, Abies Douglasii, A. Menziesii, and Cupressus Lawsoniana. The remainder were Wellingtonias, Abies Webbiana, A. Morinda, Arbor-vitæ, &c. All were planted in a nursery, the soil of which was for the most part about one-half shingle, and the subsoil entirely of that description. He had all the plants taken up, and every particle of soil shaken from their roots. He found that every plant was attacked by fungi, and that most of them had lost at least two-thirds of their roots, which were entirely covered with and penetrated by minute thread-like processes, forming a thick network all over them, sometimes, indeed, assuming the appearance of small lumps of spawn. After the plants were taken up he had the roots well washed in pure water until not a particle of spawn could be seen on them, what were left were then cut back to 3 or 4 inches beyond the decayed parts. On examining the soil in which the trees had been planted he found partially decayed leaves and small pieces of decayed wood, which were doubtless the cause of the mischief. Leaf-mould had been applied to give the plants a start, which, however, as has been seen, was in the wrong direction. Every leaf and bit of wood was the nucleus of disease. He was compelled to plant again in the same ground, after removing the soil and putting maiden loam in its place. Trenches were opened and the plants were well puddled in, and staked in cases where they required such support. Some 1000 plants were treated in this manner, to which was added syringing morning and evening in very hot weather. The loss was less than 1 per cent. The plants were lifted and replanted at the latter end of March.*

This and similar instances induced some remarks by the Rev. M. J. Berkeley on the subject, and it must be remembered that this gentleman speaks with the experience of nearly half a century largely devoted to the diseases of plants, especially of a fungoid character, and their antidotes. He wrote:—"Every day proves more clearly what great caution ought to be exercised in planting on ground which has formerly been occupied by trees. A few sceptical remarks are occasionally heard, leaning simply on mere negatives, but the positive proofs are too numerous and stringent to leave any room for doubt. We have now before us a portion of the roots of a Wellingtonia, which were in close proximity to an old decayed post, and are now densely clothed with fungous spawn, which is rapidly destroying the tree, one of an avenue of 160, and fears are entertained that the rest will suffer. Different remedies have been tried without success, and we feel convinced that any chemical which could reach the diseased roots through the soil would soon destroy those roots which still remain sound. The only plan likely to succeed is to lift the trees carefully and prune away every diseased root. We have known this treatment successful, and can suggest no other.

There is little doubt that a large portion of the Larch rot is due to this cause, and we have been informed by an extensive forest owner in Scotland that after a plantation of Scotch Fir is cut down it is useless replanting it till the ground is covered with strong heather, by which time the old roots have lost their power of mischief. In this, as in many other instances, prevention is much easier than the cure. If trees must be planted where others have preceded them there is little chance of success except the ground is deeply trenched and every root removed."*

It will probably be urged that, on forest land, and especially in tropical countries, it is impracticable to suggest clearing the soil of old roots, stumps, and decaying vegetable matter. That it has always been the practice to leave all this kind of *débris* to rot and decay in the ground, and that, upon the whole, it does not prove deleterious. That Coffee is constantly planted on such roughly-cleared forest land, with the rotting stumps left, and the soil covered with rotting twigs. And yet Coffee plantations flourish, and nurseries of forest trees succeed under such conditions. It may be so, but the danger always exists, and if any temporary weakness or sickness should fall upon such a plantation, root fungi will then seize upon the weakened roots, and demonstrate their presence and their power.

In the majority of cases recorded, in which death or disease has been caused by root fungi, the suffering trees have belonged to the Coniferæ, but they are by no means the only kind of tree subject to similar attacks. We have before us a record of a Green Gage tree which died, and was succeeded by a Peach tree, which grew with the utmost luxuriance, but at once withered from the contact of the old roots. The ground was then most carefully trenched, but apparently not far enough, as a scarlet-flowered Chestnut, which was planted within their reach, and which for two years flowered well, though it was only a seedling of four or five years old, after flowering in 1866 caused great surprise by dying suddenly. The roots, even the merest fibres, on examination were found covered with spawn which had run between the bark and the wood, and formed a white film. It is probable that the enemy was the mycelium of Polyporus igneus, which is white, but it is very rarely that an opportunity occurs of ascertaining to what species the destructive mycelium belongs.†

Another instance is recorded of the examination of the border of a conservatory, the sickly appearance of the vegetation planted therein having indicated something wrong. The soil from 2 inches to 1 foot in depth below the surface was found to be like a mass of snow with fungus spawn. Its origin was traced to some staves of a wooden tub which had been left in the border. The roots of Oranges, Camellias, Acacias, Clethras, and Neriums, literally crumbled to pieces on being touched.*

Knowing what an insidious foe we have to deal with in this kind of fungoid disease, it is not unnatural that we should sometimes suspect that in Tea plantations and in Coffee plantations, as well as in nurseries of forest trees, this enemy has been the secret cause of much mischief in the past, and that too little attention has been applied in this direction. Having now pointed out what to us appears to be a grave source of danger, we must leave the suggestions with forest officers to apply them in their own individual cases, and satisfy themselves that this form of disease is, or is not, one which affects them, or the districts under their care.

Endophytes are fungi which enter by any means into the substance of young and growing plants, and develope themselves outwardly, by bursting through the cuticle of the leaves and young branches, when they become prominent objects, distorting, and at length killing, the trees, or at least stunting and deforming them. Of this class are the species of Peridermium which attack the leaves and young branches of Conifers—or rather it should be said they burst through and develope themselves on the leaves and twigs, scattering abroad their myriad spores in a yellow or orange-coloured dust. Such also are the species of Podisoma which cause gouty swellings of the branches of Juniperes and Cypresses, and burst through the bark in gelatinous orange or brown protuberances. At a future time it may prove advantageous if we enter more into the details of this class of parasites, and especially as to their structure, mode of development, and reproduction, and such suggestions as may, from time to time, offer themselves as helps towards their eradication.

Epiphytes are those fungi which, by spreading over the surface of the leaves and other green parts of growing plants, choke up the stomata, check all transpiration, and literally choke the plants to death. These fungi attack evergreen and deciduous trees alike, and are not less deleterious in their influences than the last-named kind. Some have a glaucous, whitish, or mouldy appearance, as the numerous species of Erysiphe; whilst others are almost black, resembling a coating of soot, as the species of Capnodium asterina, Meliola, &c., and these like the former must receive special illustration.

Finally, it may be permitted us to suggest that, in order to render our further remarks and illustrations of these parasites as complete and practical as possible, it would be of considerable assistance if forest officers in all parts of India would kindly collect and forward to us, through the Inspector-General, specimens of leaves and twigs of trees of all kinds which come under their knowledge which are affected or injured by parasitic fungi. In all instances the botanical name of the tree, locality, and date, should be attached. *Indian Forester.*

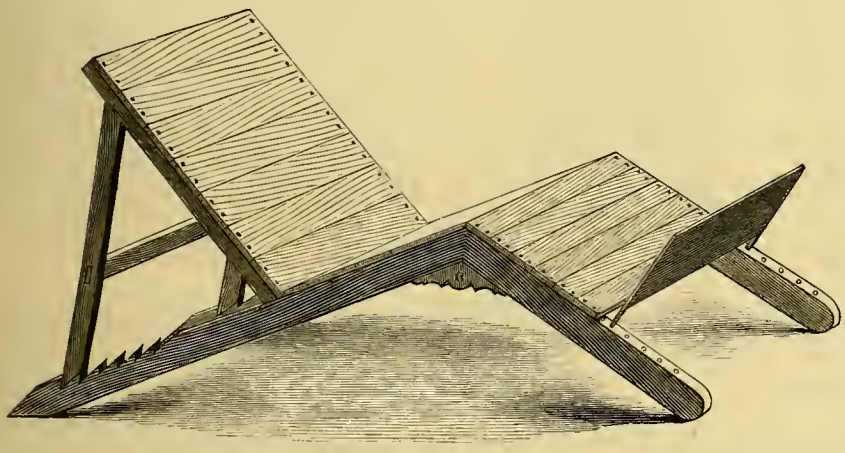


Fig. 34—Garden Lounge. (see p. 178)

Home Correspondence.

The Hydrangea for Market Purposes.—As shown this season at South Kensington in such perfection by the growers for market this is one of the decorative plants that is seen in greater perfection in London than in any other locality. Its large showy heads of flowers, grown in such small pots, are a surprise to country visitors. Like the other plants that the London grower takes in hand, it receives the greatest attention in all its stages of growth. It is nearly hardy in most of the southern counties, but when grown for decorative purposes it is treated as a half hardy plant, and carefully protected from frost. Now we have the fine white one added to the pink and blue, they give us three very useful colours for ordinary decoration, which every person can possess by striking a few plants every spring. The first batch of store and flowering plants are put into a moderate heat the beginning of January. As soon as the cuttings are ready they are taken off and propagated. All the side shoots and suckers are taken off the flowering plants for cuttings. This is continued all the season with each succeeding batch of plants. As soon as the cuttings are well rooted they are potted into 2½-inch pots in a good loamy soil, with a little manure and sand added. As soon as these pots are well filled with roots, they are potted into 4-inch pots, using the same compost; they may receive another shift by-and-bye, but the 4-inch pot is the

* *Gardeners' Chronicle*, 1865, p. 1061.

* *Gardeners' Chronicle*, 1865, p. 1153. [This may be true in some cases, especially when the locality is not suited to the species, but it will certainly not hold good in the general form here given. *The Editor, "Indian Forester."*]

† *Gardeners' Chronicle*, 1866, p. 1017.

* *Gardeners' Chronicle*, 1867, p. 105.

preferable size for market purposes, and its producing power is wonderful. As soon as well established and carefully hardened off, they are plunged out-of-doors in an open situation in prepared beds of coal-ashes or tan, and well attended to till October, when they are housed in a cool house, carefully keeping them from frost till they are introduced into the forcing-house. For private establishments they are very useful, and when they get too large do well cut back occasionally after flowering, and put into a feeble heat; when nicely broken, the shoots may be thinned to the requisite number, and treated as above. Market growers only use young plants. Old plants when too large for indoors do well treated like old Fuchsias—wintered where they can be protected from frost. They make very interesting objects for shrubbery and subtropical borders, and when not wanted may at a hazard be left in the borders. *E. W.*

Lilium Martagon dalmaticum.—Referring to Mr. Wilson's note at p. 116 of this Lily bearing with Mr. Ellacombe twenty-five blooms on a stem, I would remark that I have to-night counted forty-one on one of mine grown in the open ground. *Henry Buckley, 27, Wheeleys' Road, Edgbaston, Aug. 2.*

Butcher's Broom (see pp. 82, 118), in combination with Horse Radish is boiled for a decoction, to be used in cases of dropsy. I am very often asked for it, and think that it must also be used for other purposes, but what I cannot say. *T. Smith.*

Orchids in July.—The following have been in flower during the last month, under the care of Mr. Beattie:—

Disa grandiflora
,, Herschelli
Anguloa uniflora grandiflora
,, Clowesii
Dendrochilum filiforme
Cattleya Leopoldi
,, marginata
,, intermedia
,, Forbesii
Comparettia coccinea
Aerides suavissimum
,, roseum
,, japonicum
,, virens Dayii
,, nobile
Colax jugosus
,, ,, aurea (a bright lemon colour, an accidental variety)
Epidendrum macrochilum
,, vitellinum majus
Mesospinidium vulcanicum
,, sanguineum
Acropera Loddigesii
Dendrobium transparens
,, amœnum
,, Parishii
,, Pierardi
,, ,, latifolium
,, thyrsiflorum
,, Farmeri
,, marmoratum
,, sulcatum
,, Philipsianum
,, calceolus
Oncidium barbatum
,, Wentworthianum
,, Lanceanum
,, tiquetrum
,, rostrans (insignificant and worthless)
,, articulatum
,, flexuosum
,, Papilio
,, stelligerum
,, cucullatum
,, tigratum (identical with O. rostrans)
,, pulvinatum
Maxillaria venusta
Odontoglossum Pescatorei
,, Alexandræ
,, Rossii
,, rubescens
,, Lindleyanum
,, angustatum
Odontoglossum cordatum
,, Roezlii
Cryptochilus sanguineus (sold first as Cœlogyne species—then under this name, same plants and same importation)
Sobralia macrantha
Lælia elegans lutea (one plant among several imported species of elegans, bulb similar, but flowers a rich golden hue; labellum streaked with red. Is it known to any reader? Unfortunately the stem, which has four flowers, was broken off just as they were opening)
,, cinnabarina
Ansellia Plantii
Lycaste aromatica
,, Deppei
,, Harrisoniæ
Saccolabium Blumei
,, ampullaceum
Angræcum falcatum
Cypripedium Sedeni
,, niveum
,, longifolium
,, Roezlii
,, Lowii
,, barbatum nigrum
Miltonia spectabilis
,, festiva
,, Clowesii
Peristeria elata
Masdevallia Lindeni
,, Harryana
,, Veitchii
,, peristeria
,, ignea
Burlingtonia candida
Stanhopea Wardii
Thunia alba
Phalænopsis cornu-cervi
,, roseum
,, Luddemannianum
Brassia caudata
,, Lawrenceana
,, Gireoudiana
Trichopilia fragrans
Vanda tricolor
,, lamellata
Zygopetalum maxillare

Edward W. Cox, Moat Mount.

Lilium Krameri and its Varieties.—Among a large lot of Lilium Krameri introduced from Japan last spring, and which are now flowering, I found several distinct varieties, some with shorter flowers, others with paler or darker tints, but among all one was most remarkable; it is a dark purple variety, of such a fine colour that it has been much admired by all who have seen it. I should be glad to know if this variety has been observed elsewhere. *J. H. Krelage, Haarlem.*

Trees Rooting from the Branches.—In addition to the species of Ficus named by Dr. Bennett in your issue of the 28th ult., which produce adventitious roots from their branches, there is Ficus retusa, Linn. This tree, in the wet season, produces vast numbers of these aërial roots, the greater number of the tips of which, however, perish when the dry season commences. Trees may be seen all along the streets in Hong Kong with hundreds of these aërials roots, several yards in length, hanging from their branches, which, with a little protection from the accidents to which they are exposed, would soon reach the ground and take firm hold there. Roots from the branches of a tree growing on a dry and exposed situation, which I conducted through Bamboo tubes, grew about 10 feet, reaching the ground in one season. Ficus elastica may also be named as another species which produces aërial roots. *Charles Ford, Superintendent, Government Gardens of Hong Kong.*

The Cherry Currant.—We notice in the report of the examination of red Currants grown for trial at Chiswick, in your issue for August 4, that the Cherry Currant was considered the same as La Fertile. The Cherry Currant is with us slightly larger than La Fertile and a week or ten days earlier; it is an immensely strong, but rather awkward grower. La Fertile is almost as large as regards the fruit as the Cherry, it is a vigorous grower and makes an evenly balanced bush and is an immense cropper. We obtained it some years since from Mr. Rivers, the raiser, and there can be no doubt as to the correctness of our stock. *Ewing & Co., Norwich.*

Lilium Wittei.—In the report of the meeting of the Royal Horticultural Society of July 3 last (*Gardeners' Chronicle*, viii., p. 19), I see that H. J. Elwes, Esq., sent, among others, cut flowers of Lilium auratum var. Wittei, remarkable for its long, narrow, white petals, with a rich golden band. I should doubt if this Lily were the true Lilium Wittei, which till now I have not met in any other collection than my own. I suppose Mr. Elwes' Lily is Lilium auratum var. virginale, which is quite different from Wittei. Mr. Elwes, in his monograph, thinks these two Lilies to be synonyms, or almost the same. As I have had both Lilies in flower at the same time I have been able to observe the decided difference between them. L. Wittei has not narrow, long petals, but rather broad and short ones; L. auratum virginale is papillose on all the divisions of the perianth—the outer as well as the inner, and these papillæ are very delicately tinged with light yellow. The divisions of the perianth of L. Wittei are totally glabrous. The last form I have never found among any lot of L. auratum. L. auratum virginale I bought first in 1868 from Mr. William Bull; since that time I have found it sometimes among introduced lots of L. auratum, and at present several plants are in flower in my nursery which all have the papillose character on the perianth division, the petals being more or less narrow in the different plants. In consequence I think I am right in considering L. Wittei and L. auratum virginale to be two different plants, leaving it to later examination to decide if L. Wittei must be considered as a separate species or merely as a variety of L. auratum. *J. H. Krelage, Haarlem.*

The Eagle's Claw Cactus.—In a late number of your paper (June 16, p. 749) a doubt is expressed whether the figure of the Eagle's Claw Cactus (the Mexicans call all these fish-hook Cacti, and the Indians actually make fish-hooks of those spines) truly represents E. Wislizeni, on account of the length and number of the spines. Botanists are only now learning, and amateurs will by-and-by also learn, that the length as well as the number of spines vary greatly in the same species of Cactus, and that age brings about great changes, not only in the shape of the plants and the number of their ribs, but particularly in the arrangement, number, and size of their spines. Young plants are more globose, with fewer ribs, smaller and fewer spines, in simpler order. In Echinocactus Wislizeni, of which I have seen a great many specimens of all sizes, this is most strikingly the case. As an instance I send you a bunch of spines just received from Arizona, taken from a large flowering plant, which exhibits a new variation of the same species—viz, with curved but never hooked spines. *G. Engelmann, St. Louis, Missouri.*

The Flow of the Sap.—I have no doubt instances in support of Mr. Murray's theory of the flow of sap could be indefinitely multiplied if people having the opportunity would only look about them. I send you with this some leaves from Acer Negundo, taken from near the top of stocks that had been budded, and where the buds had failed, or had become grown over and imbedded in the bark (rather a common occurrence with this tree) they were not worked again, and now, after two years have elapsed, this partial variegation shows itself. But a still stronger example is furnished in the case of a Horse Chestnut, in which was inserted a bud taken from the base of a partially variegated leaf that appeared upon an otherwise normal form. This bud did not take, and after two years have elapsed a part of the stock about 3 feet above the point of insertion becomes variegated, and some of it not merely in a partial manner, but thoroughly, as witness the leaf enclosed. And now comes the most curious part of the case. The stock just above the point where the bud was inserted forks into two equal branches, one on the same side as the bud, and one on the other. The variegation has appeared upon the branch immediately over the bud, whereas the opposite shoot has not even a trace. I cannot say for certain that no variegation showed itself last year upon this tree, but if so it could only have been very slight, otherwise it could not have escaped my observation. *T. Smith, Newry.* [Our correspondent's specimens and statement are very interesting, but we do not see that they particularly favour Mr. Murray's views. Eds.]

Potato Seed not Growing.—In your Co. Kildare correspondent's true report of the Potato crop last week he asks could salt water have destroyed the germinating power of imported seed Potatos, referring especially to one farmer's loss of 10 acres. That may be answered by others, but in the case mentioned the sufferer lays the blame on the Potatos breaking in the sacks during transit and after. Imported seed was not the only kind that failed about here, so that I think we must look for some other cause, most probably to the fact of the "second growth" being very prevalent last year, which of course rendered the old tubers faulty for seed. *Hibernicus, Kilkea, Aug. 7.*

Squirrels and Fruit.—It has been doubted by many that squirrels will attack fruit, but that they do so I have during the past week had ocular proof, for a nest of young ones having been reared in a Cedar of Lebanon close to the gardens they have commenced on some Warrington Gooseberries, and most assiduously did they work, carrying them away one at a time in their mouths. As I had already protected as many as we were likely to require, this I did not object to, and allowed them to divide the spoils with the blackbirds, but, like these bold depredators, they had no sooner assisted in clearing these bushes than they commenced operations on those that were netted, and soon cut their way through. I found, too, that they were stripping some Apple trees, but they did not appear to eat the fruit, for on watching them I found they nibbled them to pieces, apparently with the object of getting at the pips, as the ground was strewn with portions of Apples from which they had been removed. Reluctant as I am to destroy such interesting little creatures I was compelled to do so, and both old and young had to pay the penalty of their pilfering propensities. Two were caught in the net, and the others shot when running off with an Apple, which they usually took to the Cedars close by. *J. Sheppard.*

Lilium cordifolium.—I quite agree with Mr. Max Leichtlin, now that I have seen the flowers of my Lilium cordifolium, which were only in bud when I wrote my last communication. There is a great difference between those of the L. cordifolium, introduced twenty years ago, and my present plants, which I received from Mr. Leichtlin in the summer of 1875. The present plants are dwarfer in habit, and bear much smaller flowers. These are nearly pure white, with green inside, and the violet tinge of the petals which was found in the flowers of the former stock is at present nearly totally missed. The difference is so striking, and my present plants having all the same variation, one would think the present form to be a fixed variety of the major type, which has been figured and described, Sieb. et Zucc., *Flora Japonica*, tab. 13 *et* 14, and *Flore des Serres*, tab. 216. Mr. Leichtlin perhaps will be able to inform us if this variation has been obtained accidentally in European cultivation, or if there are found different forms in Japan either wild or cultivated. As for the Lilium giganteum, I think I am right in what I said before: it was observed here that plants of the same stock flowered lower and earlier than usual. The Lily mentioned before was Hansoni not Stantoni. *J. H. Krelage, Haarlem.*

Hardiness of Eriostemon intermedius.—Another hardy shrub turns up in Eriostemon intermedius, this was planted on a south-west wall two years ago, and has remained quite uninjured. It flowered splendidly last spring, and is now growing most vigorously, has young shoots a foot long, and of the deepest green—more luxuriant, in fact, than we usually see the plant under careful indoor cultivation. *T. Smith, Newry.*

Potatos.—I have just been having a look over some Potatos in the neighbourhood of Reading, and have been much shocked to observe how destructive the Potato disease is already proving in that locality. In many instances the haulm is quite destroyed, and the roots have many badly affected tubers. Here in West Middlesex but little has been heard of yet, and little is to be seen, as generally the foliage is still green and vigorous; I was, therefore, quite unprepared for the evidences of the terrible fungus that I have since seen. With continued dry weather the crop may not be severely damaged, but with much rain the prospect will be gloomy. I was considerably

pleased to find that our excellent friend and Potato raiser, Mr. Robert Fenn, had but little to complain of yet, and that his several acres of fine new kinds were all looking in rude health; the situation of his land is high, and the soil light and brashy. A small plot of the Lapstone showed the spot on the leaf most fully, and these, although Salus had been applied, were evidently fast going. Salus I found also had been largely used at Heckfield, but the results were the reverse of beneficial. I fear it will have to be acknowledged that this compound is useless as curative or preventative of the Potato disease. Mr. Fenn's new Anglo-American crosses are in this, the second year of growth, producing some splendid samples, and in variety, size, quality, and beauty would appear to be all that could be desired. The parents were the red American Late Rose and Willard, and the English red Bountiful, but nevertheless some of the progeny are singularly white both in flesh and in skin. *A. D., Bedfont.*

The Layering of the Points of Vines.—The Lady Downe's house at Heckfield affords one of the best examples of the culture of that fine Grape to be found in the kingdom. The Vines are all planted on one side, and are carried up the roof and down the other side, making rods of nearly 30 feet in length, all carrying an even crop of bunches, of which there are about 550. The present year's shoots at the extremity of these Vines Mr. Wildsmith has layered in a prepared border, and all are rooted, the young growth still remaining. If next year these Vines are allowed to remain rooted at both ends, what may be expected to result? *D.* [That the Vines will do even better than before, may be the expected result of this experiment. See our last number for 1875, p. 810. There you will find the details of a somewhat similar experiment carried out by Mr. Rochford, of Page Green, Tottenham. Eds.]

Toxicophlæa spectabilis.—I send you a shoot of Toxicophlæa spectabilis taken from a plant kept during last winter in a cold house, and plunged out-of-doors in the full sun this season. The foliage, as you will observe, is quite unlike what we usually see on this plant grown in the stove—a deep coppery crimson colour. Even the young shoots that are being produced out-of-doors are also of the same colour; in this state a very distinct plant for many purposes. *T. Smith, Newry.*

Laxton's New Peas, Harbinger and Marvel.—At the last great trial of Peas at the Royal Horticultural Society's Gardens at Chiswick, Harbinger is said to have been three or four days earlier than any other in that great collection. I have grown it for some time, and can bear testimony to its hardiness. This season, sown on February 7, it is now (June 9) ready, while William I. and Little Gem are only just coming into bloom. The style of growth is rather straggling, about 2½ feet high, with from four to five pairs of pods on each stem, and averaging from four to five peas in each pod. As an early Pea it is a gain, though the produce is sparing; but gardeners should bear in mind that if Peas can be had that much earlier, it is certainly an acquisition. Marvel is also noted at the great Pea trial, and I believe received a First-class Certificate. It is, I fully believe, the most productive of any Pea of my acquaintance, growing from 3½ feet to 4 feet high, and the Peas hanging literally from top to bottom. It bears some resemblance to the variety called Dr. Maclean, but produces the pods in pairs instead of singly, as in Dr. Maclean, and has from eight to nine peas in each pod, green as a Leek, and of the very highest flavour; the seed is green and white, and wrinkled, but the plant is hardy. Sown here on December 12, it has battled bravely with this cold spring, and is now (June 9) in pod. These two new Peas are not yet let out to the public, but are in the hands of Messrs. James Veitch & Son, who will doubtless bring them out in due time. Touching the Peas raised by Mr. Laxton, I may mention that Standard is a superb variety, growing from 3 feet to 3½ feet high, averaging nine peas in each pod, and these so tightly packed when allowed to grow as to burst each other, but when gathered young they certainly are the right thing. If we take Harbinger as a first crop, Standard and Marvel as second, and that fine Pea, Omega, as the latest, no other four sorts could successfully compete against them. I must, perhaps, except Dagmar and the Baron, Peas of which more will be heard at some future day. *R. Gilbert, in "Florist and Pomologist."*

Orchid Sales.—I do not complain that imported Orchids are sold under false names—such as a worthless Odontoglot for O. spathaceum, O. Lindleyanum for Alexandræ; Masdevallia of some poor sort for Lindeni, or some wretched flower for cirrhosum; but when an established plant that has flowered is sold for O. odoratum and is only Lindleyanum I think it is too bad. In the first case the seller is often as much a loser as the buyer. We often hear of new plants being bought for a trifle, both from the East as well as the West, and the difficulty would be met by the word "supposed" placed before the name or (?) after it. In the latter case it may be two years before the deceit is detected, and how can one appeal to Mr. Stevens under these circumstances, though I am resolved to do so if it occurs again. *An Old Orchid Grower.*

Tebbs' Universal Fumigator.—We have lately been using one of these fumigators, sent us for trial by Messrs. Flanagan & Son, 98, Cheapside, E.C., of the merits of which on the score of cheapness, construction, and performance of the work required of it, we can speak in very favourable terms. The tobacco-paper is placed in the fumigator on a perforated cone-shaped bottom, under which a few pieces of brown paper are placed, and then ignited, and, the feeding aperture being closed about half, it can be placed in a house, pit, or frame, with the certainty that it will not flame or go out until every bit has been burnt by slow combustion. It is certainly the cheapest fumigator that has come under our notice, and by far the best that we are acquainted with for amateurs and villa gardeners.

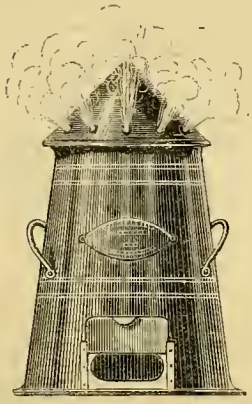


Fig. 35.—Tebbs' Universal Fumigator.

Reports of Societies.

Royal Horticultural: *August* 7.—W. B. Kellock, Esq., in the chair. The afternoon meeting was but thinly attended, as usual at this season, and Mr. Murray, after announcing the awards, made some remarks on the variations observed in the common red-spider.

Floral Committee.—W. B. Kellock, Esq., in the chair. No great variety of subjects came under the notice of the committee on this occasion. By far the most remarkable subjects exhibited were a couple of magnificent specimens of Odontoglossum vexillarium from the rich store of Sir Trevor Lawrence, Bart., M.P. On one of these—the ordinary pale variety—we counted eight spikes and seventy-four flowers; while on the other—a rich rosy coloured form—were seven spikes and fifty-three flowers, both plants being in the pink of perfection as to health and freshness, a point on which Sir Trevor has something to say in another column (see p. 173). A Cultural Commendation was awarded by the committee, who also recommended the rosy variety to the Council as a proper subject for the award of a medal. Sir Trevor Lawrence also gained a First-class Certificate for Eulophia guineensis, a new and striking plant, with a stiff erect spike of crimson and pink flowers. Messrs. Paul & Son, the Old Nurseries, Cheshunt, received a First-class Certificate for a fine new H.P. Rose named Marquis of Salisbury, a well-formed, full, globular-shaped flower in the style of Alfred Colomb, on which it may be considered an advance. Mr. B. S. Williams also received a similar award for Dendrobium suavissimum, the showy new species which resembles D. chrysotoxum, but, unlike that species, has a large rich maroon blotch in the centre; shown at Regent's Park this summer by Messrs. Low. Mr. Williams also sent several other new plants, including the bold, vigorous growing and handsome new Croton Andreanus; and the very distinct new seedling Dracæna Bausei, which gained a First-class Certificate. Mr. Parker, Tooting, received a vote of thanks for some cut flowers of the pretty Asclepias tuberosa. A fine group of admirably grown Balsams came from Mr. Puttick, of Acton; and Mr. Cannell, of Swanley, sent some Pentstemons and Antirrhinums, and cut flowers of the very pretty Cape Pelargonium echinatum, white, with rich crimson spots; and a new variety of the same, named Spotted Gem, with bright rose petals, spotted with crimson and white centred—a very pretty thing for growing for cut flowers. A First-class Certificate was awarded. Several boxes of admirable cut blooms of Roses shown in quartettes instead of trios, as usual, a plan which shows up the individual characteristics of the different varieties with admirable clearness. Mr. R. Dean, Ealing, sent some cut blooms of several useful and showy border flowers, including some giant African Marigolds of great size. Messrs. Jackman & Son, Woking, showed Biota orientalis densa glauca, a seedling of compact habit—not quite distinct enough to be honoured with an award, but still a nice companion plant for the golden forms of the same species. Messrs. John Laing & Co., Stanstead, showed a fine group of the autumn-flowering Phloxes—wonderfully showy decorative subjects just now, but not half so much grown in pots as they deserve to be. From the Society's gardens at Chiswick came flowering examples of various double Pelargoniums and Ten-week Stocks, and specimens of Messrs. Vilmorin & Co.'s new Celosia cristata variegata—a good old plant utterly spoilt for decorative purposes. Messrs. James Carter & Co. sent a seedling Gloxinia named Sybil Kenyon, a variety with a hose-and-hose corolla, but with no other quality to recommend it. Messrs. Sander & Co., St. Albans, showed a good sample of their white Candytuft Tom Thumb; and Mr. J. Chambers, Westlake Nursery, Isleworth, had two hybrid Begonias, one of which, named Defiance—the result of a cross between × Weltoniensis and a scarlet seedling—was remarkable for the richness of its scarlet colour.

Fruit Committee.—The Rev. M. J. Berkeley in the chair. Messrs. T. Rivers & Sons, Sawbridgeworth, sent ripe specimens of Hale's Early Peach, a very early American variety, of medium size, good colour and excellent flavour, that has not been exhibited here before, though it has been known for some time. A First-class Certificate was awarded. The same firm also sent fruits of a new Nectarine named Advance, quite ripe, though gathered from a cold house. The samples were rather small, of a pale green, not particularly pleasing colour, but very good in flavour; and samples of the Pine-apple Nectarine that had been forced on, and were of splendid size and colour. Eight varieties of Cherries were also sent up from Sawbridgeworth, and as all were of excellent quality we give their names:—Black Bigarreau, and the late black variety, Bigarreau Noir de Schmidt, Early Rivers, and Bedford Prolific, all black varieties; and Bigarreau Gros Cœuret, Bigarreau Napoleon, and Monstreuse de Mezel, whites. Mr. Barron brought up from Chiswick a bunch of the White Romain Grape, a white variety much resembling the Royal Muscadine, but much earlier, being ripe now, while the last-named is quite green. From Mr. Tillery, Welbeck, came some fine examples of Grosse Mignonne Peaches, and the highly-coloured Welbeck Nectarine. A very fine sample of the Pitmaston Orange Nectarine and excellent Barrington Peaches came from Mr. Pressley, gr. to G. Jennings, Esq., Ferndale, Clapham; and Mr. James Douglas, gr. to F. Whitburn, Esq., Loxford Hall, contributed a dish of ripe Kerry Pippin Apples. A finely developed Queen Pine was shown by Mr. Ollerhead, gr. to Sir Henry Peek, M.P.; and from Mr. Miles, gr. to Lord Carrington, came a splendid dish of the handsome Stamfordian Tomato, which we hear is to be sent out by the Messrs. Dickson, of Chester. Mr. Hunter, gr. to the Earl of Durham, Lambton Castle, sent a fine dish of Figs under the name of Lambton Castle Seedling, which the committee could not distinguish from Brunswick. Mr. G. Cooling, nurseryman, Bath, sent samples of two new varieties of Potatos, which were ordered to be grown at Chiswick for approval. H. M. Dunnett, Esq., sent a brace of a new white-spined, almost smooth Cucumber, said to be very prolific under frame culture.

Woodford Horticultural: *July* 18. — The summer exhibition of this thriving young society was held in the immediate vicinity of the beautiful gardens of E. N. Buxton, Esq., Knighton, Woodford. The larger number of the exhibits were effectively arranged in a splendid large tent, whilst a splendid lot of cut Roses staged by Messrs. William Paul & Son, Mr. Rumsey and others, were arranged in a separate tent.

At this show H. F. Barclay, Esq. (Mr. Lovell, gr.), staged the best Muscats we have seen this season, though they were not fully ripe. The same exhibitor also staged some splendid Nectarines. Alderman Finnis, Wanstead (Mr. Simmons, gr.), staged many very meritorious subjects, consisting amongst others of Fuchsias, variegated Pelargoniums (very fine plants), Gloxinias, Lycopodiums, specimen Ferns, including the premier award for stove and greenhouse plants, &c. W. Mills, Esq. (Mr. Harrington, gr.), had many very neat and effective examples,

including Maranta medio-picta, M. tubispatha, M. fasciata, and, perhaps the most showy, M. virginalis; Tillandsias, zonata viridis and fol. brunneis; staging also some excellent Palms, viz., Beaucarnea recurvata, Phœnix, &c. E. N. Buxton, Esq. (Mr. A. Grove, gr.), staged some handsome Palms, comprising, amongst others, Phœnix sylvestris, a neat Cocos Weddelliana, Areca lutescens, Latania borbonica, Areca sapida, &c.; his miscellaneous collection comprised Kentia Belmoreana, a fine Eucharis, laden with bloom, &c. The Lord Mayor (Mr. Jones, gr.) received awards for stove and greenhouse plants and for Melons. R. Lechford, Esq. (Mr. Rumball, gr.), had the award for a basket filled with plants, Coleus, &c.; and A. H. Berthoud, Esq. (Mr. Rolstone, gr.), had the best Roses amongst gardeners. Miss Barclay, of Walthamstow (Mr. Pearce, gr.), staged many meritorious subjects in Caladiums, Cucumbers, &c., being well placed. Mr. Mead had some fine showy Hydrangeas. J. Spicer, Esq. (Mr. Darvill, gr.), received premier awards for black Grapes, splendid Peaches, Currants, &c.; Petunias, Cockscombs, and Fuchsias, by Rev. G. S. Fitzgerald (Mr. Fisher, gr.). H. Fowler, Esq. (Mr. Chambers, gr.), upheld well the Picotee and Rose interests, Messrs. Barnes, Peters, Thurgood, Riding, &c., aiding well in general subjects. The special prizes of Messrs. Daniels Brothers, Norwich, went to Messrs. Pearce, Grove, Bass, Ford, and others. The vegetable display, especially that connected with the cottage garden interests, were a great improvement upon past displays of the kind previously held this season in this county. Perhaps, however, as much of interest was centred in the ladies' classes set apart for table decorations; and this the more so because the prizes were well contested by the ladies of the neighbourhood—a fact which went far to make the show a display furthered and forwarded by all classes, and one which, whenever employed, will go farther, probably, to popularise these displays than perhaps any other. The displays were divided into two classes, one for a "single vase," intended, no doubt, for drawing-room decorations;" and the other for a group of vases decorated with fruit, flowers, or leaves for a dinner-table; and three 1st prizes were awarded in connection with the latter class. They comprised an unique display by Miss Gadsden and, we believe, the Misses E. N. Buxton. Around an upright centre-piece were borderings of pink and white wild Rose blooms, encircled in turn in a kind of natural negligence by a wreath of Bryony, possessing its characteristic greenish flowers, berries, and lucid foliage. The centre stand, and four minor stands to match comprising the outer square, were elegantly wrought out of the large wild white Ox-eye Daisies, grasses, a Poppy head or two, and a spray or two of a small, single scarlet Potentilla. The effect was charming. Miss White, of the Mansion House, London, and Miss Spicer, Woodford, were the other winners. Miss White's design consisted of three splendid glass vases of elegant or chaste design, being very artistically arranged with garden flowers of quiet, subdued, yet most effective tints, being, in fact, a mastered effort at colour illustration. Miss Spicer's designs were far more simple and dwarf, yet possessing much elegance. Her arrangement consisted more in giving effect to neutral colours, Orchid blooms entering more fully into the composition.

We cannot say too much in praise of the wild-flower bouquets arranged by school children, for taken all in all, though exceeding probably fifty in number, there was not a bad bouquet amongst them. Some, indeed, were so lightly put together as to seem a *fac simile* of some of those dense floral wreaths which Nature attires herself with in field and hedgerow. These standing singly as regards the individual blooms were very distinct from the denser, more thickly packed ones. We believe the Honorary Secretary, Mr. Taylor, Woodford schools, is the moving spirit here. *W. E.*

Didsbury Floral and Horticultural: *July* 27 *and* 28.—Decidedly the best of the shows held since this flourishing Society set to work, and completely filling a great tent, described as the "largest in England." Of course in an exhibition of plants contributed almost exclusively from the conservatories of amateurs, *plus* cottage-garden flowers and vegetables, one does not look for anything particularly new and strange. The charm consists in the variety and the excellent condition of the specimens, and the abundant proof that the cultivation has been from first to last a labour of love. Regarded as an exhibition of the results of careful culture, and of a desire to bring every plant that is dealt with up to the very best condition it is capable of attaining, nothing could be more beautiful or satisfying. So long as gardeners set out with and keep faithful to this idea, the calling forth all the hidden secrets of loveliness there may be in a plant, purely in order to see what it will develope into, without thinking of prizes and rewards, floriculture is sure to prosper. At Didsbury there seems good guarantee for this, and the fact is extremely gratifying to notice. Almost all the classes of plants now in bloom were shown in fair quantity, blending with abundance of extremely beautiful Palms, Ferns, and others of the kinds that remind us of what in regard to plants it is so important never to forget, namely, that contour is quite as large a factor of genuine beauty as colour. There were plenty, likewise, of gay-foliaged plants, Crotons, Caladiums, Coleuses, and others that illustrate how wonderfully Nature, when she takes a fancy so to do, can diversify any single idea. It is well that these charming modifications of simple and original types should be thus set out for people's consideration, placed side by side, so that the eye can take in all at once, since the great, and essential, and permanent value to us of the varieties or sports in which Nature indulges consists in the lesson they supply as to the still more wonderful fact of its unity. Very pleasant was it at Didsbury to see so many sorts in juxtaposition—the same tune sung, as it were, in a score of different keys and variations. Another good feature of this excellent show consisted in the overwhelming preponderance of natural plants, by which expression we mean plants allowed to retain within proper limits the forms which Nature prescribed to them in the beginning, as opposed to the unduly tied-in and constrained, often so painful to observe, and pertinacity in which is always a sign to us, not only of indifferent taste, but of a deficiency of good sense, for good taste means that which is in closest accord with reason and symmetry. Nothing is more charming in a cultivated plant than an air of perfect spontaneity. A plant that gives one the impression of great labour having been bestowed upon it in order to make it what it is can never be accounted properly beautiful. Very charming as illustrations of how a plant may be at once natural, and at the same time trim and graceful, were the lovely Fuchsias exhibited by Miss Ashton, Mr. Adamson, Mr. Silkenstadt, and Mr. Bolland.

Orchids at the present season one does not look for, either in abundance or perfection. Very nice examples of this delightful order of plants were shown, nevertheless, by Mr. James Fildes and Mr. Joseph Broome. Mr. Fildes' principal plants were Aerides quinquevulnerum, Oncidium Lanceanum, and Cypripedium niveum. Mr. Broome showed Cypripedium Veitchii, Epidendrum vitellinum, Phalænopsis grandiflora, and several others. The massive and imposing feature of the show consisted, of course, of the mixed collections of stove and greenhouse plants. In these the chief honours fell to Mr. W. S. Schloss, Mr. H. Samson, and Mr. Broome. The next most attractive were, perhaps, the groups "arranged for effect"—a class we are always glad to see in a schedule, for although it often implies very ordinary materials, the combination of forms and hues in a tastefully pictorial manner is so very elegant and useful an art that one is content to overlook the individuals and contemplate the total, which indeed is all we are asked to do, and beyond which it is scarcely fair to go. At Didsbury they seem to have people who understand this engaging art. Nothing could be more beautiful in its way than the grand group which confronted the visitor immediately upon entering—a contribution from Messrs. E. Cole & Sons; or than the groups in other parts of the tent, which came from Miss Ashton, Mr. Adamson, Mr. Gammon, and Dr. Reed. The loveliest sets of any one particular kind of flowering plant consisted unquestionably of the Gloxinias, the 1st prize for which went to Mr. Thomas Ashton. Among them was a wonderfully well-flowered specimen of Boule de Neige, cream-white, and of the utmost purity, with alongside an equally beautiful Madame Thibaut, the margin ornamented with copious lilac specks. Cut Roses came in good quantity from Mr. Henderson, Mr. Silkenstadt, Mr. Adamson, Mr. James Brown, and Messrs. Robson & Bush; Pelargoniums, in profusion, from Mr. and Miss Ashton and Mr. Silkenstadt; Phloxes, very charming, from Messrs. Cole & Sons; and Cockscombs, a grand lot, from Mr. Henderson. Selaginellas, Petunias, Achimenes, and bouquets were also supplied freely. In reference to the bouquets, which were mostly very creditable to the makers, we must once again remark however, on the undesirableness of using a superabundance of flowers, and point out also that much harm is done by introducing a great blossom like that of a recurving petalled Lily, which simply conceals the pretty things close by, without adding at all to the intrinsic merit. To introduce these big Lily flowers is objectionable upon another ground. The long stamens inevitably lose their anthers, so beautiful when balanced in their places, and the spectacle of the filaments, decapitated, so to speak, is then only a few removes from the disagreeable. We say this in kindness, not intending anything in disparagement of work very neatly done, but simply to give a hint how still better it may be done in future. Excellent fruit was shown, of the accustomed kinds, but not in any large quantity.

The cottagers' classes, as heretofore, were all very well sustained. It is always very pleasing to see the old-fashioned annuals and perennials coming nicely to the front, Sweet Williams and Antirrhinums, Pinks, and scarlet Lychnis, especially when accompanied by plenty of good vegetables. Nothing could be more creditable to the cultivators than the Peas. Models of gardens were also shown, one or two very nice indeed, being laid out in part as shrubberies. This kind of rudimentary study of the capital employment called landscape gardening is one that might be very usefully pursued. We have never seen better efforts than those at Didsbury, and congratulate all concerned in the welfare of the Society that at every point there is indication of progress so good, with promise so encouraging as to the future. *G.*

National Carnation and Picotee Society: *Aug.* 4 *and* 6.—The season has not proved auspicious in the matter of Carnations and Picotees, as far as the North of England is concerned. The weather has been generally cold, cheerless, and sunless, and the result is the Carnations and Picotees are not yet in bloom. There was consequently a great falling off of flowers at the Botanical Gardens, Old Trafford, on the above dates. There was a show certainly, but it was so shorn of its usual proportions, owing to so many flowers not being in bloom, that it is under consideration whether it will not be advisable to hold a supplementary show a week or ten days hence. Many of the growers, too late to exhibit on the 4th, would be able to make a fine display on, if this suggested show takes place.

The Carnation and Picotee blooms were arranged in the large conservatory of the Botanical Gardens, and with the cottagers' produce filled three long tables. A half-length of table sufficed for the representatives of the Dianthus family. Some remarkably good flowers were staged, but the main body showed signs of immaturity. The lack of bleaching which gives so much inferiority to the ground of the flowers, evidenced the absence of sunshine, and indeed some of the growers were of opinion that the glorious luminary had parted company with the county of Lancashire for a time.

But three stands of flowers competed in the leading class for twelve dissimilar CARNATIONS, though five prizes were offered. The best stand came from Mr. B. Simonite, Rough Bank, Sheffield, who had P.F. James Douglas, very fine; S.B. Lord Napier, P.F. Dr. Foster, very fine; C.B. J. D. Hextall, a grand flower, raised by the exhibitor; R.F. John Keet, fine; S.F. Sportsman, R.F. James Merryweather, S.B. Admiral Curzon, P.F. Squire Meynell, S.B. Mars, seedling S.F. and seedling R.F. 2d, Mr. Jonathan Booth, florist, Failsworth, with S.B. Admiral Curzon, Seedling S.F., R.F. Uncle Tom, S.B. Garibaldi, R.F. James Merryweather, P.P.B. James Taylor, S.F. Annihilator, P.F. James Douglas, S.F. Sportsman, R.F. Sybil, C.B. Lord Milton, and R.F. John Keet. 3d, Mr. Samuel Brown, Nottingham, the best flowers in this stand being Sybil, James Merryweather, P.F. Ajax, Annihilator (very good), C.B. Gem, Admiral Curzon, and R.F. Flora's Garland. Mr. B. Simonite was also 1st with twelve dissimilar Picotees, having L. Rose Miss Sewell, H.P. Mrs. Niven, L. Rose Miss Wood, L. Rose Mrs. Allcroft (extra fine), L. Rose Fairy Queen, H. Red Leonora, H. Rose Juliana, L Rose Teresa (a beautiful seedling of the exhibitor's raising, of first-class quality), and the remainder promising seedlings. 2d, Mr. S. Brown, with L. Red Lucy, L. Red Arbitrator, H. Rose Mrs. Davis, L.P. Amy Robsart, H. Red Miss Small, L. Rose Countess of Kent, H. Purple Purple Perfection, Med. Red Emily, L. Red Miss Ward, H. Rose Kitty, H. Purple Mrs. Niven, and seedlings.

The next class was for twelve Carnations, nine at least dissimilar, open to growers of 400 pairs or less. The best stand came from Mr. George Rudd, Undercliffe, Bradford, who had S.B. Sir J. Paxton, very fine; P.P.B. James Taylor, R.F. James Carter, P.P.B. Eccentric Jack, S.F. Clipper, R.F. John Keet, S.B. Admiral Curzon, C.B. Maréchal Ney, S.B. Mars, and seedlings. 2d, Mr. Richard Gorton, Eccles, Manchester, with P.P.B. Eccentric Jack, R.F. Sybil, P.F. Squire Trow, R.F. Cristagali (Whittaker), very fine; P.F. John Keet, P.F. Earl of Stamford, C.B. J. D. Hextall, P.F. Dr. Foster, P.F. Mayor of Nottingham, and S.F. Clipper; 3d, Mr. S. Brown; 4th, Mr. P. Mellor, Ashton-under-Lyne. In the class for twelve PICOTEES shown under the same conditions, Mr. G. Rudd was 1st with M. Red William Summers, M. Purple Zerlina, H. Red J. R. Bryant, H. Purple Alliance, Rev. F. D. Horner, L. Rose Mrs. Fordham, L. Rose Fairy Queen, L. Purple Mary, H. Rose Mrs. Lord. 2d, Mr. S. Brown, with Lucy, Arbitrator, Emily, Kitty, Purple Perfection, Miss Wood, Mrs. Davis, Catherine and Mrs. Johnson. 3d, Mr. T. Mellor, whose best flowers were Mrs. May, Lady Elcho, Prima Donna, Mary, and Mrs. Lord.

In the class for six Carnations, dissimilar, open to growers of 150 pairs or less, Mr. Stark, Chesterfield, was 1st, with R.F. Sir F. Barnaby, P.F. Dr. Tooler, P.F. Mayor of Nottingham, P.P.B. James Taylor, R.F. Mrs. Holland, and R.F. Merrimac. 2d, Mr.

W. Taylor, Middleton, with S.F. Sportsman, S.B. Mars, R.F. Lovely Ann, S.F. Mr. Battersby, S F. Clipper, and P.F. Esther. There were but two exhibitors in this class. S. Cooper, Esq., Timperley, Cheshire, was 1st with six Picotees grown under the same conditions, having H. Red Miss Small, Light Red Mrs. Bower, L. Purple Ann Lord, L Purple Mary, H. Red Mrs. Fuller, and M. Red Ensign. 3d, Mr. Stark, with Margaret, Mrs. Allcroft, Ethel, Mrs. Fordham, Admiration, and Mrs. Norman.

In the classes for single blooms a large number were shown, as usual. The best scarlet bizarre was Dreadnought, from Mr. B. Simonite, and he was 2d also with a seedling. Then followed in the order of merit Admiral Curzon, Mars, and Sensation. In the class for crimson bizarres Mr. B. Simonite was awarded the five 1st prizes with J. D. Hextall, without doubt the very best flower of its class; Mr. J. Booth coming 6th with Lord Milton. The best scarlet flake was Sportsman, from Mr. G. Rudd, who was also 2d with Clipper. Then followed a seedling of Mr. B. Simonite's, bright in colour, Sportsman and Clipper. The best rose flake was Sybil, shown in excellent condition by Mr. J. Booth—Mr. T. Mellor being 2d, with James Merryweather; then followed, in order of merit, Admiral Curzon, John Keet, and Merrimac. The best purple flake was Dr. Foster, from Mr. B. Simonite, very fine, and the same exhibitor followed with James Douglas, Mayor of Nottingham, and Squire Meynell, securing all the prizes in this class. The best heavy red Picotee was J. B. Bryant, from Mr. B. Simonite; and he was 2d also with Miss Small—Ensign and Lord Valentine followed next in order. The best and 2d best light red was seedlings from Mr. B. Simonite; Mrs. Bower was also well shown. The best heavy purple was a fine seedling named Miss Chadwick, which was awarded a First-class Certificate. It was raised and shown by Mr. Joseph Chadwick. It has a pure ground and fine petal, and will be a thoroughly good flower. This variety also took the 2d and 3d prizes. Picco took the remaining three prizes. The best light purple was a seedling from Mr. P. Mellor, a small but very charming flower, with a finely formed edge, and very pure in colour. 2d, Mr. S. Cooper, with Ann Lord, which variety also took the remaining prizes for the same exhibitor. The best light rose was Teresa, finely shown by Mr. B. Simonite; next came Mrs. Allcroft, Miss Sewell, and Miss Wood. The best heavy Rose was Mrs. Lord, from Mr. J. Chadwick; and Mr. Booth was 2d, with the same variety. Juliana came next, and the remaining prizes went also to Mrs. Lord. The premier Carnation was Simonite's J. D. Hextall; the premier Picotee Chadwick's Miss Chadwick.

It is worthy of record that the Picotees, which are usually eight or nine days later than the Carnations in blooming, have this season preceded them by several days.

Manchester Botanical and Horticultural: *August* 4 *and* 6.—By way of giving a character of comprehensiveness to the excellent work being performed by the Manchester Society, an exhibition of cottagers' produce was arranged for and held in the Botanical Gardens, Stretford, on the above dates. The competition was not confined merely to cottagers resident in the Manchester district, but open to any residing in the United Kingdom. The first two classes (for plants) were restricted for cottagers having no garden, but only a window in which to grow plants, and it was cheering to notice that by far the greater majority of the plants staged in these classes showed unmistakable signs of window culture. The other classes were open to cottagers having a garden, with the proviso that it might include frames and a small greenhouse. As a matter of course the designation "cottager" had to embrace many of a different character to that understood in a country district, and operatives, artisans, &c., were found competing. As far as it could be brought about, only those qualified to exhibit were permitted to compete.

As a first experiment the show must be pronounced a decided success. The promoters could have wished to have seen more exhibits, fairly numerous as they were, but time is required to give publicity to such a project, and there is already reason to believe the number of exhibitors will be considerably increased next year. The prizes are good, their value is beyond what is usually given at cottagers' shows.

The best window-grown Pelargonium came from George Whitfield, Stretford; the best Fuchsia from Lamb, Didsbury. They were both capital specimens, and must have been carefully tended to have had them in such good condition. The three Ferns staged by R. Tyldisley, Worsley, were remarkably good, large, clean examples of Adiantum cuneatum, a handsome crested Lastrea, and Osmunda regalis cristata. J. Sidebottom, Manchester, came next with Davallia pyxidata, Trichomanes radicans, and Hymenophyllum demissum. In the class for three plants, distinct, Abel Cartwright, Stalybridge, had good examples of Fuchsia, a tuberous-rooted Begonia, and a Coleus. W. Higginbotham, Swinton, was 2d with a Fuchsia, Zonal Pelargonium, and a capital double Petunia. So good was the competition in this class that equal 3d prizes were awarded.

Fuchsias in threes, as well as in twos, were very good, and so were the Pelargoniums. The best pair of the latter included gold and silver-edged Tricolors very well-grown. There was a class for a collection of British plants, and two collections were staged, but one had to be disqualified, owing to cootaining some Japanese and other plants of foreign introduction. There were groups of succulents and other things of an interesting character.

In the way of cut flowers there were miscellaneous collections which were capitally shown—hardy herbaceous flowers, Phloxes, Roses, Carnations, Sweet Williams, Pansies, &c. Bouquets of wild flowers were remarkably well done.

Vegetables were somewhat sparingly represented, but there were good Potatos, both round and kidney; Lettuce, Beans, Peas, Turnips, &c.

Fruit was confined to Gooseberries and Currants. There were four classes of the former, viz, yellow, red, white, and green. The prizes in these classes were given by Mr. Samuel Barlow, and a very spirited competition ensued. The best red varieties were Sir Colin Campbell, Linden, Companion, Beauty, Dan's Mistake, Speedwell, and Crown Bob; the best yellows were Leveller and Ringer; the best white Hero of the Vale, Countess, and Antagonist; the best greens were Green Surprise, Stockwell, and Plunder.

The show was greatly helped by valuable collections of plants from J. Rylands, Esq., J. Broome, Esq., and Mr. B. S. Williams; cut Roses from Messrs. Paul & Son, Cheshunt, F. & A. Dickson & Sons, and J. Dickson & Son, Chester; very fine cut Sweet Williams, from Mr. S. Barlow; skeleton leaves and flowers from Mr. Cussons; and various other exhibits of an interesting character.

Weston-super-Mare and East Somerset Horticultural: *August* 1.—The Weston-super-Mare Society's show has now for some years been one of the best summer displays, and on the present occasion fully maintained its character. Neither is this to be wondered at: the thorough excellence of the arrangements carried out by the committee for all concerned, and the handsome prizes they offer, induce those who have large and valuable plants to incur the serious expense and immense amount of labour involved in carrying such over long distances. In the open class for twelve plants in or out of flower, Messrs. Lucombe, Pince & Co., Exeter, took the 1st prize of £20 and the Royal Horticultural Society's Silver Medal for a collection in every way equal to anything we have ever seen at this time of the year. It consisted of Ixora Williamsii, bearing some seventy fine heads of bloom (one of the best of the numerous hybrids that now exist, but all of which lack the fine shade of colour and long-enduring character in the flowers of the species, I. coccinea); Allamanda Hendersoni, profusely bloomed; A. grandiflora, Dipladenia amabilis, Clerodendron Balfourianum, very large, finely-flowered, and as fresh as it is usually seen in May; a splendid Erica Fairrieana, E. Irbyana, and Eucharis amazonica with about twenty-eight large umbels of its snowy flowers; these were backed by a huge Lataoia borbonica, equally fine samples of Pritchardia pacifica, and Stevensonia grandiflora, and an immense, well-coloured Croton variegatus. E. Pilgrim, Esq., Cheltenham, was awarded the 2d prize and Bronze Medal of the Royal Horticultural Society for a very fine group, in which was Erica Thompsoni, 4½ feet through, splendidly flowered; E. Parmentieri Dracophyllum gracile, nicely bloomed and quite fresh; Azalea Brilliant, a large well flowered specimen, also as fresh and in as good condition as Azaleas are usually seen in May; Croton longifolius, variegatus, and Encephalartos villosus. Messrs. Parker & Bush, Bristol, 3d, showing smaller, but very good plants, amongst which we noticed Ixora Prince of Orange, and Franciscea calycina, well flowered. 4th, Messrs. Bryant & Hoskins, Bristol.

Six stove and greenhouse plants in flower.—1st, Messrs. Lucombe Pince & Co. with medium-sized, finely flowered examples, including the seldom seen Ixora salicifolia, covered with beautiful heads of handsome blooms, and I. amboinensis, also profusely flowered; Mr. Pilgrim 2d.

Six fine-foliage plants.—1st, Messrs. Lucombe, Pince & Co., who staged a fine group, in which Cycas circinalis and Croton undulatus were conspicuous. Messrs. Parker & Bush were a good 2d: in their half-dozen was the best plant of Anthurium crystallinum we have seen.

Eight Ferns.—For these Messrs. Lucombe Pince & Co. were also 1st, having among others the ever-to-be-met-with, but rarely surpassable Davallia Moorei, large and in fine condition; a beautiful example of Asplenium Nidus, and Pteris scaberula, unsurpassed for the elegance of its finely divided fronds. This plant was remarkably fresh and green, a condition it is not always seen in, often on account of its being affected with thrips, to which it is very subject if grown in too much heat. 2d, Messrs. Parker & Bush.

Eight Adiantums.—Here Messrs Parker & Bush took the lead with large plants in good fresh condition; 2d, Messrs. Bryant & Hoskins.

Six Orchids.—1st, Mr. J. W. Mills. In his exhibit were nice plants of Pilumna fragrans, Epidendrum vitellinum majus, and E. prismatocarpum.

In the classes for six Fuchsias, six Liliums, six Petunias, six Clematis, six Begonias, six Gloxinias, and eight hardy Ferns, Mr. S. Brown, Weston-super-Mare, was 1st.

New or rare plants.—Messrs. Lucombe Pince & Co. 1st; Messrs. Bryant & Hoskins 2d—both showing good plants of Croton Disraeli.

In the classes for amateurs for six flowering plants Mr. Pilgrim was 1st, his best examples being Anthurium Scherzerianum and Erica tricolor coronata. This collection likewise received the Royal Horticultural Society's Silver Medal. 2d, Mr. J. W. Miles. In this group was a splendidly flowered Lapageria rosea. Six fine-foliaged plants.—Mr. Pilgrim 1st, having, amongst others, beautiful examples of Cocos Weddelliana and Phormium tenax variegatum; 2d, Mr. J. Lawless. For a single stove or greenhouse plant Mr. J. W. Miles took 1st, with an exceedingly fine specimen of Odontoglossum hastilabium; Mr. Pilgrim 2d, with a finely grown and equally well flowered plant of the comparatively new Boronia elatior, the elegant drooping branches of which were clothed with its deep rosy-pink flowers. For either exhibition or home decoration this is a first-class plant.

Cut flowers.—There was a considerable display of Roses for so late in the season. In the open class of twenty-four varieties, three blooms of each, there were six competitors. With most of the exhibitors the flowers were in extremely varied condition, the greater number good, and some very bad, no doubt owing to the extreme heat of the previous day. Mr. W. Corp, Oxford, was a long way 1st, staging a really fine lot of flowers for the time of the year, the best being Marie Rady, La France, Alfred Colomb, Devienne Lamy, and Sénateur Vaisse; 2d, the Rev. J. B. M. Camm; Messrs. Curtis & Sandford, Torquay, 3d.

Twenty-four Dahlias.—1st, Mr. J. Nation, Taunton.

Twenty-four Gladiolus.—1st, Mr. S. Brown.

Twenty-four bunches of miscellaneous cut flowers.—1st, Mr. J. W. Miles, with a really grand lot; 2d, Mr. S. Brown.

Twelve herbaceous Phloxes.—1st, Messrs. Lucombe Pince & Co.; 2d, Messrs. Bryant & Hoskins. Hand bouquet.—1st, Mr. W. Pethick; 2d, Messrs. Lucombe & Pince.

Amateurs' cut flowers: twelve Roses.—1st, the Rev. J. B. M. Camm; 2d, Mr. T. Hobbs, Bristol. Twelve Dahlias.—1st, Mr. J. Nation.

Group of flowers for drawing-room table.—1st, Mr. T. Meakins.

Group of flowers and fruit combined.—1st, Mr. H. Norton.

Fruit.—The show of fruit was not equal to what we have seen here before, no doubt in some measure consequent upon the earlier date of the exhibition. Eight varieties.—1st, Sir A. H. Elton. In this collection were some very good Black Hambugh Grapes and Royal George Peaches. 2d, Earl Fortescue, who showed amongst others an excellent Smooth Cayenne Pine and Crawford's Early Peaches. One Pine.—1st, Earl Fortescue; 2d, Sir A. H. Elton. Three bunches white Grapes.—1st, the Rev. J. Heyworth; 2d, Mr. T. Hallett. Three bunches black Grapes.—1st, Mr. J. F. Norris, with medium-sized Black Hamburghs, well finished; 2d, Messrs. Lucombe Pince & Co., with large fine bunches of Mrs. Pince's Muscat. Six Peaches.—1st, Sir A. H. Elton; 2d, Earl Fortescue. Six Nectarines.—1st, Earl Fortescue; 2d, Mr. J. B. Lowe. (*From a Correspondent.*)

Notices of Books.

A New London Flora; *or, Handbook to the Botanical Localities of the Metropolitan Districts, compiled from the latest authorities and from personal observation.* By Eyre Ch. de Crespigny, M.D., M.R.C.S., late of H.M.'s Medical Service in India, &c. London: Hardwicke & Bogue, 1877.

Dr. de Crespigny starts with the assertion that "a new London Flora is much required;" and we are inclined to agree with him. In these days of bank holidays, Saturday half-holidays, cheap trains, and frequent excursions, there are many to whom a compendious work indicating the localities where they might find some of our more interesting plants would be a useful companion in their country rambles. But for such a purpose it would have to be limited to recently observed plants, and should be brought up to the latest date; historical records of species, however interesting, are quite out of place in a work of

such scope. Dr. de Crespigny's book would have been smaller, but infinitely more useful, had this principle—which, curiously enough, he himself lays down very definitely—been adhered to: and the value of his compilation is materially lessened by its non-observance. To take an instance from his first page: Adonis autumnalis is localised at (among other places) Acton and Reigate; but the authority for its occurrence at Acton is no more recent than Blackstone (1746), while at Reigate only solitary specimens, probably escapes, have been met with (see *Fl. Surrey*, p. 2). On the same page we find, among the localities for Aceras anthropophora, "chalk pits on the Hog's Back, and old chalk pits near Harefield (?)." But these localities, in spite of the conjunctive "and," are in no way connected, the Hog's Back being in Surrey, and Harefield in Middlesex. Moreover, Aceras is not given, even doubtfully, in the *Flora of Middlesex* as a plant of that county, and the (?) seems to imply a doubt of any more recent record should such exist. Among the localities for Actinocarpus Damasonium we find "Felbridge pools, perhaps." Does this merely mean that the locality is a likely one, although the plant has never been found there?

Leaving the first page, and glancing through the volume at random, the first thing that strikes us is the heterogeneous manner in which the localities are mixed up, no attempt being made to keep those of each county together; and as the county is hardly ever mentioned, and when mentioned is frequently wrong —*e.g.*, Bisham is in Berks, not Herts (p. 22), and so is Newbury, though Dr. de Crespigny places it in Beds (p. 28)—the effect is, to say the least of it, somewhat confusing. Some of the entries, again, are puzzling. What information is conveyed by the following:—"Cuscuta epilinum, on Flax, rare, S, *Cybele Brit.* ii., iii.," or by "Carduus Forsteri (hybrid) Surrey (? *olim*, an obscurity, *Cybele Brit.*)"? Cerastium pubinlum [?], which has not been found in Surrey since the time of Dickson, its original discoverer, should be omitted altogether, or, if inserted, requires an "*olim*"; Dr. de Crespigny only adds to its locality "subject of controversy," which might be stated with at least equal truth of many other plants.

Of course this kind of criticism might be continued indefinitely—almost every separate entry suggests it. Dr. de Crespigny is scarcely more happy in his generalisations. He says of the genus Chenopodium, "Species difficult to determine, any number may be made; *vide* Moquin, in vol. iii. [xiii.] of De Candolle's *Prodromus*." But no British botanist need confuse our Chenopodia if he will take ordinary pains about them; while Moquin certainly has not described so many forms as to call for such a criticism. Still worse is the announcement (p. 95) that "the vast and formidable array of anomalous vegetable growths known as blights, mildews, mould, oak-spangles [!] &c., have no claim to be classed as fungals, whatever may be said for Clavaria, Sphæria, Peziza, and other amorphous vegetations of a membranous, horny, fleshy, and even gelatinous structure." After this we are prepared for anything; so that the appearance of "Plantago lacustris" at p. 51, followed by "Plantago coronopus, see P. lacustris," does not startle us as it might do under other circumstances.

One or two curious omissions are scarcely less puzzling. The paucity of Buckinghamshire localities may be accounted for by the small amount of printed matter relating to the plants of that county; but the principle of selection from published works is very difficult to ascertain. For instance, Agrostis spica venti, though not a common grass, is so abundant in some parts of Middlesex as to be a troublesome weed, and is duly recorded as such in the Flora of that county; but not a single Middlesex locality is given for it in the *New London Flora*. As critical forms are by no means excluded, some mention should have been made of Aira flexuosa; Lepidium Draba, again, has only two localities—by the Thames between Hammersmith and Kew, and at Barking. In the former place Dr. de Crespigny notes "(?) from seed washed up from Thanet;" but if "washed up" from anywhere it is much more likely to have come from the well known and not far distant station near the Wandsworth distillery, where it was plentifully established for many years, and in all probability still holds its ground. Yet this locality is not even mentioned; neither is that near the Edgware Road station of the North London Railway (see *Flora of Middlesex*), where it still abounds, and has been established for at least a dozen years. Sonchus palustris is certainly not extinct in its Thames localities.

We observe that the *New London Flora* is dedicated to Mr. H. C. Watson, and that it is interspersed with quotations from his works, which, severed from their context, do not always fairly represent their author, who will, we fancy, be inclined to exclaim "save me from my friends." Many other points suggest criticism, such as the general plan of the book, the list of authorities quoted, and the detailed list of localities at the end of the book; but *le jeu ne vaut pas la chandelle*. It is fair, however, to add that the short descriptions of the localities which precede the special lists are very well done, and convey in few words an accurate idea of the places they describe.

Hops; *their Cultivation, Commerce, and Uses in Various Countries.* By P. L. Simmonds. (Spon.)

This little book is a useful compilation, embracing statistical and other details relating to the culture and properties of the Hop. We must not look for entire accuracy in such a work—indeed, the author modestly hints at his inability to give "much practical or novel information to the experienced Hop-grower." On the other hand botanical accuracy must not be looked for, else we might point to the botanical details of the Hop, and of the mildew which affects it, as points requiring more perfect treatment. The most valuable part of the present work consists in the statistical details scattered through various publications, but here condensed in small compass for ready reference.

Coffee Planting in Southern India and Ceylon. By E. C. P. Hull. London: E. & F. N. Spon.

This book appears at an opportune time, when so much attention has been drawn to the diminished supply of Coffee from Ceylon, in consequence of the ravages of the Hemileia. At the present time there are frequent inquiries among planters and intending planters in different colonies for handbooks on the cultivation and preparation of useful plants, and principally, perhaps, those treating on the two chief beverages, tea and coffee. On the former product, however, comparatively little has been produced in book form, while several good treatises on Coffee culture have of late issued from the press. This latest contribution is a well-got-up book of handy size. The book commences with a very brief popular description of the plant of Coffea arabica, with a notice of its native country, introduction into Europe, general history, properties, and uses.

That the author has made himself acquainted with his subject is evident from the outset, for he refers to the prospect of the larger cultivation of the Liberian kind in Ceylon, its more robust habit, productiveness, &c. The climate best suited for Coffee cultivation is duly considered, together with elevation, temperature, &c. On this point the author says:—"At an elevation of between 4000 and 5000 feet above sea-level in Ceylon one sees, supposing the situation to be not unduly exposed to wind, fields of dark evergreen, luxuriant Coffee trees, so well clothed with foliage that not a square yard of bare ground is visible for acres. Such situations have what may fairly be called an exceedingly humid climate; probably hardly a week passes without rainfall, while at certain seasons this occurs without intermission for weeks together; even after a fair bright noon-day a dense white mist will frequently settle down towards evening, wrapping all in obscurity, and saturating vegetation with moisture. The temperature here will probably seldom rise above 70° in the shade, at other times falling as low as 50°. The general result is that although the trees have a gloriously healthy appearance, they bear hardly any crop."

The opposite extreme is a climate where there is great heat and scarcely any rainfall during a great part of the year, a few showers occur during the spring months, and a perfect deluge may be looked for while the monsoon lasts, from June to August. For four or even five months of the year droughts often prevail, the sun being so hot that the ground opens in fissures, the jungles are parched and vegetation actually burnt off. "The effect of this ordeal upon the Coffee is at once apparent, the plant, although not by nature deciduous, beginning first to droop, and finally losing nearly all or much of its foliage year after year, until eventually it falls a prey to the effects of exhaustion in one form or other." Neither of these conditions then is suitable to the proper cultivation of Coffee, what is required being a medium climate where a healthy growth of the plant may be promoted, together with productiveness and longevity. It is shown that Coffee is capable of bearing a considerable degree of heat provided there is a proportionate humidity, but this humidity is often the cause of agues and other afflictions to the health of the planters. Into all these considerations the author enters as well as into the subjects of contracts, labour, food supply; a good deal of space is given to actual cultivation, such as planting, the best tools for use, the care of the plants in their young state, and the preservation of the trees in maturity, also on the gathering of the berries, pulping, washing, and drying; and finally we have estimates and statistics of the cost of Coffee culture both in Ceylon and Southern India, and an appendix is added giving instructions "for the medical treatment of coolies and others on Coffee estates until professional assistance can be obtained." Altogether the book is one that will commend itself to all those interested in the culture and uses of Coffee.

The Emigrant and Sportsman in Canada, &c. By John J. Rowan. Stanford.

Mere sporting books constitute perhaps the dreariest and least attractive department of literature to any but professed sportsmen. The reader, however, of the present work will have no cause to complain. The book is well written and full of interest, the remarks on emigration are sensible and to the point, the information given being practical and evidently the outcome of personal experience. So much indeed is told us on the titlepage, which professes to give "some experiences of an old-country settler, with sketches of Canadian life, sporting adventures and observations on the forests and fauna." So well is this programme carried out that we know of no work within anything like equal compass which contains so much authentic, readable matter about Canada and the outlying provinces.

We select for extract some citations relating to the forests of Canada, which are becoming more and more valuable, on account of the scarcity of timber in the United States:—

"Two things are necessary to the growth of forest trees, viz., a certain degree of summer heat and plenty of moisture. The latter condition they cannot get in the Western States, where the evaporation is more than double the rainfall. Given a certain degree of summer heat, say from 60° to 70°, with plenty of moisture, and the most valuable timber trees will grow to perfection, and will stand almost any degree of winter cold. In Canada the melting snow nourishes the roots, while the hot sunshine playing on the foliage draws up the stems straight and branchless to a great height. In the Pine forests it is not unusual to see trees 6 feet in diameter at the butt, and straight as an arrow, growing to the height of 100 feet without limb or fork.

"Nature's rotation of crops in the forest is an interesting study. Where a deciduous forest has been cut down or destroyed by fire, Spruce and Fir trees rapidly spring up. Where a Pine forest has been destroyed by fire, Blueberries and Raspberries grow in immense profusion for the two or three subsequent seasons; then Cherry, White Birch, Maple, and Popple (American Poplar) commence to make their appearance, shoot up with surprising rapidity, and soon a forest of deciduous trees occupies the site of the ancient Pine forests of the country, relics of which may be seen in the gigantic half-charred stems, thoroughly dried by fire and weather, which remain standing amongst the young green wood for twenty or thirty years. These immense trunks, standing high over the heads of the young forest trees with uplifted arms, and stems blanched white with successive storms and sunshine, look like the ghosts of the forest primeval, and present a weird and rather melancholy appearance.

"In Lower Canada and the maritime provinces Spruce and Fir are the weeds of the country. They seem to spring up everywhere and under any circumstances. They grow equally well in the open or under the shade of larger trees. The latter has often surprised me, knowing the difficulty that is experienced in getting under-cover to grow in English woods. On land that has been left in pasture for a few years, the weeds that grow up, and warn the farmer that his land is ready for the plough, are Spruce and Fir trees. In rocky districts of the lower St. Lawrence and of Nova Scotia, of the Thousand Islands and of the Laurentian Mountains, wherever there is a crack in a rock large enough to hold a thimbleful of soil, there one may see a little Spruce or Fir tree."

The forests exercise a very beneficial effect on the climate both in summer and winter, preventing the too rapid melting of the snow and the consequent

drying up of the land, which occurs in the Western States of the Union. Hence grass, cereals, Potatos, Turnips, and the crops of a cool climate flourish, as well as those of a hot climate, such as Indian Corn, Grapes, Peaches, Pumpkins, &c. Spring, when it begins, is no laggard, as with us, but advances rapidly and without interruption.

"So with the crops. The thaw heaves up the surface of the soil into loose mould thoroughly moistened by the melting soows. On this comes a great heat, and the farmer or gardener can see his seed growing. . . . The frost kills the roots of the weeds in winter, and one hoeing in the summer time in Canada is as good as two in England. . . . A comparison between the climate of the United States and of Canada as exemplified by the *physique* and appearance of the people is very strongly in favour of the latter climate. A climate suitable to the forest, as we have seen, is also that one most suitable to the growth of grasses and to the health of cattle. It is also most favourable to man, who appears to benefit by a certain amount of humidity in the atmosphere as much as the forest trees. Thus the natives of the forest regions in North America are robust and ruddy, while those of the prairies and treeless regions are lanky and yellow. The world cannot produce finer specimens of manhood than are to be met with in the backwoods of Canada, more especially in the lumber districts. Canadian-born men are, if anything, taller than the old-country people, and less fleshy. They are hardy, robust, and vigorous, presenting a very striking contrast to their next neighbours."

Animal Products: their Preparation, Commercial Uses and Value. By P. L. Simmonds. Chapman & Hall.

This treatise is, we learn, intended to serve primarily as a descriptive guide to the collection of animal products in the Bethnal Green Museum, and in the next place as a practical treatise on economic zoology for the use of the public in general. The subject-matter is arranged under the heads of wool-producing animals and the products they yield, products of the bovine tribe, of the deer and antelope groups, of fur-bearing mammals, of carnivorous animals, of horses—solid-hoofed and thick-skinned (pachydermatous) animals; of aquatic mammals, such as whales; and lastly, of marsupials, such as the kangaroo and opossum. In the Museum itself the classification adopted is into animal substances used for textile materials, such as wool, silk, feathers, hides, animal substances used for domestic and ornamental purposes, such as bones, tortoiseshell, animal oils and fats, substances used for dyeing in pharmacy and perfumery, &c. On each of these subjects the volume before us contains many details otherwise not readily accessible save in numerous and bulky treatises. Numerous illustrations are given. Many of those of cattle are taken by permission from the pages of the *Agricultural Gazette*. To show the manner in which Mr. Simmonds has treated his subject, we may give the following extract relating to rabbits:—

"Rabbits.—The rabbit (Lepus cuniculus), originally a native of Spain, belongs to the same genus as the hare, but differs from it considerably in its gregarious habits, its subterranean mode of life, its whiter flesh, and the less perfect state of the young when first produced.

"'Fancy' rabbits, as they are called, have been kept in this country from the earliest times, being mentioned by Cæsar in his account of Britain. They have been raised from the common rabbit by scientific breeding in many countries, particularly in Persia and Arabia, whence we have derived several of our present breeds. The silver-grey rabbit is much bred for its fur, which fetches a high price in China, and is sometimes used here.

"In France about 60,000,000 of rabbit skins are collected annually. The principal portion are used for their hair, for hat-making, and a few millions for furs, when dyed different shades. More than sixteen different transformations are given to the skins in France, and they are made to assume the appearance of costly furs to suit the tastes and customs of different nations. France works up seven-eighths of the quantity, and Belgium the other eighth.

The number of rabbits sold in the markets of Paris in 1845 was only 177,000, but in 1860 this number had increased to more than 2,000,000. Taking the number consumed in Paris at a thirtieth of the whole quantity used in the Republic, the total consumption would be about 70,000,000 annually. According to official returns, the average price of a rabbit exceeds 2 francs, so that the value of those consumed annually may be taken at £5,500,000.

"Messrs. Leeding & Co., of Borough High Street, state that they work up yearly nearly 2,000,000 hare and rabbit skins, nearly all English, for foreign skins do not make such good fur as the English and Scotch. They buy the skins principally from poulterers, marine store dealers, and hawkers. They estimate the number of skins manufactured in this country annually produced and imported at not less than 30,000,000. At an average weight of 2½ lb. each, these would give 35,500 tons of food, and valuing each at but 1s., this amounts to £1,500,000, to which £500,000 more must be added for the value of the skins. The number of rabbits sold by licensed game dealers in the kingdom in 1872 was returned at about 5,200,000, but these are a very small proportion of the total sales.

"It was stated by Lord Malmesbury in the House of Lords in March, 1873, that Mr. Brooks, the salesman in Leadenhall Market, receives weekly from Ostend 1500 cases, each containing 100 rabbits; that one gentleman in Somerset sends to Birmingham 10,000 a-week, to Wolverhampton 3000, and to Nottingham 4000 weekly. Southampton receives in the year about 90,000."

—— We doubt whether any other 156 miles of railway in the kingdom affords the traveller so much of beauty and varied interest as the London, Chatham and Dover Railway. That being the case, we have no doubt Messrs. Penrose & Son's *Panoramic Guide* to the railway in question will prove very serviceable. A little more personal experience and less reliance on second-hand statements and indifferently drawn-up guide-books would be desirable in a second edition. The subject is worth all the literary care that can well be bestowed upon it.

—— To stem the rising tide of immorality, counteract the deterioration of the Press, induce a healthier tone throughout society, promote the more thorough training of the young in the principles of mortality and religion, so as to avoid the spread of superstition on the one hand and infidelity on the other, we must naturally look in great measure to the female part of the community. The little volume entitled *Woman and Her Work in the World*, by Mr. C. R. Cresswell (Hardwicke & Bogue), has with reference to these points a special interest. It is an unusually well written treatise, so that its perusual forms an agreeable recreation, while the author's broad and liberal views, sympathy with whatever is pure and holy, and earnest desire to promote female education and open up modes of profitable employment for women, deserve the fullest consideration. No one wants to turn women into Professors, or into so many Mrs. Jellabys, but there is so much good that might be done which is now left undone for want of knowledge, so much domestic sorrow and misery incurred which might be prevented by fuller knowledge on the parts of wives and mothers, and so much unnecessary loss of power and means in the matter of domestic economy, that we hail any attempt to promote the education of women and improve her social position. It is encouraging to see that progress is being made in this direction. Only recently the University of London has made a great step in advance by throwing open its degrees in all the faculties to women, and that they value the privileges already accorded to them is testified by the numbers and success of the candidates who appear at the various examinations.

—— The *Florist* opens this month with a coloured plate representing two of the new border Tulips, Tulipa Eichleri, and T. Hageri, the former a native of Georgia, with pubescent stem and glaucous leaves, the latter a native of the Greek mountains, with narrow thong-like green leaves. The flower of the first has narrow oblong pointed segments of a crimson colour, the base marked with wedge-shaped dark blue spot, edged with yellow. The flower of the latter has broadly ovate-oblong pointed segments, of a rich crimson colour, with a rhomboid purplish blotch at the base of each. The second plate is devoted to the illustration of the Dymond Peach, a large and handsome mid-season variety, of robust growth, and with fruit of excellent character.

—— *A New Elementary Theory of Botany* (*Nouvelle Théorie Elémentaire de la Botanique*) is the title of a work published by Dr. Ecorchard, the director of the botanic garden at Nantes. This new theory is based upon the assumption that each plant is an aggregation of individuals. A lengthy introduction to the external forms of plants, in which an almost entirely new set of terms are explained and illustrated, leads up to a new system of classification. This consists of a dichotomous key, in which the proposed new terms are used, and by which it is not difficult to "run a plant down" to its proper family—provided always, of course, that you understand the terminology. But here comes the hitch. Probably there never was proposed anything more difficult in the way of compound terms for the beginner, though we are bound to say that most of them are intelligible to the practical botanist. Thus, for example, the classes Carpocalycorollæ, Thalamocalystemonæ, and Achlamysquamæ, the orders Collocarpæ and Dialycarpæ, and the sub-orders Collostyli-dialystigmatæ and Dialystyli-stigmatæ. These names are drawn from actual characters, which they express fairly well when you know the meaning of the components of these ugly compounds; but we fail to discover the advantages claimed by the author for his system, which he sends into the world with much confidence. As a proof of the utility and practicability of his scheme, he gives a key in his system of classification to the natural orders represented in the Flora of France. It is to be followed by a complete Flora of France, in which his terminology will be carried down to species.

—— The seventh edition of Mrs. Somerville's *Physical Geography* (Murray) has been issued in a revised form, so that it now forms a companion volume to the late Sir Charles Lyell's excellent *Student's Elements of Geology*. The original work is an admirable one, and the Editor has done his or her best to make the work a fitting exponent for popular purposes of the science on which it treats. Some portions, however, among them those relating to vegetation, still require a good deal of additional matter to bring them up to date.

—— The last issued Part of the *Journal* of the Linnean Society contains the first instalment of Mr. J. G. Baker's *Systema Iridacearum*. Mr. Baker's object is to do for the present time what Bellenden Ker did in 1827, that is, to give a complete synopsis of the genera, and a list of species, with synonyms, references to plates, &c. Mr. Baker gives a brief sketch of the morphology of the order, sufficient for classificatory purposes, and in relation to the geographical distribution admits sixty-five genera and 698 species. More than 300 species are found at the Cape. Gladioleæ are confined to the Old World, Ixieæ and Irideæ are common to Old and New. The genus Iris is distributed nearly throughout the world, the exceptions being the tropics of Asia, Polynesia, and America. The main subdivisions of the order are based on the presence of a bulb or a rhizome respectively, the regular or irregular perianth, and the isolation or combination of the stamens. The characters of each genus are given at length, but for the species a list with synonyms and references is alone given.

—— The last issued part of M. Baillon's *Histoire des Plantes* is devoted to Myrtaceæ and other orders. The woodcuts are beautiful, and the notes on structure valuable. M. Baillon includes under Myrtaceæ, true Myrtles, Leptospermeæ, Chamælauciæ, Barringtonieæ, Napoleoneæ, and Puniceæ. Hypericaceæ come next, and the staminal arrangements, dotted aromatic leaves and other characters, afford reasons for the approximation to Myrtles. Clusiaceæ come next in order, followed by Lythraceæ, a very unusual position. Next in order come Onagraceæ and Balanophoraceæ.

ON THE SOURCE OF THE CARBON OF PLANTS.

Nearly half the dry substance of plants is carbon; and it is conclusively established that they derive, at any rate, the greater part of it, directly from the carbon-dioxide of the atmosphere, which the chlorophyll cells have the power of decomposing in sunlight, at the same time evolving oxygen. But this function of vegetation, which is so essential a complement to the processes of animal life, gives rise to many problems hitherto unsolved; and an important one is whether or not plants avail themselves of other obviously possible sources of carbon than that existing in such very small proportion, although in large actual amount, in the ambiant air.

Our knowledge bearing upon the subject as it exists

in the present day, is the resultant of careful investigations by many observers. In the last century Bonnet discovered the gaseous exhalation; Priestley that the gas is oxygen; Ingenhouz that the oxygen is only evolved in sunlight; Sennebier that it is due to the decomposition of carbon-dioxide, but he believed that the carbon-dioxide is taken up in solution in water. Early in this century de Saussure carried out a long series of experiments on the relations between the carbon-dioxide decomposed, and the oxygen evolved, and on the amount of carbon-dioxide in the air compatible with the healthy development of plants. Since his time many eminent names have been added to the list of patient labourers in this field of inquiry.

Boussingault worked on the question whether the carbon-dioxide is absorbed by the leaves or taken up by water through the roots; and by direct experiments proved that the leaves of plants do take up the carbon-dioxide, which is so sparingly, though so uniformly diffused in the atmosphere. His researches led him to conclude that by far the greater part, if not the whole of the carbon which enters into the constitution of the organs of plants, is derived from atmospheric carbon-dioxide; and while drawing attention to the fact that, for healthy and vigorous action, plants require large volumes of air to pass over them, and to the surprising rapidity with which they absorb the carbon-dioxide from it, he makes calculations as to the surface presented to the air by the leaves of different crops. Taking the average number of plants growing per hectare (about 2½ English acres) he estimates that:—

Artichoke	gives a surface of		142,410	square metres.
Beetroot	,,	,,	49,921	,,
Potato	,,	,,	39,641	,,
Wheat	,,	,,	35,490	,,

Boussingault also made experiments in regard to the absorption of carbon-dioxide by plants growing under different conditions as to soil and manures. He found that a Helianthus which in twenty-four hours would, without any manure, only decompose 2 c.c. of carbon-dioxide, decomposed 182 c.c. in the same time when supplied with manure containing nitrates and phosphates, 11 c.c. when with nitrates without phosphates, and only from 3 to 6 c.c. when manured with phosphates without nitrates.

That the carbon-dioxide contained in the atmosphere is sufficient for normal vegetation is proved by the abundant growth of Heath and other wild plants on sandy hills; and the numerous experiments on water-culture conclusively show that a plant may grow luxuriantly, and store up an abundance of carbon, when supplied only with mineral salts, in a solution which contains little or no carbon-dioxide.

Sachs speaks of it as an unquestionable fact, "that most plants which contain chlorophyll (for instance, our cereal crops, Beans, Tobacco, Sunflower, &c.) obtain the entire quantity of their carbon by the decomposition of atmospheric carbon-dioxide, and require for their nutrition no other carbon-compound from without." He goes on to say: "The compound of carbon originally present on the earth is the dioxide, and the only abundantly active cause of its decomposition and of the combination of carbon with the elements of water is the cell containing chlorophyll. Hence all compounds of carbon of this kind, whether found in animals or in plants or in the products of their decomposition, are derived indirectly from the organs of plants which contain chlorophyll."

Dr. J. Boehm made direct experiments with seedlings of Scarlet Runner, growing them under glass shades, luted with potass lye, in pots containing in some cases quartz sand moistened with a nutritive solution, and in others garden soil rich in humus. The two sets were quite equal in development and duration of life; those in the garden soil formed quite as little starch as those in the sand; and from this he concluded that the carbon-dioxide yielded by the garden soil had taken no share in the growth of the plants.

Liebig had, however, supposed that plants might owe some part of their carbon to the carbon compounds in the soil, which were absorbed by their roots, and that young plants especially drew their supply from this source. He speaks of the effect of drought as checking the supply of carbon-dioxide by the roots, and throwing the plants exclusively upon that in the air.

But the tendency of more recent investigations points to the conclusion that the atmosphere and the parts of plants living in it are solely concerned in the storing up of the carbon of vegetation.

We may pause for a moment to consider the amount of the carbon so stored up.

Liebig estimated that more than 1000 lb. of carbon may be harvested annually from a *morgen* of surface—somewhat less than two-thirds of an English acre.

According to the estimates of Lawes and Gilbert, with Wheat for twenty years in succession on the same land, there was an actual yield of 2500 lb. of carbon, per acre, per annum, where no organic carbon compounds were added to the soil, and where these were added (in the form of farmyard manure) the actual yield in carbon was less. With Barley, for twenty years in succession, the average annual yield was 2088 lb. of carbon per acre; and the indication is that some other crops, under similar conditions, acquire even more.

Estimates recently made of the forest growth in Germany give as much as 2700 lb. In tropical climates where vegetable growth is more luxuriant the amounts are far greater; and in the West India Islands as much as from 2½ to 5 tons of carbon may be harvested per acre in the crop of Sugar-cane.

With these large amounts of accumulation on the one hand, we have, on the other, an atmosphere containing carbon-dioxide in so small a proportion as 0.04 per cent.

Then we have to bear in mind the large supplies of carbon-dioxide within the pores especially of manured soils, as determined by Boussingault, and at the disposal of the roots of plants. Also the enormous quantity of water taken up from the soil and passing through plants during growth, probably at any rate more than 200 parts for every part of dry substance fixed, and the fact that carbon-dioxide is present in all natural waters would lead to the supposition that the roots would scarcely either take it up to no purpose, or act as a filter to that which constitutes so important a requirement of the plant.

Dr. Moll* has recently, by some interesting experiments, made a contribution to the evidence which is required to answer the question—Can leaves decompose the carbon-dioxide which is at the disposition of the roots? and argues that the proof that one part of the plant—the leaf—takes up and decomposes carbon-dioxide, is no proof that it is not taken up in another part—the root.

He quotes the experiments of Sennebier and de Saussure, but considers that they were not made quantitatively, or with sufficient exactness to solve this problem. For its elucidation he rests his methods upon Sachs' theory that the starch in the chlorophyll grains must be considered as the first visible product of the decomposition of carbon-dioxide, and that therefore, according to him, the presence or absence of starch in the leaves is the crucial test of the decomposition or non-decomposition of carbon-dioxide. In Dr. Moll's investigation of the starch contents he used Sachs' modification of Boehm's method.

Five sets of experiments were made to meet the different aspects of the question.

In the first set glass shades were used, in one of which the air was kept free from carbon-dioxide by being luted with potass lye, while the other contained ordinary air, or air with an excess of carbon-dioxide, and was luted with water. The liquid lute was in porcelain dishes, made with a round hole in the middle, the central hole and outer edge being deeply rimmed. The shades, of less circumference than the dishes, were set in them, and were furnished with tubular necks, into which smaller tubes were fixed for the current of air to pass through, and for other requirements of the experiments. The exit tube of the shade in which the atmosphere was kept free from carbon-dioxide was conducted through a test-tube filled with pieces of pumice saturated with potass ley. Preliminary experiments with etiolated plants, with a watch glass containing baryta-water within the shade, satisfied the author that he secured having air absolutely free from carbon-dioxide under that luted with potass lye; and some early failures taught him how to regulate the supply of carbon-dioxide and air in the other shade, so as to grow plants as well-developed and healthy as those in the open air. With thick-leaved plants he found that it was necessary to add as much as 2 per cent. of carbon-dioxide to a volume of air supplied to them of about 2500 c.c. daily, in order to satisfy their requirements for free growth. *Nature.*

To be continued.)

* "Ueber den Ursprung des Kohlenstoffs der Pflanzen. Von Dr. J. W. Moll (Utrecht). — *Landwirthschaftliche Jahrbücher*, band vi., heft 2.

Obituary.

We regret to hear of the somewhat sudden death of Mr. George Smith, of Dunstable and London. Mr. George Smith was the father of one of our most valued contributors, Mr. Worthington Smith, who received his earliest and best directions in the study of art, and in the habit of close observation, from the example of his father. Mr. George Smith was born at Gaddesden Row, Herts, on May 9, 1804; died in London, on July 31, 1877; and was buried at Dunstable.

—— The death of Mr. Richard Webb of Calcot, near Reading, on July 26, is also announced. Mr. Webb was the owner of one of the largest and most interesting Nut gardens in the country, and was besides the raiser of several new varieties, which are getting into cultivation. His garden—about 11 acres in extent, surrounded by a brick wall 8 feet high—was, when we saw it last, a perfect thicket of Nut bushes and fruit trees, the produce of which was guarded from the depredations of bipeds by half a dozen or more very powerful mastiffs, and from birds by a score or more of cats of mixed nationalities and breeds — but all favourites of their master, a man of much kindliness of disposition.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, August 8, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Aug.	In.	In.	°	°	°	°	°	°			In.
2	29.79	+0.04	68.0	51.5	16.5	58.2	— 4.1	47.2	66	N.W.	0.00
3	29.82	+0.08	69.0	50.0	19.0	56.9	— 5.3	51.9	83	WNW	0.07
4	29.88	+0.12	67.2	54.0	13.2	58.9	— 3.3	52.0	72	N.W.	0.00
5	29.85	+0.11	76.0	55.2	20.8	63.9	+ 1.8	55.4	69	WSW	0.00
6	29.73	—0.02	75.6	58.5	17.1	65.7	+ 3.6	57.7	76	S.	0.02
7	29.43	—0.33	70.0	61.1	8.9	63.8	+ 1.8	60.8	83	S.	0.36
8	29.32	—0.43	68.2	57.0	11.2	60.8	— 1.2	57.5	89	S.	0.15
Mean	29.69	—0.06	70.6	55.3	15.3	61.2	— 1.0	54.6	78	N.W.: S.	sum 0.63

Aug. 2.—The morning was dull, the afternoon was bright at times. Clear night.
— 3.—The day was generally dull and cold.
— 4.—Dull morning; generally dull till 3 P.M.; fine and bright till 9 P.M. Overcast at night.
— 5.—Fine and bright day throughout.
— 6.—Warm and fine generally; occasionally dull. Rain at night.
— 7.—Warm and dull morning. Showers of rain all day. Cloudless after 11 P.M.
— 8.—Dull, and showery morning. Thunder, with heavy rain, afternoon. Showery at night.

London: *Barometer.*—During the week ending Saturday, August 4, in the suburbs of London the reading of the barometer at the level of the sea increased from 30.16 inches at the beginning of the week to 30.32 inches by the morning of July 30, decreased to 29.83 inches by midnight on the 31st, increased to 30.05 inches by the morning of August 3, decreased to 30.01 inches by the afternoon of the same day, and was 30.08 inches at the end of the week. The mean reading for the week at sea level was 30.05 inches, being 0.15 inch above that of the preceding week, and 0.12 inch above the average.

Temperature.—The highest temperatures of the air observed by day were 84° on July 29, 83¾° on the 30th, and 86¾° on the 31st; on August 1 a great change took place, and the highest temperature was 71¾°, and 67¼° was the highest temperature on August 4; the mean value for the week was 75¾°. The lowest temperatures of the air observed by night varied from 50° on August 3 to 65° on July 29; the mean for the week was 57°. The mean daily range of temperature in the week was 18¾°, the greatest range in the day being 26¼°, on July 31, and the least 13¼°, on August 4.

The mean daily temperatures of the air, and the

departures from their respective averages, were as follows:—July 29, 71°.7, + 9°.4; 30th, 68°.2, + 5°.9; 31st, 71°.8, + 9°.5; August 1, 62°.2, − 0°.1; 2d, 58°.2, − 4°.1; 3d, 56°.9, − 5°.3; and 4th, 58°.9, − 3°.3. The hottest day in the week was July 31, and the coldest was August 3; the difference of mean temperature between these days was 14°.8. The mean temperature of the air for the week was 64°, being 1°.7 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 144° on July 29, 145° on the 30th, and 151° on the 31st; on August 1 the highest reading was 94¾°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 49¼° on August 2, and 47½° on the 3d; on July 29, 57¼° was the lowest reading.

Wind.—The direction of the wind was S.W. and W.N.W., and its strength brisk. The weather during the first three days of the week was very fine and hot, but dull and cool on the remaining four days.

Rain fell on the 4th; the amount measured was 0.07 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 86¾° at Blackheath, 86° at Cambridge, 85½° at Norwich, and 83° at Sunderland; these extreme high temperatures occurred on the last three days of July, and were confined to the South and East parts of England, and not shared in elsewhere. At Wolverhampton, Nottingham, and Sheffield 78° was the highest in the week, and at Liverpool 70° was the highest observed. The mean value from all stations was 78½°.

The lowest temperatures of the air observed by night were 42½° at Eccles, 43° at Sheffield, 44° at Leeds and Hull, and 44¾° at Bradford; at Liverpool 51½° was the lowest temperature, 51° at Sunderland, and 50° at Blackheath; the mean value from all stations was 47°. The range of temperature in the week was the greatest at Cambridge, 38°, and the least at Liverpool, 18½°, the mean range of temperature from all stations was 31½°.

The mean of the seven high day temperatures was the highest at Blackheath, 75¾°, Cambridge 75½°, and at Norwich and Bristol both 73½°, and the lowest at Liverpool, 63¾°, and Eccles, 66¾°; the mean from all stations was 70½°. The mean of the seven low night temperatures was the lowest at Eccles, 49°, and Wolverhampton and Nottingham both 51¾°, and the highest at Blackheath, 57°, and Norwich 56°; the mean from all stations was 53½°. The mean daily range of temperature in the week was the least at Liverpool, 9½°, and the greatest at Cambridge, 21¼°; the mean daily range from all stations was 17°.

The mean temperature of the air for the week from all stations was 60¼°, being 1¼° higher than the value for the corresponding week in 1876. The highest were 64° at Blackheath, 63° at Norwich, and 62¾° at Cambridge; and the lowest were 56° at Eccles, and 57½° at both Liverpool and Bradford.

Rain fell generally on one or two days in the week at most places; the amounts measured varied from 1 inch nearly at Nottingham (at which place it fell on six days) to one-hundredth of an inch at Leicester and Leeds; at Brighton and Sheffield no rain fell. The average fall over the country was two-tenths of an inch.

The weather was fine and warm on the last three days of July, but dull and cold on the first four days of August.

Scotland: *Temperature.*—The highest temperatures of the air varied from 73° at Dundee, and 72¾° at Aberdeen, to 63¾° at Glasgow; the mean from all stations was 69°. The lowest temperatures of the air ranged between 40° at Edinburgh, Dundee, and Paisley, and 45° at Glasgow. The mean from all stations was 42°. The mean range of temperature in the week from all stations was 27°.

The mean temperature of the air for the week from all stations was 56½°, being 3¾ lower than that of England, and 1¼° lower than the value for the corresponding week in 1876. The highest was 57½° at Dundee, and the lowest 54¾° at Glasgow.

Rain.—The amounts of rain measured at the several stations varied from 1 inch nearly at Dundee, to a quarter of an inch at Glasgow; the average fall over the country was four-tenths of an inch.

Dublin.—The highest temperature was 80½°, the lowest 43°, the range 37½, the mean 59½°; and the fall of rain 0.17 inch.

JAMES GLAISHER.

Variorum.

Artificial Fruit.—These imitations are made of wax. The process is more tedious than that necessary for the construction of flowers, for separate moulds have to be made for each kind of fruit. Plaster of Paris is the best material with which to form the moulds, because it mixes readily with water, and hardens quickly. Put fine, damp sand into a small basin, and lay down the fruit—say an Orange—which is going to be copied; let half rest below and half remain above the surface of the sand. Prepare the plaster. When ready for it, stir some quickly in a basin of water, and then pour it upon the fruit, and in a few minutes this will be sufficiently hard to remove. Raise the basin with one hand, and let the mould fall gently into the other. Put the half-mould, with the fruit resting in it, into an empty basin (the fruit uppermost), and pour over it freshly-prepared plaster. When the mould is quite hard it is ready for further operations. In a tin saucepan with a spout melt some wax slowly; a lump about half the size of the model will fill the mould once. The wax must not be allowed to boil, or its colour will be spoilt. Put the two half-moulds into hot water for some five or ten minutes; take them out, and gently absorb the moisture with a soft handkerchief. This operation needs speed and delicacy of touch, for if the moulds are not sufficiently hot, the wax will stiffen too quickly, and so will lie in ridges instead of being smooth; and if the moulds are handled roughly, they are easily spoilt. Pour into the hollow of each mould as much wax as will fill the spaces; the wax should not be very hot, or it will cling too determinedly to the mould, and not be willing to leave it. Join the two halves together—exactly and firmly—and then turn them over and over, and hold them in every conceivable position; this treatment will ensure the wax being of equal thickness in every part. When the mould is quite cold, gently separate the halves, and turn out the waxen model. It is well to make several specimens of the same fruit, as they are easily damaged, and also the moulds are liable to be injured when put away for further use. In order to colour the wax, stir some powder, the colour required, into the wax when it is fluid; unless the stirring is continued while the wax is poured into the mould, the colouring matter is liable to settle on the side of the mould. Very beautiful artificial fruits are brought from Jamaica.—*From "Cassell's Domestic Dictionary" for August.*

The Cool Green Shade.—A law exists in New York State which may well excite envious feelings in the hearts of all footsore and weary travellers in other parts of the world. This statute is to the effect that any inhabitant liable to highway-tax who transplants to the side of the highway any forest shade trees or fruit trees of suitable size, shall be allowed an abatement of his highway tax amounting to about 4s. 2d. for every four trees. Certain regulations are laid down as to the distances the trees are to be apart. Elms are not to be nearer than 70 feet, Maples and other forest trees not nearer than 50 feet, except Locust trees, which may be set 30 feet apart. Fruit trees are to stand at a distance from each other of at least 50 feet. This is pleasant to read about. Here is a State, not satisfied with providing wayfarers with shelter from the too fierce rays of the sun, but taking care that they shall have Apples and other fruits ready to their hands, and so be no longer tempted to enter the fields to steal raw Turnips. Many a dusty road in our own country might be treated in the same fashion. Good feeling, without the prospect of a remission of taxes, will perhaps prompt some one to make a beginning. *From "The Gatherer," in "Cassell's Family Magazine" for August.*

Head to Foot Washing.—At the recent Domestic Economy Congress, held at Birmingham, Mr. Edwin Chadwick, C.B., said the effect of cleanliness was not sufficiently recognised. He found evidences of its effects in various ways. Dealing with the animal creation, he said the pig that was washed would put on one-fifth more flesh with the same amount of food than the pig that was unwashed. The same effect was observable in other animals. They had seen the horse washed from head to foot to give it additional force. The same argument applied to the human creature. He knew the case of an army hemmed in by the enemy and put upon half rations. They were regularly washed, and it was found after a time that the men who washed were equal in force to to those who were unwashed and put upon full rations. Head to foot washing was not only important in the matter of economy in food, but also for the prevention of contagious disease. Nurses who attended scarlatina cases and other cases of contagious disease had found out that, by washing twice a day, and sometimes by changing their clothes, they might withstand the dangers resulting from the practice, and doctors who were similarly engaged had come to the same conclusion. As a defence against an outbreak of epidemic disease he would have the whole population tubbed. He mentioned that in a prison containing 1200 persons washing was enforced, and instead of using 70 or 80 gallons of water for each bath, and causing a large expenditure of time, a very simple method was devised for giving the prisoners a thorough good bath. Each man was placed in a recess, with a spray of tepid water overhead, which completely cleansed him. Schools at which unwashed children attended were centres of children's epidemics. They were well aware of that in Holland, for if it was discovered at any school there that a child had not been "tubbed," it was taken aside, properly washed, and the mother was admonished that she must not send her child again to school in that condition. There was an enormous sanitary improvement in consequence of that rule being enforced. There had been a marked reduction in epidemic diseases, and he maintained that, in this country, a cleanliness league was quite as important to the population as a temperance league, because filth, intemperance, idleness, and vice went always together.

The Dymond Peach (of which an illustration appears in the August number of the *Florist and Pomologist*) is a fine mid-season Peach, ripening on the open wall about the middle of September. It is a large and handsome fruit, and being at the same time a variety of hardy constitution, a healthy and robust grower, producing fruit of excellent quality, it is a variety which can be recommended for general cultivation. It appears to have been sent out by Messrs. Veitch & Son, of Exeter, some years ago, but to have been since somewhat overlooked, amidst the flood of novelties which has latterly poured in upon us. The fruit is above medium size, roundish, somewhat flattened, with a well-marked suture, and a terminal depression. The skin is finely downy, pale greenish yellow where shaded, marbled and mottled with dull rosy crimson on the sunny side, passing to Venetian red where most exposed. The flesh is greenish white, very slightly stained with red next the stone, from which it parts freely; it is melting and very juicy, with a fine, brisk flavour. A really good Peach, combining size with high quality in its fruit. The leaves are strongly serrated, but bear no glands that we could discover; there are, however, one or two enlarged teeth developed towards the base of the leaf. The healthy robust habit of the tree is of itself a recommendation of no mean value; and altogether the Dymond is a variety which may be planted with advantage. *T. Moore, in "Florist and Pomologist."*

Enquiries.

He that questioneth much shall learn much.—Bacon.

201. Feathery Columbine.—About twenty years ago I had a plant which we called the Feathery Columbine. The flower was cream-coloured, and somewhat like the Queen of the Meadow, the leaves like those of the Columbine; it was herbaceous. As I should like to get it again, can you tell me the botanical name? None of the nurserymen here seem to know it. I may mention that I saw it a year or two since in a cottage garden at Gorebridge. *J. G., Edinburgh.* [? A Thalictrum. Eds.]

Answers to Correspondents.

Apricots: *T. B. R.* We cannot suggest a cause for their cracking, but if the roots are in a damp border that may account for it.

Books: *Mrs. Tennant. The Rose Garden*, by William Paul (Kent & Co.); and Glenny's translation of M. Du Breuil's work on Fruit Trees (Lockwood & Co.).

Browallias: *J. Hakeman.* Messrs. Veitch, Henderson, and others, supply seeds of B Roezlii, which is the finest of the genus. The old B. alata can be obtained at any of the seed-houses.

Currants: *J. G. & Co.* There is no appearance of insect damage. The roots look as if they had been killed, but by what means we are unable to say. *A. M.*

Forcing Flowers: *Amateur.* We are sorry we cannot assist you, as nothing can be done beyond keeping them as dry as you conveniently can by means of handlights and similar contrivances.

Insects: *J. Leman.* These are friends, not enemies; they are what are called "false scorpions" (Pseudo-scorpiones), having, like scorpions, the nippers on the palpi (which look like anterior legs), but no tail nor sting. They are named Chelifer museorum, the specific name having been given on account of their being met with in museums, &c. They feed upon mites and woodlice, and it is no doubt the small species of the latter which are so destructive to Cucumbers that they were hunting for in the crevices of their stems when taken by our correspondent. *A. M.—W. Cocks.* The insect found growing on Potato-tops in Boston is the seven-spotted Ladybird, certainly not the Colorado beetle, as you might easily have seen by comparing them with the illustration which appeared in our last two issues.—*W. Muir.* Immature forms of the common Ladybird—the mortal enemy of green-fly.

Name of Nut: *O.* The Frizzled Filbert.

Names of Plants; *W. W.* We cannot undertake to ascertain the name of the Pelargonium. The Fern is Pteris serrulata cristata.—*Nemo.* We do not recognise the Statice. Please send specimens with leaves of both.—*H. J., Bristol.* Sedum anglicum.—*J. Hanafy.* We believe the name is quite correct: Veronica salicifolia.—*E. B. Ricketts.* Tropæolum speciosum.—*G., Bath.* From the leaves only we cannot be sure, but perhaps 1 is C. amara, and 2, C. tomentosa.—*Westbrook.* 1 and 2, Agrostis vulgaris; 3, Molinia cœrulea; 4, Poa pratensis; 5, Avena flavescens; 6, Arrhenatherum avenaceum. Six is our limit.—*F. H.* 1, Agrostis vulgaris; 2, Phleum pratense; 3, Holcus lanatus; 4, Alopecurus agrestis; 5, Holcus mollis; 6, Lolium perenne.—*Hayes.* The hygrometric Oat,

Avena fatua, and Potamogeton crispus probably; but specimen insufficient.—*C. D. F.* Avena fatua, the hygrometric Oat.—*P. W. J.* Stachys palustris.—*Sybil.* An Acanthus, but we cannot say which without leaves.

POTATOS: *E. Stanly.* We are quite unable to account for the condition of your Potatos, which will without doubt all speedily fall into a mass of putrescence. The specimen of Snowflake sent on to us was on arrival large and firm, but one-half the interior (though quite solid) was jet black. The starch was broken up in these places, but only the slightest possible trace of fungus threads could be made out. In twenty-four hours the whole tuber had collapsed into a blackish wet mass, and in thirty-six hours it was highly putrescent and swarming with infusoria. Whether this state of things is caused by the Peronospora or Fusisporium of the Potato we are unable to say with certainty, but many facts seem to point in the direction that the spawn or plasma of fungi may exist in plants in a diffused state like water and without a cell-wall. The corrosive plasma in this condition would appear to spread and destroy all tissues in its course. We are under the impression that the plasma thus diffused is deficient of some condition capable of exciting it into the production of a cell-wall. This is, we imagine, why mycelium proper in the form of threads is often not to be seen.

SWEET WILLIAMS: *W. C.* The flowers were in bad condition when they reached us. Most of the forms are too rough on the edge to rank higher than mere border flowers, but a crimson with even white edges, and a purple with similar edging, are smoother, and would perhaps, if separately worked onwards, eventually yield some high-class flowers. Light colours preponderate.

VINE LEAVES: *W. C. T.* The warts on the back of the Vine leaves usually make their appearance in houses that have been kept too close and moist. To stop it you must give more air.

VINES: *T. Martin.* As soon as the fruit is off and the foliage is well matured—say towards the end of September—or not later that the first week or two in October.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED.—William Paul & Son (Paul's Nurseries, Waltham Cross), Bulb Catalogue for 1877.—Toole & Co. (22, D'Olier Street, Dublin), Catalogue of Dutch Bulbs and Flower Roots, Flower and Vegetable Seeds, &c.—Thomas Meehan (German Town, Philadelphia), List of American Tree Seeds.—Alfred Legerton (5, Aldgate, London, E.), Wholesale Catalogue of Dutch and other flower roots.

ERRATUM.—At p. 152, col. *b*, in the paragraph on bedding Violas, for "Crown Jewel (Grieve)," read "Crown Jewel, Grievei," Blue Beard, &c.

COMMUNICATIONS RECEIVED.—Stevens & Williams (next week).—R. C. A.—A. Honeyman (next week).—W. C.—B.—H. W. W.—W. G.—A. McL.—J. C.—A Subscriber.—J. S.

Markets.

COVENT GARDEN, August 9.

We have no alteration to report this week, trade being very quiet, and the prices stationary. The Potato market is firm at last week's quotations. The only novelty that has arrived during the week is the Colorado beetle (not alive we are happy to say), specimens of which find a sale at 1*s.* 6*d.* each.

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Fuchsias, per dozen	4 0–18 0
Bedding-out plants, per doz.	1 6– 3 0	Heaths, variety, doz.	12 0–60 0
— in boxes, each	1 6– 2 6	Heliotrope, per doz.	4 0–12 0
Begonias, per doz.	6 0–12 0	Hydrangea, per doz.	6 0–24 0
Bouvardias, do.	12 0–24 0	Liliums in var., each	1 6– 6 0
Calceolaria	6 0–18 0	Mignonette, per doz.	3 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargoniums, p. doz.	9 0–18 0
Cyperus, do.	6 0–12 0	— scarlet, per doz.	2 6– 9 0
Dracæna terminalis	30 0–60 0	Petunias, per doz.	4 0–12 0
— viridis, per doz.	18 0–24 0	Rhodanthe, per doz.	6 0–12 0
Ferns, in var., p. doz.	4 0– ..	Roses, fairy, p. doz.	4 0–12 0
Ficus elastica, each	2 6–15 0	Valotta purpur., doz.	9 0–18 0

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Bouvardias, per bun.	1 0– 4 0	Myosotis, 12 bunch.	3 0–12 0
Calceolaria, p. bun.	1 0– 2 0	Pelargoniums, 12 spr.	0 6– 2 0
Carnations, per dozen	0 6– 2 0	— zonal, 12 sprays	0 3– 1 0
— 12 bunches	3 0– 9 0	Pinks (white and coloured), 12 bun.	6 0–12 0
Cornflower, 12 bun.	3 0– 9 0	Primula, double, per bunch	1 0– 2 0
Eschscholtzia, dozen bunches	2 0– 6 0	Roses (outdr.), 12 bun.	2 6– 9 0
Eucharis, per doz.	4 0–12 0	— (indoor), per doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	Stephanotis, 12 spr.	2 0– 9 0
Heartsease, 12 bun.	1 6– 6 0	Stocks, 12 bunches	4 0– 8 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Lilies (in variety), 12 sprays	1 0– 2 0	Sweet Sultan, 12 bun.	4 0–12 0
Mignonette, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	3 6– 4 6	Melons, each	4 0–10 0
Apricots, per box	2 0– 3 0	Oranges, per 100	12 0–20 0
Cherries, p. ½-sieve	6 0– 8 0	Peaches, per doz.	3 0–18 0
Currants, red, ½-siev.	3 0– 3 6	Pears, per doz.	.. ..
— black, p. ½-sieve	5 0– 5 6	Pine-apples, per lb.	2 0– 6 0
Grapes, per lb.	1 6– 6 0	Strawberries, p. lb.	0 4– 1 6
Lemons, per 100	8 0–12 0	Figs, green, each	0 4– 1 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	2 0– ..	Mint, green, bunch	0 6– ..
Beans, French, per bushel	6 0– ..	Mushrooms, per pott.	1 0– 3 0
Beet, per doz.	1 0– 2 0	Onions, 12 bunches	9 0– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Eodive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per buoch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	1 6– 3 0
Leeks, per bunch	0 2– 0 4	Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos (new):—Jersey Kidneys, 10*s.* to 14*s.* per cwt.; Rounds, 9*s.* to 10*s.* per cwt.

SEEDS.

LONDON: *August* 8.—The seed market was rather better attended to-day than is usual on a Wednesday, owing to the Corn Exchange having been closed on Monday last. No feature of importance was, however, developed; and in scarcely any article was there any quotable variation. For Rape and Mustard seeds for present sowing we have a good demand at full prices. With favourable weather some new samples of Mustard may be expected in about a fortnight's time. The supply of new Rape does not become over-abundant; for the most part the quality of the seed is this year extremely good, but everywhere the yield proves most disappointing. In Clover seed, both red and white, there is just now hardly anything doing. Antwerp advices describe the prospects of the seed crops as follows:—Red Clover, good; Alsike and white, poor; Trefoil, a complete failure. For Trifolium incarnatum there is a moderate sale at last week's currencies. As we get further into August, more samples of new Rye and of Tares come to hand, but values are not yet fixed for either description. There is a brisk inquiry for new large blue Peas; for such, if good, buyers would be readily found. For Canary seed there is now a rather healthier feeling, but no great improvement in the demand is yet perceptible. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Monday being a Bank holiday no business was transacted at Mark Lane. Trade on Wednesday was without particular movement, the boisterous weather having little or no effect. Notwithstanding a very fair attendance business was extremely dull, and quotations were only altered where there was any pressure to sell. The tendency, however, as regards spring corn, and especially Oats, was decidedly weaker.—Average prices of corn for the week ending August 4:—Wheat, 65*s.* 6*d.*; Barley, 35*s.* 5*d.*; Oats, 28*s.* 7*d.* For the corresponding week last year:—Wheat, 46*s.* 8*d.*; Barley, 31*s.* 10*d.*; Oats, 29*s.* 9*d.*

CATTLE.

At Copenhagen Fields on Monday there was a fair supply of beasts for the day, and the demand was pretty good. On the average prices were rather better, and a good clearance was effected. American consignments come to hand in good condition. The number of sheep and lambs was small for the time of year. Trade opened active, but became slack towards the close. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.* 2*d.*; sheep, 5*s.* 6*d.* to 6*s.*, and 6*s.* 4*d.* to 7*s.*; lambs, 7*s.* to 8*s.*; pigs, 4*s.* to 5*s.*—On Thursday trade ruled quiet. Supplies of beasts and sheep were about the average for a Thursday. The demand was wanting in activity, and quotations were barely as firm as on Monday. Lambs were steady, but not active, and calves and pigs sold at about late rates.

HAY.

The Whitechapel report for Tuesday states that fodder experienced a dull trade at prices much the same as on the previous Saturday. The supply was fair. Prime clover, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; good new clover, 100*s.* to 126*s.*; prime meadow hay, 90*s.* to 124*s.*; inferior, 70*s.* to 85*s.*; good new hay, 80*s.* to 100*s.*; and straw, 44*s.* to 60*s.* per load.—On Thursday there was a fair supply of fodder on sale, the trade for which was rather quiet, and prices were unaltered.—Cumberland Market quotations:—Superior old meadow hay, 128*s.* to 135*s.*; inferior, 90*s.* to 110*s.*; new hay, 80*s.* to 108*s.*; superior old Clover, 132*s.* to 140*s.*; inferior, 105*s.* to 115*s.*; new Clover, 88*s.* to 120*s.*; and straw, 57*s.* to 60*s.* per load.

COALS.

The Exchange was closed on Monday. A steady business was transacted on Wednesday at the following quotations:—Walls End—Haswell, 20*s.*; Hawthorns, 18*s.* 3*d.*; Lambton, 19*s.* 6*d.*; Original Hartlepool, 20*s.*; South Hetton, 20*s.*; Tunstall, 18*s.* 3*d.*; Hartlepool, 19*s.*; East Hartlepool, 19*s.* 9*d.*; South Hartlepool, 18*s.* 3*d.*; Tees, 19*s.* 9*d.*

MR. MECHI'S ADDRESS to his OLD FRIENDS and CUSTOMERS and to the PUBLIC:—

"As it has been erroneously supposed by some that I am no longer interested in my London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-strop trade was immense; now moustache and beard are the order of the day, and the razor and strop trade is comparatively defunct. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody travels by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor geese supplied our pens, and many a now rich merchant in the City will remember the quality of Mechi's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and, I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press? and how much less time is occupied in sipping port wine, as we used to do fifty years ago, when we could not travel? Steam will make our 4 lb loaves cheaper some day, just as it has converted calico from 2*s.* 6*d.* to 6*d.* or less per yard. Then, again, a letter which used to cost 6*s.* 6*d.* to Cork is now carried for 1*d.* Sir Rowland Hill richly deserves a monument. But to return to business: fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the strop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'Exchanged if not approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and convenience of arrangements in the dressing bag and dressing case department, and in the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our sportsmen remain, and 'sporting knives' form one of our special departments. I feel firmly convinced that there is no fear of the departure of knives and forks, or dioners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their owo conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

112, Regent Street, W., opposite Vigo Street.—1877.

TEBBS' UNIVERSAL FUMIGATOR.

For Greenhouses, Conservatories, Ferneries, Frames, Poultry Houses, Infirmaries, Ships, Bed-rooms, &c. Entirely supersedes the use of pots for the purpose. Price 3*s.*, large size 4*s.* 6*d.* each. Wholesale and Retail of FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C.

And Wholesale of CORRY AND SOPER, Shad Thames, London, S.E.

REGISTERED JULY 2 1877

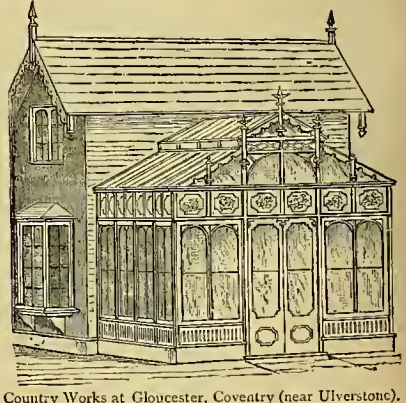
Greenhouses.

H. FREEMAN AND SONS, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantial made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 12 feet, £28; 12½ feet by 10 feet, £15. Estimates given in wood or iron.

HORTICULTURAL BUILDINGS

Designed, Built, and efficiently Ventilated and Heated.

Estimates given to Architects' Plans, or to Rough Sketches, with Sizes, &c.



Country Works at Gloucester, Coventry (near Ulverstone). Paisley, and Aberdeen only.

A PAMPHLET with Illustrations, Testimonials, &c., and PRICE LISTS of Sir J. Paxton's Hothouses, for 3*d.* post free.

A HANDBOOK of Vine and Fruit Tree Cultivation, with Plans of Glass Houses, Heating, &c., post free, 13*d.*

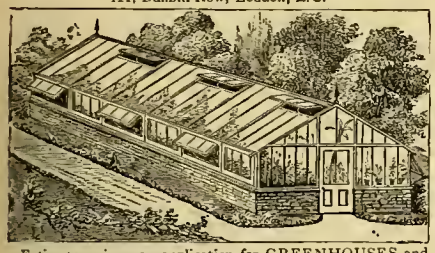
HEREMAN AND MORTON,
HORTICULTURAL ENGINEERS,
2, GLOUCESTER STREET, REGENT'S PARK,
LONDON, N.W.

Metallic Hothouse Builder to Her Majesty.

HENRY HOPE
(late Clark & Hope, formerly Clark),
HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER,
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5s. each.

☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

W. H. LASCELLES, HORTICULTURAL BUILDER, Finsbury Steam Joinery Works, 121, Bunhill Row, London, E.C.

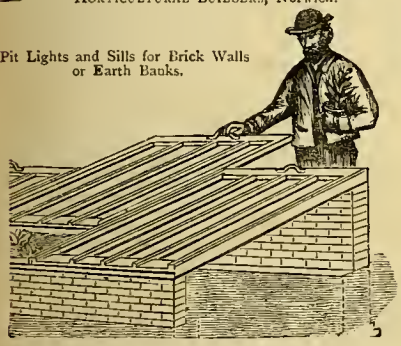


Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.	Each. s.	d
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	35	0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65	0
LIGHTS ONLY.		
3 feet by 4 feet Light, not painted nor glazed	3	6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10	0
6 feet by 4 feet, not painted nor glazed	6	0
Ditto glazed and painted four coats	16	6

BOULTON AND PAUL, HORTICULTURAL BUILDERS, Norwich.

Pit Lights and Sills for Brick Walls or Earth Banks.



PIT LIGHTS and FRAMES complete for fixing on Brickwork, made in two sizes of Lights to work 6 ft. by 4 ft. 2 in. thick, 7 ft. 6 in. by 4 ft. 2½ in. thick, Lights glazed with 21 oz. British sheet glass, painted four times, sills 4½ in. by 3 in., with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

Cash Prices. Carriage paid to any Railway Station in England and Wales; also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.

SILLS or FRAMES, with 2 Lights, 6 ft. by 4 ft., 8 ft. long by 6 ft. wide, £2 16s.; 3 Lights, 6 ft. by 4 ft., 12 ft. long by 6 ft. wide, £4 3s.; 4 Lights, 6 ft. by 4 ft., 16 ft. long by 6 ft. wide, £5 10s.; 2 Lights, 7 ft. 6 in. by 4 ft., 8 ft. long by 7 ft. 6 in. wide, £3 10s.; 3 Lights, 7 ft. 6 in. by 4 ft., 12 ft. long by 7 ft. 6 in. wide, £5 2s.; 4 Lights, 7 ft. 6 in. by 4 ft., 16 ft. long by 7 ft. 6 in. wide, £6 14s. Prices for longer lengths at cheaper rates. Prices on application.

Catalogue of every description of Horticultural Building, post-free, 24 stamps. Plant Preserver Lists, Melon Frame Lists and Greenhouse Lists, post-free.

GREATLY REDUCED PRICES.

GALVANISED FITTINGS FOR WIRING FRUIT WALLS.

F. MORTON & CO.
(Limited), LIVERPOOL
(NAYLOR STREET IRONWORKS),

are now able, having improved manufacturing appliances, to supply these at following close prices, for cash to accompany order:—

TIGHTENING RAIDISSEURS ..	2s. 8d.	per dozen.
TERMINAL HOLDFASTS	1 8	ditto
EYES for GUIDING the WIRES ..	0 5	ditto
WIRE, best quality	1 10	per 100 yds.
WINDING KEY (only one required) ..	0 4	

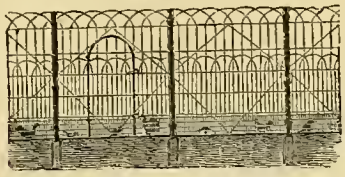
All Galvanised. Bags for packing extra.

Apply for Illustrated CATALOGUE, which contains also full particulars of F. M. & Co.'s well known system of WIRE CABLE FENCING, IRON ENTRANCE and FIELD GATES, in great variety of design. HURDLES, CONTINUOUS FENCING, &c., adapted for Mansion, Villa, or Farm.

London Branch:—
1, DELAHAY STREET, WESTMINSTER, S.W.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

THOMAS'S
NEW POULTRY FENCING,
No. 508.
Very strong and durable. Reduced Prices, 1877.



Galvanised after Manufactured, with Iron Standards, Painted Black, AND SPACED 2 FEET APART, rendering it the strongest and best Fence in the Market.

This ornamental Fencing is easily fixed or removed by any labourer, without extra cost.

PRICES:—
6 feet high, 6s. per yard; 7 feet high, 7s. per yard,
Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 3s. extra, except when 12 yards are ordered, in which case a door is included.

Five per cent. discount allowed for prompt cash on Orders amounting to 40s. and upwards.

Illustrated and Priced Catalogues of every description of Horticultural Wirework on application.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities, of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

RUSTIC
Garden Furniture
IN
GREAT VARIETY.

Garden Seats, Awnings and Tents, Rustic Tables, Chairs, and Flower Stands, Lawn Mowers, Garden Rollers, Water Barrows, Wheelbarrows, Garden Tools, Fancy Wirework, Birdcages, Hammocks, and all kinds of Garden Furniture at lowest marked prices.

CATALOGUES POST-FREE.

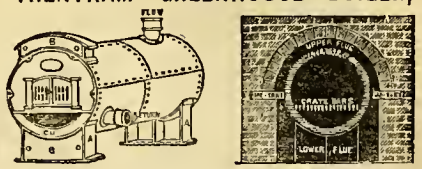
THE PANKLIBANON, 56, BAKER STREET, W.

ROSSER & RUSSELL
HORTICULTURAL WARMING ENGINEERS VENTILATING & SANITARY

ARCHITECTURE APPLIED TO CONSERVATORIES
HEATING APPARATUS OF EVERY DESCRIPTION. BY HOT WATER, STEAM OR WARMED AIR
SEE ILLUSTRATED CATALOGUE POST FREE
DESIGNS & ESTIMATES ON APPLICATION.
OFFICES & SHOWROOMS. 46 CHARING CROSS.
WORKS QUEENS WHARF HAMMERSMITH

For Sale, a
STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
HILL AND SMITH, Brierley Hill Ironworks, Dudley.

STEVENS'
TRENTHAM GREENHOUSE BOILER,



After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.
Castle Hill Works, Newcastle, Staffordshire.

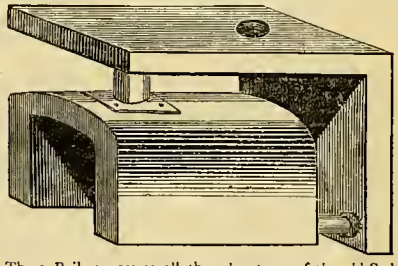
☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to
Messrs. DEARDS, Boiler Works, Harlow,
who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

AGRICULTURAL LOCOMOTIVES,
STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES, STEAM ROAD ROLLERS.
For Prices, Description, and Reports of Working, apply to the Manufacturers,
AVELING & PORTER,
ROCHESTER, KENT; 72, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes. High.	Wide.	Long.	To heat of 4-in. Pipe. Feet.	Price. £	s.	d.
20 in.	18 "	18 "	300	7	0	0
20 "	18 "	24 "	400	8	0	0
20 "	18 "	30 "	500	9	0	0
24 "	24 "	24 "	700	12	0	0
24 "	24 "	31 "	850	14	0	0
24 "	24 "	36 "	1,000	16	0	0
24 "	24 "	48 "	1,400	20	0	0
28 "	28 "	60 "	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

THE GARDENERS' CHRONICLE.

SCALE OF CHARGES FOR ADVERTISING.

Head line charged as two.

4 Lines	..	.. £0	3	0	15 Lines	..	.. £0	8	6
5 "	..	.. 0	3	6	16 "	..	.. 0	9	0
6 "	..	.. 0	4	0	17 "	..	.. 0	9	6
7 "	..	.. 0	4	6	18	..	.. 0	10	0
8 "	..	.. 0	5	0	19 "	..	.. 0	10	6
9 "	..	.. 0	5	6	20 "	..	.. 0	11	0
10 "	..	.. 0	6	0	21 "	..	.. 0	11	6
11 "	..	.. 0	6	6	22 "	..	.. 0	12	0
12 "	..	.. 0	7	0	23 "	..	.. 0	12	6
13 "	..	.. 0	7	6	24 "	..	.. 0	13	0
14 "	..	.. 0	8	0	25 "	..	.. 0	13	6

AND SIXPENCE FOR EVERY ADDITIONAL LINE.

If set across columns, the lowest charge will be 30*s.*

Page	..	..	..	£9	0 0
Half Page	..	..	..	5	0 0
Column	..	..	..	3	5 0

GARDENERS, AND OTHERS, WANTING PLACES,
26 words 1*s.* 6*d.*, and 6*d.* for every additional line (about 9 words) or part of a line.

THESE ADVERTISEMENTS MUST BE PREPAID.

BIRTHS, DEATHS and MARRIAGES, 5*s.* each insertion.

Advertisements for the current week MUST *reach the Office by Thursday noon.*

All Subscriptions Payable in Advance.

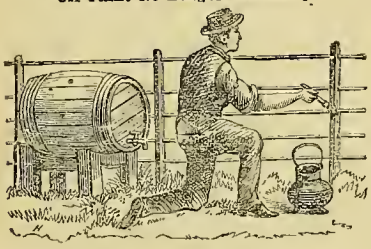
THE UNITED KINGDOM: 12 Months, £1 3*s.* 10*d.*; 6 Months, 11*s.* 11*d.*: 3 Months, 6*s.*

FOREIGN: 26*s.*, including Postage for 12 Months.

P.O.O. to be made payable at the King Street Post-office, W.C., to W. RICHARDS.

PUBLISHING OFFICE and OFFICE for ADVERTISEMENTS, 41, Wellington Street, Covent Garden, London, W.C.

Oil Paint No Longer Necessary.



HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL RECEIVED MAY 3, 1877.

"*The Ryleys, Alderly Edge, Manchester.*—Messrs. Hill & Smith.—Sirs,—For some 20 years I have used your 'Black Varnish,' and shall be glad if you will forward me another cask, *as I consider it the best thing known for the preservation of all outdoor work, either wood or iron,* that requires to be painted. —Yours respectfully, ALFRED LOWE, J.P."

Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained.

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

CARSONS' PAINT,

PATRONISED BY THE QUEEN,
H.R.H. THE PRINCE OF WALES,
H.R.H. THE DUKE OF EDINBURGH,
The British, Indian and Colonial Governments,
10,000 of the Nobility, Gentry, and Clergy,
Railway and Canal Companies, Collieries, Iron-masters, &c., &c.,
Is extensively used for all kinds of

OUTDOOR WORK.

It is especially applicable to
WOOD, IRON, BRICK, STONE & COMPO.
CAN BE LAID ON BY UNSKILLED LABOUR.
Sold in all Colours.
2 cwt. free to all Stations.
Prices, Patterns, and Testimonials Post Free.

WALTER CARSON & SONS,
LA BELLE SAUVAGE YARD,
LUDGATE HILL, LONDON, E.C.
And 21, BACHELOR'S WALK, DUBLIN.
NO AGENTS.

JOHN BOWMAN.
GREENHOUSES—every description, } From £10
VINERIES—all the latest improvements, } to £1000.
GLASSHOUSES—perfect ventilation,
HORTICULTURAL BUILDER and TIMBER MERCHANT,
West End Steam Joinery, Newcastle.

THE CHEAPEST and MOST DURABLE SHADING.—"Lasting for years."
MADE of PREPARED WOOL and HAIR.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied.
Patronised by Her Majesty the Queen, for Windsor Castle; Prince Christian, for Frogmore Gardens; the late Sir J. Paxton; the late A. F. Paxton, Esq.; the late S. Rucker, Esq., &c.
"FRIGI DOMO" CANVAS.

2 yards wide	..	..	..	1*s.* 10*d.*
3 yards wide	..	..	..	3*s.* 0*d.*
4 yards wide	..	..	..	3*s.* 10*d.*

"FRIGI DOMO" NETTING, 1*s.* 6*d.* per yard.
Can be had from all Florists and Seedsmen, and of
E. T. ARCHER, Brockley Road, Forest Hill, London, S.E.
*** Late of Cannon Street, City, E.C.

THE CULTIVATOR.—A Portuguese Monthly Agricultural Journal, which circulates in Portugal and her possessions, and in the Principal Towns of the Brazils.

This Paper offers an excellent medium for Advertisements of every description of industry and of every article of consumption in the countries and places above mentioned.

Advertising charges, 8*d.* per square inch, Translation included.

Ten per cent. Discount for six months; 20 per cent. Discount for twelve months, if paid in advance.

Address, the Editor of the *Cultivator*, St. Michael's, Azores.

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AND
NEW SOUTH WALES ADVERTISER.

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SHIPPING INTELLIGENCE.

The SYDNEY MAIL has a wide circulation throughout the Australian Colonies, New Zealand, Polynesia, &c. It contains a large amount of information on a great variety of subjects.

Subscription in advance, £1 per Annum.
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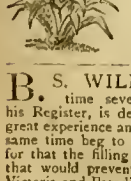

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Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Keosingtoo, S.W.

NOTICE.—FRUIT and FLORAL COMMITTEES' MEETINGS, on TUESDAY NEXT, August 21. in the Council Room, at 11 o'Clock. General Meeting, for Election of Fellows, at 3 o'Clock.

CRYSTAL PALACE.—TWENTY SECOND ANNUAL EXHIBITION of FRUIT and CUT FLOWERS, FRIDAY and SATURDAY, September 21 and 22. Schedules may be had on application to Secretary and Manager.

N.B. Rule 12 is cancelled.

ALEXANDRA PALACE.—The GREAT INTERNATIONAL FRUIT SHOW will be held on THURSDAY, FRIDAY and SATURDAY, September 13, 14 and 15, when Prizes to the amount of about THREE HUNDRED and FIFTY POUNDS will be offered for FRUIT, VEGETABLES, TABLE DECORATIONS, CUT FLOWERS, &c. Schedules are now ready, and may be obtained on application to JOHN A. McKENZIE.

1 and 2, Great Winchester Street Buildings, London, E.C.

GRAND FLOWER and FRUIT DECORATIONS in connection with the Floral Concerts at the Agricultural Hall.

ENTRIES CLOSE AUGUST 21. List of Prizes and full particulars can be had on application to

Agricultural Hall, London. J. W. WILSON, Manager.

AGRICULTURAL HALL, London.

GRAND FLORAL DECORATIONS and CONCERTS.

In schedule of Prizes in Classes 1, 2, and 3 read "Foliage Plants, or Flowers, or Fruit, or Mixed Collection."

F. W. WILSON, Manager.

BISHOP AUCKLAND FLOWER SHOW, AUGUST 31, 1877.

GREAT PLANT and GENERAL SHOW. GRAND AUTUMNAL ROSE SHOW. SPECIAL FRUIT SHOW.

ENTRIES CLOSE AUGUST 20. Schedules on application to J. C. HENDY, Secretary.

SANDY and DISTRICT FLORAL and HORTICULTURAL SOCIETY (Open Show).

The NINTH ANNUAL EXHIBITION of FLOWERS, FRUIT, VEGETABLES, CAGE BIRDS, and POULTRY, will be held at Sandy, Bedfordshire, on FRIDAY, August 31. Prizes, ONE HUNDRED AND EIGHTY POUNDS. Ten Stove and Greenhouse Plants, in Flower, 1st prize, £10; 2d, £6. Four Silver Cups for Poultry. Schedules on application to

E. T. LEEDS SMITH, Hon. Sec., Sandy.
W. GREEN, Assistant Sec., Sandy.

GREAT INTERNATIONAL FRUIT and FLOWER SHOW at CARLISLE, SEPTEMBER 6, 7 and 8.

The Committee beg to announce that Lady Musgrave, Eden Hall, has kindly increased her Prize for Table Decorations, and will now give a very handsome CUP, valued at TWENTY-FIVE POUNDS, to the successful Competitor—the TIME for ENTRIES being EXTENDED to August 30.

Sutton's Choice Strains of

FLORISTS' FLOWERS.

SUTTON'S CALCEOLARIA "PERFECTION," 3s. 6d. per packet.
SUTTON'S PRIZE PRIMULA, 2s. 6d. per packet.
SUTTON'S SUPERB CINERARIA, 2s. 6d. per packet.
SUTTON'S PRIZE CYCLAMEN, 2s. 6d. per packet.
Post-free.

The Queen's Seedsmen, Reading.

MINIER, NASH AND CO.'S CATALOGUE of HYACINTHS, and other DUTCH FLOWER ROOTS is now ready, and may be had on application. Friends who have not received a copy will please write.

60, Strand, London, W.C.

B. MALLER begs to announce that his stock of ERICA HYEMALIS and other varieties is very extensive, and in excellent condition this season. He has also a large quantity of ADIANTUM CUNEATUM, SOLANUMS, BOUVARDIAS, &c. The usual Trade Sale will be held in September. An inspection is respectfully solicited.

Burnt Ash Nursery, Lee, S.E.

DUTCH BULBS, &c.—The most complete Catalogue in the Trade, post-free for 3d., returned to purchasers.—GIBBS AND COMPANY, Seedsmen and Importers of Bulbs, Woodbridge, Suffolk.

Hyacinths, Tulips, Crocus, Gladioli, &c.

OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.

ANT. ROOZEN AND SON, Overveen, near Haarlem, Holland.

WATKINS AND SIMPSON'S Wholesale CATALOGUE of DUTCH and other BULBS is now ready and may be had on application. Any Customer not having received one by post will oblige us by letting us know.

1, Savoy Hill, Strand, London, W.C.

CAMELLIA TREES.—Six fine, 6 to 8 feet high, in pots. Apply,

Clift House, Bedminster, Bristol.

CAMELLIAS.—For Sale, in Two Lots, Double Whites, &c., 18 large Plants in pots; and AZALEAS, 18 Plants, best varieties.

Norwood Nursery, Beulah Hill, S.E.

ADOLPHE D'HAENE, NURSERYMAN, Ghent, Belgium (Successor to ALEXIS DALLIERE).

AZALEA INDICA, well set with buds, £5 per 100.
CAMELLIAS, well set with buds, from £6 to £8 per 100.
SPIRÆA JAPONICA (strong clumps for forcing), £1 per 100.

Large stock of young PALMS, prices and dimensions forwarded on application.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

GIANT ROCCA ONION.—The largest and best in cultivation for autumn sowing; frequently weighs from 2 to 3lb. each. Sow at once. Seed, with complete cultural instructions, 1s. per ounce, post-free, 1s. 2d.

DANIELS BROS., Seedsmen to the Prince of Wales, Norwich.

To the Trade.

NEW TURNIP SEEDS for PRESENT SOWING.

H. AND F. SHARPE have just harvested their new crop of WHITE-FLESHED TURNIP SEEDS, and are prepared to make special offers to the Trade at very moderate prices. The Seed is ready for immediate delivery.—Seed Growing Establishment, Wisbech.

Daniels' Defiance

GIANT EARLY MARROW CABBAGE.—The earliest, sweetest, largest and best Cabbage in cultivation. Sow at once. Seed, with cultural directions, 1s. 6d. per packet, post-free 1s. 8d.

DANIELS BROS., The Queen's Seedsmen, Norwich.

PRICKLY COMFREY (SYMPHYTUM ASPERRIMUM). Whole Roots purchased by

THOS. CHRISTY AND CO., 155, Fenchurch Street, London.

WANTED, Seedling PRIMULA SINENSIS FIMBRIATA, red and white; also Seedling CINERARIA, ready for potting off; a large quantity of GERANIUM, Vesuvius, cuttings. State price and particulars to J. COWAN, The Vineyard, Garston, Liverpool.

To Gentlemen's Gardeners and Others.

WANTED GERANIUM CUTTINGS—Pollock, Vesuvius, Gem, Master Christine and Bronze. Large quantity. State price per 1000.

GEO. COX, 114, Loughborough Road, Brixton, S.W.

WANTED, Young Ripe Wood of MARECHAL NIEL ROSE, for Cuttings. Particulars to Mr. MARRIOTT, Mellish Road, Walsall.

WANTED, to PURCHASE, ROMAN HYACINTHS, LILY OF THE VALLEY (single crowns), and HOTTIA SPIRÆA, and any good winter-flowering thing for forcing. With price, terms, &c., to

W. J., care of F. Wright, 3, Chobham Villas, Chobham Road, Stratford, Essex, E.

NEW REGAL PELARGONIUM, "PRINCE OF WALES."

Much brighter in colour, larger in truss, and very superior in every way to Pelargonium "Captain Raikes."

Price One Guinea each.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers AZALEA INDICA, MOLLIS and PONTICA, CAMELLIAS, SPIRÆA JAPONICA, PALMS and DRACÆNAS. CATALOGUES free on application.

PINES.—A very fine Lot of Fruiting and Succession PINES, including Smooth Cayenne, Queen's, Baroness Rothschild, Black Jamaica, &c. To be sold cheap. Apply for full particulars as to prices, &c., to

CHARLES TURNER, The Royal Nurseries, Slough.

ORCHIDS.—Over 50 fine established Plants in flowering condition. Cattleyas, Dendrobes, Oncids, &c. To be Sold for £12; worth more than treble. Owner giving up their culture.

B. K., Tregeare, Park Hill Road, Croydon.

CALCEOLARIAS, PRIMULAS and CINERARIA SEEDLINGS.—Splendid Plants. A half-penny card will bring you full and valuable particulars, together with prices per dozen, 100, or 1000, either by post, or established in sixties. H. CANNELL, Swanley, Kent.

Herbaceous Calceolaria.

WOOD AND INGRAM offer new SEED of their selected and improved strain of the above, which has hitherto given universal satisfaction, in 5s., 2s. 6d., and 1s. 6d. packets. Trade price on application.

The Nurseries, Huntingdoo.

PRIMULA SINENSIS FIMBRIATA, Red and White, of a splendid strain; a few hundreds to be Disposed of. Strong plants, 7s. 6d.; larger, in 60's, ready for 48's, 12s. per 100.

The Nursery, 30, High Street, Clapham, S.W.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.

Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

DELPHINUM SMITHII.—New Seed, just harvested, of this sterling novelty. If sown now will make strong plants for blooming next spring. In packets, 6d. and 1s. each, post free. Price to the Trade on application.

T. SMITH, Seed Grower, Long Wittenham, Abingdon.

PILOCEREUS SENILIS.—Fine healthy plants, covered with pure white hairs, 4 inches high, 2½ inches diameter, at 7s. 6d. each; 5 to 6 inches high, 2½ inches diameter, 10s.; 7 to 10 inches high, 2½ to 3 inches diameter, 15s. The usual allowance to the Trade.

FRIEDRICH ADOLPH HAAGE, Jun., Nurseryman and Seedsman, Erfurt, Prussia.

To the Trade.

ROSE BLOOMS. Price until further notice 8s. per 100, at

CRANSTON'S NURSERIES, King's Acre, Hereford.

MR. A. PETITHUGUENIN, NÉGOCIANT, à Genlis, France, Côte d'Or, demande à acheter des GRAINES de SAINFOIN à la COMMISSION.

HOLLYHOCKS.—Strong Seedlings, raised from a collection of the very finest named sorts, 25s. per 100, cash.

J. JACKSON, Nursery, Kidderminster.

VINES.—Splendid Planting and Fruiting Canes, of leading varieties, perfectly ripened without bottom heat. Lists and Prices on application to

JAMES DICKSON AND SONS, Newton Nurseries, Chester.

GRAPE VINES, fruiting, in pots, 7s. 6d. to 10s. 6d. each; FIGS, fruiting, in pots, 3s. 6d. to 5s. each; PEACHES, NECTARINES and APRICOTS, fruiting, in pots, 7s. 6d. to 10s. 6d. each. Are now ready to send out by

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

A Heavy Crop of Strawberries Next Season.

H. CANNELL begs to inform the Public that he can now supply very fine large strong Plants in any quantities, the Four best early, main, and late bearing varieties in cultivation, and if planted at once, the greatest satisfaction must follow. See CATALOGUE, sent post-free. Special Prices per 1000 or 10,000.

Swanley, Kent.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mare.

Price List on application.

SALE BY AUCTION.

Choice Imported and Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King's Street, Covent Garden, W.C., on TUESDAY, August 21, at half-past 12 o'Clock precisely, a quantity of fine Plants, just received, of MESOSPINIDIUM VULCANICUM, from Ecuador, and ODONTOGLOSSUMS from New Grenada, also 200 Established Plants of DENDROBIUM BENSONI, 200 ODONTOGLOSSUM CIRRHOSUM, 100 ONCIDIUM VARICOSUM, good plants of LŒLIA DAYANUM in bud, CATTLEYA MAXIMA, MESOSPINIDIUM SANQUINEUM, ODONTOGLOSSUM HALLI, PHALÆNOPSIS SCHILLERIANA, P. AMABILIS, P. LUDDEMANNIANA, SACCOLABIUMS, &c. At the same time will be Sold ORCHIDS from Burmah, imported a few weeks since, and growing freely, consisting of Dendrobium Wardianum, D. Devonianum, Dendrobium sent as Suavissimum Pleiones, Cœlogyne, Cypripedium Boxalli, Vandas.

On view the morning of Sale, and Catalogues had.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, August 22, at half-past 12 o'Clock precisely, a consignment of twenty-five cases of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS, just arrived from well-known Farms in Holland, in large and small lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

Arboretum Street, Nottingham.
To FLORISTS and OTHERS.

J. M. POTT has been instructed by the Executors of the late James Hartshorn, Esq., to SELL by AUCTION, without reserve, on WEDNESDAY, August 22, on the premises in Arboretum Street, Nottingham, at 12 o'Clock precisely, a large and valuable COLLECTION of CONSERVATORY and GREENHOUSE PLANTS, consisting of Pearson's best varieties of Geraniums, Abutilons, Amaryllis, Fuchsias, Cinerarias, fine specimens of Foliage Plants, Camellias, well-grown Azaleas, Rhododendrons, rare and beautiful Palms and Ferns, including Five large Tree Ferns; Crotons, Dracænas, Ericas, Heaths, Coleus, Gloxineas, two Araucarias excelsa, Yuccas, &c., all healthy and in excellent condition.

Catalogues may be had of the Auctioneer, 23, Cockspur Street, London, W.; Eldon Chambers, Nottingham; and at the Place of Sale. The Plants may be viewed on Tuesday, the 21st, from 12 to 4.

FOR IMMEDIATE DISPOSAL, a snug, SMALL FLORIST and JOBBING GARDENING BUSINESS. Price only £40. Excellent opportunity for a persevering Man. Advertiser going abroad. Goodwill and business complete. Correspondents will be answered.
C. BUSBY, Florist, 85, Westbourne Park Road, Bayswater, W.

To Florists, &c.

TO BE LET, on Lease, 6 miles from Covent Garden, about THREE ACRES of LAND, with House, Greenhouse, Frames, Stabling, &c. Apply,
J. SMEETON, 62, Brixton Road, S.W.

Midway between Croydon and Streatham Common.

TO BE LET, a charmingly situate VILLA RESIDENCE, standing in the centre of about 2 Acres of Grounds laid out in Flower and Kitchen Gardens and Croquet Lawn, finely timbered; the House contains three Reception Rooms, six Bedrooms, Bath Room, and usual Offices. There are three Greenhouses, Stabling for Three Horses, Coach House, Man's Room, &c. Orders to view to be obtained of
Mr. NICKERSON, Auctioneer and Surveyor, 121, Cheapside, London, E.C.

SOLANUMS.—Fine market strain, extra strong, clean grown Plants in full flower, 3s. to 5s. per dozen. Packing extra. Cash.
Q. D. GODWIN, Angel Road Nursery, Edmonton.

The above NURSERY FOR SALE, Lease, Stock, Greenhouses, Fixtures, &c., cheap. If not Sold on or before the 20th proximo, the whole concern will be Sold by Public Auction, without reserve, due notice of which will be given in this paper.

THE
IMPROVEMENT OF LANDED ESTATES,
DRAINAGE, ENCLOSING, CLEARING, and the ERECTION of FARM BUILDINGS and COTTAGES.

The Land, Loan and Enfranchisement Co.
(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

ISLE of THANET FLORAL and HORTICULTURAL ASSOCIATION, and COTTAGERS' GARDENING SOCIETY.

The TWENTY-SECOND ANNUAL EXHIBITION will take place at Dane Court, St. Peter's, Thanet, on WEDNESDAY, August 29, by kind permission of Latham Tomlin, Esq., in his picturesque grounds. Intending Exhibitors are particularly requested to notify (at least Four clear days before the Day of Show) to the Secretaries the number of articles they intend to exhibit, and, if possible, what space will be required, as the rules of the Society this year will be strictly carried out. Schedules can be forwarded on application to the Secretary, HENRY AUSTEN, Jun., Fairfield, St. Peter's. The Exhibition will be opened to the Public and Subscribers at 2 P.M. By kind permission of Captain-Commandant Dorman the Band of the 8th Cinque Ports Artillery Volunteers will perform a choice selection of music at the above *fete*.

N.B.—This Annual Exhibition is now open to all England.
CHARLES DOBSON SMITH, Hon. Sec.
Margate, August 1.

BANBURY HORTICULTURAL SOCIETY.—SEPTEMBER 5 and 6.

SCHEDULE OF OPEN PRIZES.
No Entrance Fee.

	1st Prize.	2d Prize.
1. Twelve STOVE or GREENHOUSE PLANTS in bloom	£10 0 0	£5 0 0
2. Six STOVE or GREENHOUSE PLANTS, in bloom or ornamental	5 0 0	3 0 0
3. Twelve ORNAMENTAL FOLIAGE PLANTS	3 0 0	2 0 0
4. COLLECTION of FRUIT, not less than 9 varieties	3 0 0	2 0 0
5. GRAPES, Black, best 3 bunches ..	2 0 0	1 0 0
6. GRAPES, White, best 3 bunches ..	2 0 0	1 0 0
7. Forty-eight ROSES, not less than 24 varieties	2 0 0	1 0 0
8. GLADIOLUS, single spikes, 12 vars.	1 0 0	0 10 0

The Band of the Royal Marines will play both days, and the ANNUAL SHOW of the OXFORDSHIRE AGRICULTURAL SOCIETY will be held at the same time. Schedules containing full particulars will be forwarded to exhibitors on application to E. JARVIS HARTLEY, Sec.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY.
AUTUMN SHOW, SEPTEMBER 12.

No. 3 of Prize List—8 Bunches of GRAPES, sorts, 1st prize, £6; 2d prize, £4. These prizes are open to all comers. Prize Lists now ready, free. Apply to
33, South Bridge, Edinburgh. WILLIAM YOUNG.

NOTICE.—The Prizes of £5, £2, and £1, offered by Mr. J. R. PEARSON, of Chilwell, for the best SINGLE BUNCH of his NEW GRAPE GOLDEN QUEEN, will be competed for at the CRYSTAL PALACE FRUIT and FLOWER SHOW, September 21 and 22. The Awards will be made by the Crystal Palace Judges.

We propose to OFFER PRIZES to the SAME AMOUNT NEXT YEAR, for the best Bunch of MRS. PEARSON.

Garden Fruit Tree Culture.

PEACHES and NECTARINES.—Good crops are now ripening in the Orchard Houses, and an early inspection is invited.
THOMAS RIVERS AND SON, Nurseries, Sawbridgworth, Herts.

TO BE SOLD (having outgrown the house), Two Fine Specimen ORANGE TREES in Fruit. About 7 feet in height. Apply,
Mrs. ROBERT COE, Wood Street, High Barnet, Herts.

To the Trade.

HYMENOPHYLLUM TUNBRIDGENSIS, nice tufts, in 4-inch pots, 18s. per dozen.
STATICE HALFORDII, 4-inch pots, 9s. per dozen.
" ARBORESCENS, 4-inch pots, 9s. per dozen.
DRACÆNA INDIVISA, nice young plants, 9s. per dozen.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

To the Trade.

NEW HYDRANGEA "THOMAS HOGG."—Nice plants, established in 3-inch pots, 12s. per dozen; do., from cutting pots, by post, 9s. per dozen.
STOVE and GREENHOUSE PLANTS, 100 choice assortments of, for 35s.
SNOWFLAKE POTATOS, about 50 bushels.
W. GROVE, St. Owen's Nursery, Hereford.

Hyacinths, Tulips, and other Spring Flowers.

WILLIAM CUTBUSH AND SON, Highgate, London, N., and Barnet, Herts.

The Descriptive Priced CATALOGUE of HYACINTHS, TULIPS, and other SPRING FLOWERS, for the present Season, has been posted to all our Clients; if not received, an intimation to that effect will much oblige, when another copy shall be forwarded.

Their general PLANT CATALOGUE is also ready, and may be had on application.—August 14.

GEO. WHEELER, NURSERYMAN, SEEDSMAN and FLORIST, Warminster, Wilts.

CALCEOLARIA.—Geo. Wheeler's Superb Strain, being in habit very compact, stout, and dwarf, of great variety in colour, and beautifully marked. Is inferior to none. Retail packets, 2s. 6d., 1s. 6d. and 1s. each. Trade packets, 21s. to 5s. each.

G. W. distributed his first raised hybrid Calceolaria in 1830, at 21s. each in trade; and in 1832 supplied many sorts of 6 plants each to the trade at 42s. the set.

IMPERIAL CABBAGE.—G. Wheeler's Improved Genuine, after a test of about half a century, still maintains its character of first-rate Early. A limited quantity still on hand at the rate of 1s. 2d. per ounce.

Prepaid Orders for the above will be sent post-free.

Hyacinths, Tulips, Crocus, &c.

LILIUM GIGANTEUM SEED.

C. G. VAN TUBERGEN, JUN., Haarlem, Holland.—Wholesale CATALOGUE of DUTCH BULBS, now ready, will be sent post-free on application.

G. G. VAN T. has a quantity of fine fresh SEED of the magnificent LILIUM GIGANTEUM, which he now offers to the Trade at the following low prices, viz.:—In Packets of 100 Seeds, 1s. 3d.; 500 Seeds, 5s.; 1000 Seeds, 8s. 4d. Orders may be sent to his Agents,

Messrs R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C., who will also forward Catalogues on application.

FOR SALE, large Specimen Camellias in Tubs, 6 to 9 feet high, Alba pleno, Fimbriata imbricata, and Lady Hulme Blush; also large plants of the White Aralia Fieldingii, a quantity of specimen Plants of Maidenhair Fern, and fifty Grape Vines, best sorts; also large Pot plants of Maréchal Neil, and other Tea Roses. A small compact Nursery to be disposed of, with Dwelling; seventeen years lease unexpired. Appoint interview by letter to
W. HOWITT, Ilford, Essex.

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

J. MALLER has the following WINTER and SPRING BLOOMING PLANTS to offer in 48 and 32 pots, well set with buds:—

6000 Bouvardia	2000 Primula
4000 Poinsettia	2000 Dracæna
4000 Cyclamen	1000 Palms
8000 Solanum	40,000 Ericas
1000 Double Primula	1000 Clematis
2000 Tree Carnations	1000 Acacia armata
8000 Genista	1000 Grevillea robusta
2000 Adiantum cuneatum	1000 Acacia lopantha
4000 Pelargoniums	1000 Ficus elastica
6000 Cineraria	

An inspection respectfully invited. Price on application to
Brunswick Nursery, Tottenham.
Adjoining White Hart Lane Station, Great Eastern Railway. Trains every fifteen minutes from Liverpool Street.
The usual Annual Sale about the middle of September.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.
Priced CATALOGUE sent post-free.
Address, HENRY SHEPHERD, Manager.

Bedding Violas and Pansies.

DICKSONS AND CO. invite inspection of their celebrated BEDDING VIOLAS and PANSIES, which for some months have been, and are now, in great beauty. The collection in their Pilrig Park Nursery numbers upwards of 130 sorts, so that intending purchasers have an opportunity rarely offered of making the best possible selection. Blooms can be sent by post on receipt of six stamps.

D. & Co. also call attention to their SEEDLING FANCY PANSIES, which are remarkably fine this season.
Seed Warehouse, 1, Waterloo Place, Edinburgh.
(Established upwards of a Century.)

Strawberries.

CHARLES TURNER recommends the following for a continuous supply of fine flavoured fruit. Prepared Runners are now ready.

Those best adapted for forcing are marked with an asterisk.

Aromatic	*Auguste Nicaise
Beauty	British Queen
Dr. Hogg	Duc de Magenta
Eleanor	Elton Pine
Frogmore Late Pine	James Veitch
*Keens' Seedling	*La Grosse Sucrée
Lucas	*President
Royalty	*Sir C. Napier
Sir Jos. Paxton	*Vicomtesse H. de Thury

Descriptive CATALOGUE on application.
The Royal Nurseries, Slough.

To the Trade Only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland.—The WHOLESALE CATALOGUE for 1877-78, first part (327A) is now ready, and may be had free on prepaid application by Nurserymen, Florists, and Seedsmen. The Catalogue contains complete collections of Hyacinths, Tulips, Crocus, Narcissus, Fritillaria, Anemones, Ranunculus, Lilies, Iris, Gladiolus, Pæonies, and a selection of miscellaneous bulbous and tuberous plants. It is perhaps the most complete list ever published of these articles.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

ROSES.
CRANSTON'S NURSERIES
KING'S ACRE, HEREFORD.

(ESTABLISHED 1785.)

THE LARGEST ROSE GARDENS IN ENGLAND.

MESSRS. CRANSTON & CO.

Beg to announce that their ROSES (extending over many acres) are now in full bloom.

As considerable time will be required to inspect the whole of their Collection, Visitors to the Nurseries should take the morning trains arriving at Barr's Court, or Barton Stations, 2½ miles from the Nurseries, where conveyances are to be had.

Rose Blooms for Decoration supplied.

ORCHIDS.

THE NEW PLANT and BULB COMPANY

Beg to announce the publication of their

CATALOGUE (No. 36),

Containing a List of Valuable Orchids, at very Low Prices.

Sent free by post on application.

LION WALK, COLCHESTER.

BULBS OF ALL KINDS.

THE NEW PLANT and BULB COMPANY

Beg to call the attention of Purchasers of Bulbs to their

AUTUMN CATALOGUE,

Just Published.

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NEW STRAWBERRIES.

JAMES VEITCH & SONS

Beg to announce that they are now prepared to execute Orders for the two following Strawberries, which are offered by them for the first time, and which they can with confidence recommend :—

LOXFORD HALL SEEDLING.

Fruit large and handsome, conical, occasionally flattened and Cockscomb shaped, seeds prominent, skin bright crimson, flesh firm, juicy, and exquisitely flavoured. This is a seedling raised by Mr. Douglas, of Loxford Hall, from a cross between British Queen and La Constante, and retains the rich flavour of the former with the sturdy robust growth and fertility of the latter. Awarded First Prizes at the Metropolitan Exhibitions.

9s. per dozen; 60s. per 100.

PIONEER (Laxton).

Fruit medium-sized, obovate and conical, seeds rather prominent, very dark red, flesh firm, bright red, of a fine brisk rich flavour; plant of very vigorous growth, a great cropper, and very early. Received a First-class Certificate from the Royal Horticultural Society.

9s. per dozen; 60s. per 100.

All other kinds also ready in small pots, and runners from open ground.

DESCRIPTIVE PRICE LIST ON APPLICATION.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON,

THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10s. 6d. each.

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

Good Flowering Plants, in Pots 7s. 6d. each.

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.

SUTTON'S

CHOICE VEGETABLE SEEDS,

FOR PRESENT SOWING.

CABBAGE.

Sutton's Imperial.

The best Cabbage for spring use. If sown the first or second week in July it will produce beautiful Cabbages for early spring use. Heads cone-shaped, very large, firm, and of mild flavour.

9d. per ounce.

ALSO

	Per oz.—s. d.
Enfield Market	0 8
Nonpareil	0 6
Early Dwarf York	0 6
Red Pickling	1 0

CAULIFLOWER.

Sutton's King of the Cauliflowers.

May be sown in August, for transplanting in March and April for the first main crop.

Price, 1s. 6d. per packet.

ONION.—New Queen.

A valuable, new, and distinct variety, being the earliest of all Onions. Sown in March it comes to maturity in July, or sown in July it is fit for use the following autumn. It is of beautiful mild flavour, and strongly recommended.

Per packet, 1s. 6d.

The following varieties, sown in July and August, will come to a very large size during the following Spring and Summer:—

	Per oz.—s. d.
NEW GIANT ROCCA (the largest variety)	1 0
LARGE EARLY RED ITALIAN	1 0
LARGE EARLY WHITE ITALIAN	1 0
GIANT LATE RED ITALIAN	1 0
GIANT LATE WHITE ITALIAN	1 0

VEGETABLE SEEDS up to 12 ounces in weight sent by post with a charge of 4d. for the 12 ounces, or 20s. worth free to any Railway Station in England and Wales.

SUTTON & SONS,

THE QUEEN'S SEEDSMEN, READING.

HARDY ORNAMENTAL TREES IN GREAT VARIETY.

EXTENSIVE COLLECTIONS,

Showing variation in colour, of deepest green and purple, and brightest gold and silver, assuming habits pyramidal, spreading, and weeping; leaves entire, or cut and divided like Ferns, spotted, or variegated—planted in groups to show contrast of form and colour—now in great beauty at THE ARBORETUM, five minutes' walk from Isleworth Station.

CHAS. LEE & SON, Proprietors.

SEEDSMEN BY SPECIAL WARRANT.

GRASS SEEDS

CARRIAGE FREE

SUTTONS'

ROYAL BERKS SEED ESTABLISHMENT.

READING.

FOR ALL SOILS

PRICED LISTS POST FREE.

THE "ELIXIR,"

OR

BUFFALO HORN MANURE.

JOHN WILLS, F.R.H.S.,

Is now prepared to supply the above Manure, in large and small quantities, at £44 per ton.

There can be no doubt as to the "Elixir" being the very best Manure in present use for general purposes. It is used largely in the Vineyards of France and Italy.

J. WILLS has proved its efficiency on many occasions, at each of his own Establishments, and beyond making these remarks, will say nothing more in its favour, but leave the public to judge for themselves, as to its value, from the following

TESTIMONIALS:

THE "ELIXIR," or BUFFALO HORN MANURE.

"*Royal Horticultural Gardens, Chiswick, August* 14, 1877.

"*Dear Sir,—You ask me my opinion of the Buffalo Horn Dust. I give it you. Early in* 1876 *Messrs. Taylor & Co., of Clapham, sent a good sample of it here for trial as manure. It has been tried and tested in various ways—in comparison with ordinary stable manure, guano, other patent manures, &c., with most satisfactory results. We have used it, mixed with soil, for potting plants, such as Vines, Peaches, Cucumbers, Fuchsias, Pelargoniums and various others, and as top-dressings in the same manuer. Also in the formation of a new Vine border last autumn.*

"*In each and all cases, the deep green hue which the foliage soon assumes, and the great vigour which is imparted, is very striking and notable. Its light, fibry componency makes it most suitable for mixing with the soil for potting, and when used as top-dressing the roots are soon seen to permeate the entire mass. In the case of the orchard-house trees and Vines so treated the effects are astonishing.*

"*No manure that we have ever used here has produced results so decided, so apparent and satisfactory.*

"*I therefore consider the Buffalo Horn Dust to be the most efficient of manures, and intend to use it largely.*

"*I am, dear Sir, yours very truly,*

"*Mr. JOHN WILLS.*" "*A. F BARRON.*"

"The Gardens, Heckfield, Winchfield.
June 29, 1877.

"DEAR SIR,—In reply to your enquiry as to what opinion I have formed of the *Horn Manure* I bought of you some few months ago I am able to report, *most favourable*. I have used it principally for Pines, Vines, and Strawberries in Pots, and in each case its effects were of the first order. I am so convinced of its superiority over other Bone Manures for Vines that I have used *this only* in a new border I had to make, and the Vines are making the most magnificent growth. I shall be happy more fully to report results in due course.—I remain, dear Sir, very truly yours, W. WILDSMITH, Gardener to VISCOUNT EVERSLEIGH."

"J. WILLS, Esq."

"June 30, 1877.

"DEAR SIR,—I have the pleasure to inform you I have tried your Horn Manure, and the results are most satisfactory. I have it mixed in the soil with such things as Fuchsias, Pelargoniums, Geraniums, Gloxineas, Humea elegans, Neapolitan Violets, and in each case it could be seen at a glance, amongst others that had not any of the mixture, by their stronger and robust habit, a much more green and healthier appearance.—Yours very truly, F. RUTLAND, Gardener to the DUKE of RICHMOND and GORDON."

"Mr. WILLS."

"The Gardens, Syon House, Brentford,
May 16, 1877.

"DEAR SIR,—I consider your manure an excellent fertiliser; it is clean to use, and, I believe, will be lasting in its effects.—Yours faithfully, JOHN WOODBRIDGE, Gardener to the DUKE OF NORTHUMBERLAND."

"Mr. J. WILLS."

"Victoria and Paradise Nurseries, Upper Holloway,
London, N., July 6, 1877.

"DEAR SIR,—I have tried your Horn Manure on Dracænas, Crotons, Ixoras, Grape Vines, and consider it one of the best Manures we have used.—Yours faithfully,

"Mr. J. WILLS." "B. S. WILLIAMS."

"The Gardens, Crewe Hall, June 2, 1877.

"DEAR SIR,—I have tried the New Manure you were so kind as to send me on Fuchsias, Pelargoniums, Marantas, Caladiums, Anthuriums, and other Stove and Greenhouse Plants; and found its effects to be most beneficial wherever it was used. I consider it to be a most excellent Manure, and if it could be supplied in quantity at a reasonable price, would (I have no doubt) be a valuable Manure for Vine Borders, as well as Fruit Trees and Pot Vines, Pines, &c.—I am, dear Sir, yours very truly, WM. WHITAKER, Gardener to LORD CREWE."

"Mr. WILLS."

"Castle Gardens, Arundel, July 20, 1877.

"MY DEAR SIR,—I don't think I could do better than enclose you the report I had from my foreman about the Manure you kindly sent me. I must tell you that I use a good deal of night soil mixed with the best loam for two years. You should see our Strawberries and French Beans grown in it.—Yours faithfully, JOHN WILSON, Gardener to the DUKE OF NORFOLK."

"Mr. WILLS."

"Balsams, scarlet Geraniums, Fuchsias, Crotons, Chrysanthemums, and Coleus made a rapid and vigorous growth, combined with healthy foliage; the Geraniums having a marked improvement in the flowers.—July 20, 1877."

"Cricket Gardens, July 4, 1877.

"DEAR SIR,—I feel great pleasure in sending to you the result of my experience with the Manure you sent to me for trial. I selected four plants, equal in size, of the following sorts:—Geraniums, Fuchsias, French Beans, Cucumber, Balsams, Cockscomb, &c.; two of each sort I potted with a mixture of your Manure, and two of each sort I potted in the usual good soil generally used for such plants. It was quite wonderful to see the difference in the habit and growth of the plants where the Manure was used to the other. I have no hesitation in saying it is by far the best Manure I have ever tried for plants in pots.—I remain, dear Sir, yours faithfully, D. D. DAVIES, Gardener to LORD BRIDPORT."

"Mr. WILLS."

"The Gardens, Coombe Lane, Kingston-on-Thames,
June 29, 1877.

"DEAR SIR,—In answer to your enquiry as to the Horn Manure, I beg to inform you that I applied it to some early forced Muscat Vines, that have their roots confined in a very narrow inside border, and the result has been a magnificent crop of Fruit, or what appears to a casual observer perfectly exhausted canes.—I am, dear Sir, yours very truly, WM. DENNING, Gardener to LORD LONDESBOROUGH."

"The Gardens, Harwood House, August 2, 1877.

"DEAR SIR,—I have had great pleasure in giving the sample of your Horn Manure a fair trial. Having potted a many varieties of Greenhouse and other Plants with the quantity you advised me to do, I have noticed them doing well, foliage healthy and green. I don't hesitate the least in saying, the Manure will become a great acquisition to gardeners when better known.—I am, Sir, yours respectfully, JAS. FOWLER, Gardener to the EARL OF HAREWOOD."

"Mr. WILLS."

"Leyton, Essex, June 30, 1877.

"DEAR SIR,—In reply to your letter concerning the Horn Shavings you were kind enough to send me for a trial, I found a marked effect on Fuchsias (the only plants that I could try it on, as the others were all shifted). I believe it will prove a powerful Manure, as the quantity I used was only one-eightieth.—With kind regards, I remain, yours very truly,

"Mr. J. WILLS." "JAMES SWEET."

"Mentmore, Leighton Buzzard, July 3, 1877.

"DEAR SIR,—I consider your Horn Manure a very valuable material for mixing with soils for potting purposes. I have used it for various kinds of plants, and the effect is very apparent in the dark green of the foliage and robust health of the plants, which were potted in soil mixed with your Horn Manure.—I am, dear Sir, yours truly, J. SMITH, Gardener to BARONESS ROTHSCHILD."

"To Mr. WILLS."

J. WILLS BEGS TO SAY THAT HE HOLDS THE ENTIRE STOCK OF THIS MANURE.

JOHN WILLS, F.R.H.S.,

(BY SPECIAL APPOINTMENT NURSERYMAN, FLORIST, AND BOUQUETIST TO HER MAJESTY AND THE ROYAL FAMILY),

ROYAL EXOTIC NURSERY AND WINTER GARDEN,

ONSLOW CRESCENT, SOUTH KENSINGTON, LONDON, S.W.

BOULTON & PAUL,

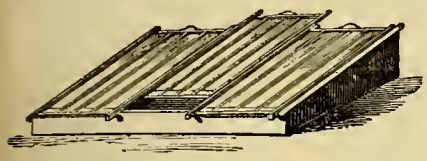
HORTICULTURAL BUILDERS,

NORWICH.

No. 75.—MELON FRAMES and FORCING FRAMES.

The largest Stock in the Kingdom, ready to be despatched on receipt of order.

These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen; 24 in. high at the back, 13 in. high in front; painted three coats of good oil colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in with putty—the best method of glazing known, and adopted by the most eminent Builders and leading Nurserymen (see *The Garden* for January 13, 1877, p. 30). Iron handles to each light, and an iron strengthening bar across. Each light is 6 ft. by 4 ft., and 2 in. thick.



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	Length.	Width.	£ s. d.
1-light frame	4 feet ..	6 feet	1 17 6
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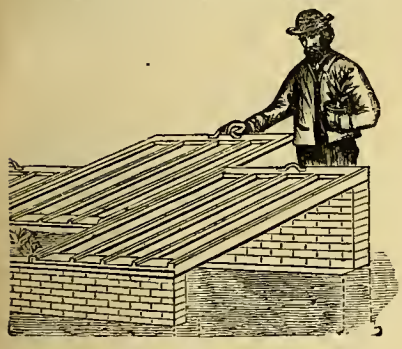
3 ,, ,, ...	12 feet ..	6 feet	4 17 6
4 ,, ,, ...	16 feet ..	6 feet	6 7 6
5 ,, ,, ...	20 feet ..	6 feet	7 17 6
6 ,, ,, ...	24 feet ..	6 feet	9 7 6

Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh, on Orders of 40*s.* and upwards.

PIT LIGHTS and SILLS for BRICK WALLS on EARTH BANKS.



PIT LIGHTS AND FRAMES.

Complete for fixing on Brickwork, made in two sizes of lights to work 6 feet by 4 feet 2 inches thick, 7 feet 6 inches by 4 feet 2½ inches thick, lights glazed with 21-oz. British sheet glass, painted four times, sills 4½ inches by 3 inches, with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

CASH PRICES.

Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.

SILLS or FRAMES.

	£ s. d.
With 2 lights, 6 feet by 4 feet, 8 feet long by 6 feet wide	2 16 0
With 3 lights, 6 feet by 4 feet, 12 feet long by 6 feet wide	4 3 0
With 4 lights, 6 feet by 4 feet, 16 feet long by 6 feet wide	5 10 0
With 2 lights, 7 feet 6 inches by 4 feet, 8 feet long by 7 feet 6 inches wide	3 10 0
With 3 lights, 7 feet 6 inches by 4 feet, 12 feet long by 7 feet 6 inches wide	5 2 0
With 4 lights, 7 feet 6 inches by 4 feet, 16 feet long by 7 feet 6 inches wide	6 14 0

Longer lengths at cheaper rates.

PRICES ON APPLICATION.

Breakage seldom occurs. Should any glass be broken, we will send sufficient to replace it, carriage free.

Catalogue of every description of Horticultural Building, post-free, 24 stamps.

PLANT PRESERVER LISTS. MELON FRAME LISTS. GREENHOUSE LISTS, POST FREE.

BOULTON & PAUL,
HORTICULTURAL BUILDERS, NORWICH.

B. S. WILLIAMS'

NEW AND CHOICE

FLOWER SEEDS FOR 1877.

Per packet—*s. d.*

CALCEOLARIA, Williams' Superb Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Capt. Cosens, *Aberystwith, May* 13, 1877.

"The Calceolarias, from the seed Capt. Cosens had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."

PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

From Mr. F. Denning, *Gardener to* J. Fenton, Esq., *Yardsley, February* 26, 1877.

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."

CINERARIA, Weatherill's Extra Choice Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and 1 6

From Mr. J. West, *Gardener, Cheadon Park, May* 21, 1877.

"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

CYCLAMEN PERSICUM GIGANTEUM (new) .. .. 2*s.* 6*d.* and 5 0

Do., do., do., Williams' Superb Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.* and 1 6

VICTORIA and PARADISE NURSERIES, Upper Holloway, London, N.

SATURDAY, AUGUST 18, 1877.

STONEHENGE.

You cross the thin-skinned Wiltshire hills from Salisbury, perhaps, and past the mount and fortress of Old Sarum, and find yourself on Salisbury Plain—a wide expanse of turf, patched here and there of late years with ploughed fields. Presently you see in the distance a group of objects, larger and browner than sheep, and motionless upon the plain. These are the stones of the pre-Roman temple of Stonehenge—the egg, as Emerson very aptly said, from which all our English churches have proceeded.

This first of British temples stands, in impressive solitude, as mysterious as Troy, without recorded history, and at present without a Homer to invent for it a story. Within a circle of 3 miles about Stonehenge there are 160 mounds or barrows, green bosses on the plain. The other objects round about may be a haystack, and perhaps a shepherd every mile or two, tending his sheep. There are now ninety-four stones, diminished from the supposed 160 of the original temple. We know little more of this surprising monument than sight and surmise have revealed. It is composed of several broken circles. The outer circle, when complete, appears to have been built on the simple plan of uprights connected by a lintal. Its remaining stones are all of the hard, native sandstone, called grey wether, from the Marlborough Downs. It has been said that of all these blocks the sacrificial stone is alone capable of resisting fire. Those of the now broken and much confused inner circle, are of igneous rock, generally syenite; and there are three stones of the ruined inner ellipse of greenstone, and one of hard siliceous schist, all of which may have been obtained in Pembrokeshire and Carnarvonshire; but how did the barbarians of 2000 years ago, or more, manage to transport them? The question occurred to Sir Philip Sydney, when writing his *Arcadia* at Wilton House. He says in simple verse:—

"Near Wilton sweet, huge heaps of stones are found,
But so confused that neither any eye
Can count them just, nor reason reason try
What force brought them to so unlikely ground."

The larks are generally soaring and singing here, on fine days, after January; and Mr. Emerson's companion, on a visit here, a certain Mr. "C.," is reported to have solaced himself with a cigar, not knowing how to sing, and to have remarked sententiously, with his back against a large flat stone—for there was a good deal of wind that day—"the larks which were hatched last year, and the wind which was hatched many thousand years ago!" The grand entrance of this roofless temple is placed exactly north-east, as all the gates of the old cavern temples are.

The visitor will observe that the builders of our British Sphynx understood the simple and primeval method of forming a joint by means of the tenon and mortise. He may not perhaps discover much else unaided. The writer's discoveries, it appears, are all wrong. It may be so; some other interpretation may be put on what he saw, but he certainly made out what seemed to him the traces of an early and extensive scheme of geometric gardening, marked upon the downs, without and about the temple.

This idea, however, has not occurred to the

antiquarians, who find in these obscure marks an "avenue or *via sacra* and a *cursus*," the former being the entrance to the cluster of stone circles and the latter a hippodrome. What they call an avenue is what gardeners might call a ribbon, the turf of which is slightly raised, and extends 594 yards in a straight line from the grand entrance. It then divides into two branches which lead, severally, to a row of barrows and to the *cursus*, which might have been at one time an extensive bowling green. This beautifully flat and artificially formed lawn is half a mile north-east of Stonehenge. It is 3036 yards long by 110 yards broad, and bounded by banks and ditches. This would fit in well with horticultural arrangements.

Then there are the "outer" and "inner" circles at Stonehenge: these are the very words of the best authorities, and so in the Regent's Park there is the "outer circle" embracing the whole, and the "inner circle" which surrounds the Botanic Gardens, that plot of 18 acres only which is so much magnified in appearance by the skilful hiding of the boundaries and by admirable landscape gardening. One cannot, but observe these similarities, and it is a refreshing thought that the great heathen temple, where human life is supposed to have been taken on the "sacrificial stone," may have been, after all, a place of innocent recreation, partially devoted by the Druids to horticultural purposes.

There is always a difficulty about ruins. In the gardens just referred to, if we may notice the rockwork, which is imperfect for want of more dignified materials, many persons must have admired the admirable arrangement of the clinkers and fused bricks. Clearly these piled heaps are rockwork though they are formed of spoiled bricks; but imagine the little ruin down, its arches broken, and its Periwinkle torn away—what sort of building would you think had stood there previous to its misfortune? It would be quite impossible to surmise; nor could you tell, in the absence of records, who built it. You might suppose it the work of a committee. You might guess that sandstone and granite were not within their reach. You might imagine the materials were conveyed in carts, and had not travelled far. But this would be all guesswork; as in the case of many an antiquarian discourse about Stonehenge. The inventive Geoffrey of Monmouth entered Stonehenge in his romantic history as a monument set up in honour of some British nobles slain on this spot by Hengist. Inigo Jones explained it as a Roman work. Davies maintains it, in his *Celtic Researches*, to be identical in style and design with the East Indian temples of the sun. Stukeley commits an heroic anacronism, and speaks of "the Deity who made the world by the scheme of Stonehenge." The *cursus*, he considers, stretches across the plain like a line of latitude upon the globe, and the meridian line of Stonehenge passes exactly through the middle of the *cursus*. The Druids, according to Stukeley, were of Phœnician origin, and possessed the magnet, and a knowledge of astronomy and geometry. Mr. Brown, a local antiquary, placed Mr. Emerson on the "sacrificial" stone, and bade him notice from that position that the top of the "astronomical" stone ranged with the sky line. He then informed him that the sun rises, at the summer solstice, exactly over the top of that stone. In other Druidical temples there is an "astronomical" stone in the same relative position.

There is a legend of Salisbury Plain that Stonehenge was built by a certain personage, whose doings were watched by a friar. While putting the great stones together in this solitary place, and talking to himself (as solitary workers sometimes do), this very busy personage observed that the method of his working would always remain a puzzle. "That's more than thee can tell!" cried the Friar, in the usual Wiltshire dialect. The moment the incautious words were uttered he fled for his life. A great stone, now lying apart from the area of the building, followed him, and has since been called the Friar's Heel.

We spoke of guesswork, but the guesswork of the learned is something more, and an intense interest attaches to their explorations of the sources of language, history, or religion. It is significant that the old Gaelic word for a stone circle of the Stonehenge type is *clachan*, which means, as every traveller in the Highlands knows, a church. *H. Evershed.*

PLANT PORTRAITS.

Anemone fulgens, *Rev. Hort.*, 1877, p. 270.—A coloured figure of this very beautiful scarlet Anemone.

× Aquilegia cœrulea hybrida, *Floral Magazine*, tab. 271.—A charming hybrid raised by Mr. Douglas from A. cœrulea, crossed with chrysantha. The sepals are pale violet coloured, the petals primrose yellow. When shown at the Royal Horticultural Society these flowers deservedly excited the greatest attention.

Azalea imbricata, *Illustr. Horticole*, t. 281.—This is the double white Azalea, of which we gave an illustration at p. 817, vol. v.

Carissa grandiflora, A. D.C., *Bot. Mag.*, tab. 6307.—A very pretty evergreen bush with white fragrant, salver-shaped flowers, 2 inches across, deep green leaves, and forked axilliary spines. It is a native of Natal, whence it was introduced by Mr. Cooper. The fruit is used by the natives. It requires warm greenhouse treatment. It flowered at Kew in May.

Ceropegia Barklyi, Hook. fil., *Bot. Mag.*, t. 6315.—A species with a tuberous root-stock, climbing stems, opposite lanceolate white-veined leaves; and flowers scarcely 2 inches long, with a narrow, curved, pinkish tube, dilated into a globose base, and expanded above into a funnel-shaped limb, diviped into five long filiform segments, coherent at the incurved tips. It was sent by Sir Henry Barkly from the Morley Mission Station in the Transkei district to Kew, where it flowered in May.

Crocus alatanicus, Semenov., *Gartenfl.* t. 906.—A spring-flowering Crocus, with fibro-membranous coats; linear leaves, with a central white band; small white flowers, with an orange eye; and the outer surface of the sepals marked with delicate purple striations. Native of the mountains of Alatan.

Dendrobium Wardianum, *Ill. Hort.*, t. 277.—The form here represented is the slender-stemmed one, in which the nodes are not prominent, and the flowers, generally speaking, inferior to those of the knotted variety. The difference is accounted for, according to M. André, by the fact that the original importations came from Assam, the latter from Burmah.

Double Pyrethrums, *Floral Mag.*, t. 271.—Three forms of Duchess of Edinburgh, rosy lilac; Amethyst, lilac; and Placida, white. The flowers are very double, globose, and likely to be effective *en masse*, but individually they are too formal to be beautiful.

Epidendrum Sophronitis, Rchb. f.. *Bot. Mag.*, t. 6314.—Described in our columns in 1867, p. 655. It is a native of Peru, and flowered in June from specimens received from M. Linden. The flowers are in groups of two—three, each 1½ inch in diameter, yellowish green, mottled with violet; lip tongue-shaped, with a green edge and a purple tip.

Hemitelia guianensis, var. Paradæ, *Illust. Hort.*, t. 280.—A Tree Fern, with trunk of moderate height, clothed with adventitious roots. The young fronds are covered with grey pubescence, which is lost as the plants get older. The petioles are grooved, and are provided at the base with short prickles. The fronds, 9 feet high, are bipinnate, with opposite sessile pinnæ. The variety is one of M. André's discoveries.

Hybrid Begonias, *Ill. Hort.*, t. 278.—This is a plate representing flowers of five varieties of tuberous Begonias, viz., Souvenir de Louis van Houtte, Benj. Williams, Meirsschaert, Fr. Deshois, and Comtesse de Gomer, all except the last, which is white, have flowers of various shades of red, but varying much in size and breadth of petal.

Kniphofia Quartiniana, Richard, *Gartenfl.*, t. 907.—An Abyssinian species, like the old favourite Tritoma, but with broader recurved leaves and spikes of orange-yellow flowers.

DESTRUCTIVE INSECTS' BILL.

The following Bill for preventing the introduction and spreading of insects destructive to crops, has passed both Houses of Parliament:—

Great Britain.

1. The Lords and others of Her Majesty's Most Honourable Privy Council (in this Act referred to as the Privy Council) may from time to time make such Orders as they think expedient for preventing the introduction into Great Britain of the insect designated as Doryphora decemlineata, and commonly called the Colorado beetle.

Any such Order, if the Privy Council think fit, may prohibit or regulate the landing in Great Britain of Potatos, or of the stalks and leaves of Potatos, or other vegetable substance, or other article, brought from any place out of Great Britain, the landing whereof may appear to the Privy Council likely to introduce the said insect into Great Britain, and may direct or authorise the destruction of any such article, if landed.

If any person lands or attempts to land any article in contravention of any Order under this Act, such article shall be liable to be forfeited in like manner as goods the importation whereof is prohibited by the Acts relating to the customs are liable to be forfeited; and the person so offending shall be liable, according to those Acts, to such penalties as are imposed on persons importing or attempting to import goods the importation whereof is prohibited by those Acts.

2. The Privy Council may from time to time make such Orders as they think expedient for preventing the spreading in Great Britain of the said insect.

Any such Order may, if the Privy Council think fit, direct or authorise the removal or destruction of any crop of Potatos or other crop or substance on which the said insect in any stage of existence, is found, or to or by means of which the said insect may appear to the Privy Council likely to spread, and the entering on any lands for the purpose of such removal or destruction, or for the purpose of any examination or inquiry authorised by the Order, or for any other purpose of the Order.

Any such Order may, if the Privy Council think fit, prohibit the selling, or exposing or offering for sale, of living specimens of the said insect, in any stage of existence, or the distribution in any other manner of such specimens.

Any such Order may impose penalties for offences against the Order, not exceeding £10 for any offence; and those penalties shall by virtue of this Act be recoverable, with costs, on summary conviction before two justices of the peace, and shall be applied as penalties recovered under the Contagious Diseases (Animals) Act, 1869, are applicable.

3. Where by any order under this Act, the Privy Council direct or authorise the removal or destruction of any crop, they may direct or authorise the payment by the Local Authority of compensation for the crop; and the Local Authority shall pay the same, subject and according to the following provisions:—(1). In the case of a crop on which the said insect, in any stage of existence, is found, the compensation shall not exceed one-half of the value of the crop. (2). In every other case the compensation shall not exceed three-fourths of the value of the crop. (3). The value of the crop shall in each case be taken to be the value which, in ordinary circumstances, the crop would have had at the time of its removal or destruction. (4). The Local Authority may, if they think fit, require the value of the crop to be ascertained by their officers or by arbitration. (5). The Local Authority may, if they think fit, withhold compensation if, in relation to the crop, the owner or the person having charge thereof, has, in their judgment, done anything in contravention of, or failed to do anything in compliance with, any Order under this Act.

4. The Local Authorities under the Contagious Diseases (Animals) Act, 1869, with their respective districts, local rates, clerks, and committees, shall be, in like manner, Local Authorities for the purposes of this Act.

The Privy Council may, if they think fit, require a Local Authority to carry into effect any Order of the Privy Council under this Act.

The expenses incurred and compensation paid by a Local Authority in pursuance of any Order under this Act shall be paid by them out of the local rate.

Every Local Authority shall keep, in such manner and form as the Privy Council from time to time by Order

direct, a record relative to proceedings in pursuance of any Order under this Act, stating the date of the removal or destruction of any crop or substance, and other proper particulars, which record shall be admitted in evidence.

5. Every Order of the Privy Council under this Act shall be published, if it relates to England, in the *London Gazette*, and if it relates to Scotland, in the *Edinburgh Gazette;* save that, where the Order affects only specified lands, the insertion in the *London* or *Edinburgh Gazette* (as the case may require) of a notice of the making of the Order shall be sufficient.

Any Order of the Privy Council under this Act shall be published by any Local Authority, to whom it is sent by the Privy Council for publication, in such manner as the Privy Council direct, and subject to, or in the absence of, any such direction, in such manner as the Local Authority think sufficient and proper to insure publicity.

6. The powers by this Act conferred on the Privy Council may be exercised by any two or more of the Lords and others of the Privy Council, and, as regards the making of Orders affecting only specified lands, may be exercised by the Lord President or one of Her Majesty's Principal Secretaries of State.

IRELAND.

7. The foregoing provisions of this Act shall apply to Ireland, as if Ireland were named therein instead of Great Britain, but subject to the provisions of this section: (1). The powers conferred on the Privy Council shall be vested in the Lord-Lieutenant, or other chief governor or governors, of Ireland, acting by the advice of her Majesty's Privy Council in Ireland. (2). The Local Authorities shall be the boards of guardians of the several poor-law unions. (3). The expenses incurred and compensation paid by a Local Authority shall be paid by the treasurer of the union out of union funds; that is to say, out of any money in his hands, to the credit of the guardians of the union, and if there is not sufficient money in his hands, then out of the money next received by him and placed to their credit. (4). Penalties (other than penalties recoverable under the Acts relating to the Customs) shall be recovered in a summary manner, and shall be applied according to the provisions of the Fines Act (Ireland), 1851, and any Act amending the same. (5). Orders shall be published in the *Dublin Gazette.*

GENERAL.

8. Every Order under this Act shall be laid before both Houses of Parliament within ten days after the making thereof, if Parliament is then sitting, and if not, then within ten days after the next meeting of Parliament.

9. The expenses of the execution of this Act, other than expenses and compensation paid by Local Authorities, shall be paid out of money to be provided by Parliament.

10. This Act may be cited as the Destructive Insects Act, 1877.

THE ROYAL GARDENS, KEW.

(*Concluded from p.* 168.)

TOBACCO.—The manufacture of cigars in Jamaica, which, as stated in my reports for 1871 and 1873, owes much, if not everything, to the exertions of the late Governor, Sir John Peter Grant, in conjunction with this establishment, has already attained great importance; the supply which in former years sufficed only for consumption in the island being now so great, that a large sale is steadily maintained in London. I can only repeat what I have urged in so many reports, that well-directed efforts on the part of West Indian colonists, especially if stimulated by such enlightened governors as the one I have just mentioned, cannot fail to be remunerative.

Tobacco and cigars have also been sent to Kew for report by His Excellency William Robinson, the Governor of the Bahamas. Although not at present fulfilling the conditions necessary for being readily saleable in the English market, the report obtained upon them was not without promise.

Our attention has been drawn to the precise nature of the well-known Lattakia Tobacco. With the kind assistance of Mr. G. J. Eldridge, Her Majesty's Consul-General at Beyrout, and of Dr. Post, Professor of Botany in the Syrian Protestant College, it has been ascertained that the plant cultivated in the Lattakia district is not, as generally stated, identical with Turkish Tobacco (Nicotiana rustica), but is a variety of N. Tabacum, while it owes its peculiar qualities to being exposed during the process of curing to the smoke of various species of Oak wood. A note on the subject has been communicated by Mr. Thiselton Dyer to the *Journal of the Linnean Society* (Botany, vol. xv., pp. 246, 247).

At the request of His Excellency Sir W. Jervois, Governor of the Straits Settlements, seed of Lattakia, Maryland, Virginia, and Orinoco Tobacco have been procured and forwarded to Singapore for cultivation in that colony. A similar collection has also been sent to the Governor of the Bahamas.

The whole of the museums are in a most crowded condition. No. 1 has long been waiting for the relief which throwing out the staircase at the back would give to it. No. 3 contains quite as many objects as there is room to properly display, having regard to the necessity of preserving proper thoroughfares on crowded days.

The collection of specimens illustrating vegetable teratology and pathology is steadily developing, and has been largely added to by gifts, especially from Miss Ormerod and Dr. Masters. It will soon require the entire space of the room in which it is at present placed.

Dr. Hugo Müller has published, in German, an exhaustive and most valuable treatise on paper materials amongst the reports of the Vienna Exhibition. Dr. Müller largely availed himself of the resources of the Kew museums during its preparation. It will no doubt long remain the standard authority on the subject, and I trust that a translation may be published for English use.

H.R.H. the Prince of Wales most graciously placed at our disposal the large collections of fruits, seeds, woods, &c., collected during his Indian tour. These specimens were materially enhanced in value for the purposes of our museums by H.R.H.'s expressly stipulating that we should be entirely free from any conditions in introducing the specimens into our arranged collections.

PHYSIOLOGICAL LABORATORY.—The physiological laboratory which the Royal Gardens owe to the munificence of T. J. Phillips Jodrell, Esq., M.A., and the commencement of which I reported last year, has been completed, and though as yet only partially provided with the necessary equipment, has been already used by Dr. Tyndall in researches on the conditions by means of which the minute organisms (Bacteria), the germs of which are always present in the air, and which determine putrefactive changes in infusions of organic substances, can be effectually excluded from them (*Proceedings of the Royal Society*, Jan. 18, 1877). I have the satisfaction of stating that the internal arrangements of the building, which were intrusted to the Assistant Director, have been pronounced by both English and Continental authorities to be (considering the size) more convenient than those of any other establishment of the kind known to them.

Two other physiological researches have been carried on at Kew during the past year, although the laboratory was not sufficiently advanced to be available for them. Professor Burdon-Sanderson has continued his examination of the electrical phenomena of the leaf of Venus' Flytrap—Dionæa muscipula (*Proceedings of the Royal Society*, Dec. 14, 1876), and Mr. S. H. Vines, Fellow of Christ's College, Cambridge, has studied the digestive ferment of Nepenthes (*Journal of the Linnean Society*, vol. xv., pp. 427—431).

I may also mention here that leaves of Chamærops humilis have been supplied to Dr. Hugo Müller, F.R.S., for the purposes of an investigation, which has led to the detection in them of a peculiar sugar, Quercite, the occurrence of which in Palms was altogether unknown.

HERBARIUM.—The new building for the accommodation of the herbarium is in a very advanced state. It will consist of a hall attached to the back of the present house. The whole of the latter will be preserved, except the drawing-room, a single apartment that was added on to its north side, and which has been removed to make room for the new hall, which is 86 feet long by 40 feet broad, and contains two galleries 10 feet broad running round it. The galleries will communicate with each other and with the ground floor by two circular iron staircases placed one at each end of the building. On each floor there will be an entrance from the old building, closed by double iron fire-proof doors. The long sides of the building will be lighted with forty-eight windows, eight on each floor on each side. The cabinets for holding the specimens will be arranged in blocks 8 feet high, of two tiers projecting like buttresses between the windows on the ground floor and galleries, thus accommodating the greatest number of cabinets with the least loss of space—a very important consideration considering the extent of the collection and the time that would be otherwise lost in consulting it. At the present time the number of cabinets is upwards of 600, and the estimated number of specimens contained in the whole is now considerably over 1,000,000, reckoning as one all the individuals of the same plant from the same locality.

The whole building will be heated with hot-water pipes. Water-mains charged at high pressure, sufficient to throw a jet more than the height of the whole building, will be carried to each floor. When complete the old building will be cleared out; as much as possible of its combustible fittings and woodwork removed, and the rooms arranged for the better accommodation of the library and of persons, besides the staff, engaged in the study of the collections.

Very extensive collections and contributions have been received at the herbarium (chiefly by gift) during the past year.

In accordance with the will of the late J. J. Bennett, F.R.S., Keeper of the Botanical Department of the British Museum, the Australian herbarium of his predecessor, Robert Brown, made during Flinders' survey of the coasts of Australia, is being divided between the British Museum (which retains the first set), the herbarium of the Royal Gardens, and that of the Edinburgh Botanic Garden. The first instalment of this valuable collection has been received, and comprises nearly 900 species.

The herbarium of the late Giles Munby has been presented by his daughters, and is of great extent and value, especially as regards the Algerian flora, of which he was, after Shaw and Desfontaines, the first efficient explorer. This herbarium is not only very extensive but is the authority for the only complete list of the Algerian flora which has hitherto been published, of which three editions in all have appeared (1847, 1859, 1866), comprising descriptions of various new species.

Very considerable and important accessions continue to be derived from the herbarium formed by Baron von Mueller in Victoria, which is transmitted to the Royal Gardens in furtherance of the *Flora Australiensis*, with the permission to retain duplicates. There is certainly no part of the world of equal extent and possessing as much of interest as Australia, which has, through the almost unaided exertions of one man, been so successfully explored botanically as has this by Baron von Mueller.

H.R.H. the Prince of Wales has graciously presented the herbarium formed by his botanical collector (Mr. Mudd) during his visit to India.

The botanical collections of the *Challenger* expedition made by Mr. Moseley have all been received at Kew, and have been for the most part arranged and distributed. Those received during the past year have been chiefly from Japan, the Society and Sandwich Islands, Juan Fernandez, Chili, and Patagonia.

EXPERIMENTS ON THE FLOW OF THE SAP.

I HOPE the lateness of these remarks may be excused, but as I did not see the *Gardeners' Chronicle* of July 21, until the beginning of August, I did not know the gist of Mr. Murray's paper until I saw it in the *Gardeners' Chronicle*. However, it is better late than never, as the saying goes, and now, with your permission, we will examine Mr. Murray's paper, and see how we shall be able to follow him in his experiments and in his reasoning thereon, and how far we shall be able to see into the correctness, or otherwise, of the theory which he propounds.

First, then, his experiments and his deductions therefrom. These are fully stated at p. 72 of the *Gardeners' Chronicle* for July, so that it is unnecessary to repeat them here.

In reading over his description of the experiment on the Grape Vine, the first thing that strikes us is that—according to Mr. Murray's own theory—the flow of sap upward was broken by the nick. The nutritive matter absorbed by the roots was cut off, and another fluid—Mr. Murray's Lithia and Litmus solution—substituted in its room. This Mr. Murray considers ascended, but did not descend as orthodoxy says it should, and from this Mr. Murray considers that he is justified in saying that there is really no descent of sap at all in most plants—at least in all plants similar to those operated on. Now we are at an utter loss to understand how he is justified in his conclusions. According to Sach's theory of ascent,

and descent, what Mr. Murray describes as having taken place is exactly what we should expect.

Both theories agree in this, that the soil must furnish nutrient matter to the roots as food to the plant. The old theory is that mineral food alone is essential, and that the carbon is derived, at least chiefly, from the atmosphere. Mr. Murray says that all the food enters by the roots. According to either theory, but more especially according to that of Mr. Murray, the experiment was calculated to lead to error. The solutions used were not plant food, not even according to the theory which indicates that a few simple salts are sufficient for nutritive purposes, far less according to that advanced by Mr. Murray.

According to the received ideas of vegetable physiology, a plant which gets nothing but water will only live, and not grow—the roots will draw in the water, and the leaves will evaporate it; hence there can be no current save an upward one. Supposing that the theory which Mr. Murray attempts to upset is right—that there is an ascent and a descent of sap—according to that theory, a return of sap under the condition afforded by Mr. Murray is an utter impossibility, as there is nothing to return. According to the old theory, there was nothing in the solution supplied by Mr. Murray to combine with carbonic acid, &c., in the leaf to form descending sap. Before Mr. Murray is entitled to say that there is no such thing as descending sap he ought to supply a living plant with food, not merely water with lithia or litmus in it, before he can even lay claim to have made a fair and trustworthy experiment. His present experiment only proves that a plant is merely a capillary sponge when supplied with water only. Any experiments which we have read of, and any which we ourselves have made on this same subject and for the same purpose, were just the opposite of Mr. Murray's, the solution being nutrient, and the results were different, as one might expect. We may have more to say of these at another place.

Again, we are at loss to understand how his experiment proves the theory of endosmose and exosmose in error. He tries to make the most of the fact that his solution did not mingle with the whole body of the ascending sap. But here, again, this experiment proves nothing, which may not be reconciled with the old theory, and is even what was to be expected. Mr. Murray cut off the supply of sap which the roots were supplying to the leaves. This left empty vessels, the supply being tapped. What more natural, and what more in accordance with the old theory, could have happened than that these empty vessels should suck in the solution. The fact of its not having entered the opposite side seems to Mr. Murray to be against the endosmose and exosmose theory. But what else could have been expected? The opposite side was untrapped; the cells were full, and no endosmose action could be thought to be so powerful as to take the sap from vessels otherwise empty and further fill full ones.

Had Mr. Murray tapped the stem on the other side to prevent the flow of the sap, and supplied it (the cut) with pure water, and still no extravasation been apparent, then his experiment might have been of some value, but as it is it is not so. Again, had Mr. Murray cut a Vine in the same way as described, and had given no solution, but simply had left it open, and had the side thus cut died its extreme length, Mr. Murray might have denied the correctness of the theory of endosmose and exosmose. But this is what I and many more have done many a time, and not an inch of the wood has died in consequence, but, instead, the descending sap has closed the wound from above.

Again, further on, he tries to prove from his experiment and from reasoning that the old theory of plants taking in carbonic acid by the leaves, and its combining with the matters sent up by the roots to form the sap which builds up the tissues of the plant, is wrong, and to help his cause he makes some very strange and unwarranted statements. He says that plants do not take up food in the dark. This is an error. [We concur.] We have again and again grown plants in nothing save water and salts, and we have proved satisfactorily—to ourselves, at least—that plants take up solutions according to the temperature and aridity of the atmosphere. Again and again have we seen Hyacinths evaporate water during darkness. [Yes.] When the temperature was kept during darkness at the same figure, as during day we have found that the absorption was nearly equal, and Mr. Murray says that Hyacinths do not use water during darkness, and adds that such a statement is not disputed. We have more to say on this head when speaking of carbonic acid. We may add that we have put coloured solutions in the water in which Hyacinths were growing after dusk, and when the temperature was kept high have found it in the utmost extremities next morning; but with a low temperature the result was as Mr. Murray indicates. Again, we have found that plants expel carbonic acid gas during darkness only with an unnaturally high temperature, but with a low temperature this action ceased, or only gave out the merest traces; while under bright sunshine and a high temperature the leaves of a small Vine deprived of air charged with four times the ordinary amount found in the atmosphere, as fast as we could pass it through a ¼-inch tube, the escaping air showing no trace of the gas whatever. But this is an old and oft-repeated experiment. Mr. Murray will surely not deny the fact that plants will take up saline solutions, when these salts are the same as the mineral matter of the plants operated on are proved to be by chemical analysis. And if he is to hold the theory which he has advanced, that the carbon in some form is only taken in by the roots, he means that a saline solution, containing no carbon, is not plant food. With this solution, then, if this new theory is right, the plants will act just in the same way as they did with Mr. Murray's litmus and lithia solution; they will merely draw in the water, and by means of the leaves evaporate it, and leave the other things behind in the structure of the plant and in the leaves. As mineral salts alone do not form plant-tissue, this process carried on for a very short time would leave the plants thus fed saturated with salts, but more especially the leaves. This is the conclusion that we must come to if we are to accept Mr. Murray's theory. But every experimentalist knows that no such thing occurs. Mr. Murray damaged his own cause greatly when he uttered the sentence "that you may try to feed a plant with mineral matters alone but it will not grow." He ought to have known that such an experiment has been tried successfully again and again. But this stubborn fact is irreconcilable with Mr. Murray's theory, hence the ignoring of it. This fact forces us to the conclusion that the carbonic acid of the atmosphere is the chief source of carbon in plants, and that it is taken in and formed by the leaves into plant-food along with the other matters taken up by the roots.

Then in his illustration, to prove the correctness of his theory, it seems to us that the examples which he has chosen are just those which his theory cannot account for. He contends that Nature's way with tuberous plants is to build up those portions of the plants which are under ground and in darkness if a portion of the plant is exposed to the light. He is still reasoning on the strength of his former error that plants do not take up food during darkness, and holding to this he contends that if a portion of the plant is exposed to the light, that the tubers or portion of the plant which is in darkness acquires the same power to assimilate food as the exposed parts. Keeping in mind that the theory advanced is, that the roots draw in all the nourishment, we should certainly expect to find that the thickest part of the stem of the Potato plant, for instance, should be below where the tubers issue from it. But if Mr. Murray will put himself to the trouble, he will find that the thickest part of the stem is above where the tubers issue from the stem, and when Potatos are manured with salts—not containing carbon—the production of tubers is generally increased.

All cultivators of plants must have noticed parts of plants, especially variegated ones, quite white and free from green. We may consider these as analogous to tubers. Well, we find that such portions grow so long as there is green leaves existing along with them, but that death invariably follows the removal of the green portion of the plant. We have fed such plants of Cyperus alternifolius with mineral salts alone, and have found the pure white stalks go on growing and being produced from the root as plentifully as those stalks which were green. Now these white stalks were just composed as the green ones were—chiefly carbon. If there is no such thing as return of sap and taking in of carbon by the leaves, how are we to account for the production of shoots being thrown up from the roots, which cannot assimilate food on their own account, but which die at once when deprived of the green portion of the plant, even although they are exposed to the light. Many instances might be cited quite similar to this, but space forbids.

Mr. Murray's pressing into the service of grafted trees to help him was surely clutching at straws. He tells us of the mighty influence of the stock over the scion as proving an upward flow, and so disproving a downward flow of sap. The influence of stock over scion is very far from being the powerful force which he would have us believe. Take our old Rose Senateur Vaisse, and calculate how often bits of it, scarcely larger than a pin-head, have been taken and put on a strong Brier, and when these have pushed into shoots buds have again and again been taken off and inserted on strong Briers, and this has been going on for many generations of Roses, and yet we have a Senateur Vaisse with the selfsame characteristics possessed by it when first sent out; not one drop of Brier or Manetti blood apparent. This is the rule of all grafting whatever. Our Jargonelle Pears and our Ribston Pippin Apples have been grafted on stocks not of their own nature, and still have been handed down to us showing little trace of the Wilding, of the Quince, or of the Paradise in the their constitution. Of all the "myriads of millions" of grafts spoken of by Mr. Murray, how many of them have shown a marked difference from their originals? Mr. Murray speaks of each graft being an experiment, proving that the stock has an altering influence on the scion. Yes, they are experiments these "myriads of millions" of grafted trees, but they prove how little the stock affects the scion; and more, they are all experiments one way. How many of these experiments have been conducted to determine the influence of scion over stock? Not one in a million; and, so far as I am aware, none at all; and the comparatively few instances which have occurred more by way of accident, showing that the scion alters the stock, are more numerous than can be produced out of "myriads of millions" of instances the other way. The very fact of grafting being a possibility proves the descent of sap, not by the whole body of the wood, like Mr. Murray's lithia and litmus solution, but between the wood and bark. Were there no descent of elaborated sap, propagating by means of grafts and cuttings would be an impossibility.

I had intended to have gone deeper into the subject, but our time and your space forbids; but I end by saying that, in my opinion, the experiments of Mr. Murray prove nothing, and were calculated to prove nothing. *Alexander Honeyman.*

THE GENUS AGAVE.

(*Continued from p.* 137.)

Series I.—Coriaceo-carnosæ.—Texture of the leaf rigid, not at all fleshy nor yielding to the touch when mature; end-spine large, hard, and pungent.

Group IV. Americanæ.—Edge of the leaf without any distinct horny border. Teeth large, deltoid-cuspidate, comparatively few in number.

In this paper I propose to deal with the large species of this group with oblanceolate leaves.

38. *A.* (*Euagave*) *Palmeri*, Engelm., Notes, p. 31.—Acaulescent. Leaves oblanceolate, 10—20 inches long, 2—2½ inches broad above the middle, slightly narrowed downwards; end-spine 1 inch or more long, deeply channelled and decurrent a couple of inches down the border; teeth unequal, deltoid-cuspidate, dark brown, ⅛—⅙ inch long, usually hooked. Scape 8—12 feet high. Panicle repeatedly and loosely branched; pedicels a line long. Perianth 1¾—2 inches long, including the ovary, whitish; lobes and tube taken together as long as the ovary; lobes usually a little longer than the tube, the outer ones much thickened and hooded. Stamens inserted about the middle of the perianth-tube; filaments twice as long as the perianth-segments; anthers 8 lines long. Capsule cylindrical-trigonous, 1½—2 inches long; seeds under ¼ inch broad, with minute tubercles covering the whole surface.

Mountains of Southern Arizona, ascending to 6300 feet. Discovered by Dr. Schott in 1855. My account of the plant is taken entirely from Dr. Engelmann, and it has not yet been introduced into cultivation.

39. *A.* (*Euagave*) *Theometel*, Zuccag.; Jacobi, Monogr., p. 70.—A caulescent. Leaves about 30 in a dense rosette, oblanceolate-spathulate, 1½—2 feet long, 4½—5 inches broad above the middle, narrowed to 3 inches above the dilated base, where it is 1 inch thick, the face nearly flat, green, slightly glaucous only when young, the dark brown pungent end-spine 1 inch long, the distant deltoid-cuspidate side prickles about ⅛ inch long. Scape 10—12 feet high, including the thyrsoid panicle. Flowers yellowish-green, 3 inches long; perianth segments oblong. Filaments twice as long as the perianth-segments. Capsule oblong-trigonous.

A native of Mexico. Here my description of the leaves is taken from a plant in Mr. Peacock's collec-

tion, and of the inflorescence from Zuccagni. There is a figure in Roemer's *Collectanea* (tab. 3). The name, Theometel, goes back to Morison, and figures given by Munting and Ray are cited here by Kunth and others. The plant, as I understand it, differs mainly from the small forms of americana by its green not glaucous leaves, and may be only a variety of that species.

40. *A. coccinea*, Roezl; Jacobi, Monogr., p. 76.—Acaulescent. Leaves 20—30 in a dense rosette, oblanceolate-spathulate, 1½—2 feet long, 4—6 inches broad two-thirds of the way up, narrowed to 3 inches above the dilated base, where it is 1—1¼ inch thick, the face nearly flat except towards the tip, dark green, only slightly glaucous when young, the centre ⅛ inch thick, the hard pungent end-spine 1½ inch long, the edge repand between the close irregular deltoid prickles, which are unequal in size, nearly straight, tipped with chestnut-brown, ⅛—¼ inch long. Inflorescence unknown.

A native of Mexico, introduced by Roezl in 1859. I have seen specimens at Kew, Reigate, and Hammersmith, and there are two forms included in Mr. Saunders' set of photographs. It is marked by its bright green leaves and habit, and prickles halfway between americana and Scolymus.

41. *A. Maximiliana*, Hort. Saunders; *A. Gustaviana*, Hort. Corderoy.—Acaulescent. Leaves about twenty in a rosette, oblanceolate-spathulate, 1½—2 feet long, 2½—3 inches broad two-thirds of the way up, narrowed to 1¾—2 inches above the dilated base, where it is 1 inch thick, the face a slightly glaucous green, the pungent brown black end-spine 1 inch long, the bright chestnut-brown prickles larger and more irregular than in americana, more hooked and furnished with longer and sharper cusps, reaching ¼ inch long. Inflorescence unknown.

Described from a plant in the Reigate collection included in Mr. Saunders' set of photographs and a plant sent to Kew by Mr. Corderoy under the name given above. It comes in between coccinea and americana, differing from the small forms of the latter by its greener colour and larger unequal sharper chestnut-brown teeth. Probably a native of Mexico, but I have no knowledge as to its history, and cannot find it described in Jacobi's monograph or elsewhere.

42. *A.* (*Euagave*) *mexicana*, Lam.; Jacobi, Monogr., p. 99 and 304.—Acaulescent. Leaves 20—30 in a rosette, oblanceolate-spathulate, 1½—2 feet long, 3—4 inches broad two-thirds of the way up, narrowed to 2—2½ inches above the dilated base, where it is ¾—1 inch thick, the face nearly flat except towards the tip, very glaucous, the centre ⅛ inch thick, the brown pungent point about ½ inch long, the subdistant brown straight deltoid-cuspidate prickles ⅛—⅙ inch long. Scape 18 feet high, including the thyrsoid panicle, which is 7—8 feet long. Perianth greenish yellow, 2¾ inch long; tube 8 lines; segments under 1 inch long. Filaments much exserted, 2—2½ inches long; anthers 1 inch long.

A native of Mexico. Closely allied to the small varieties of americana, from which it is scarcely distinct specifically. The inflorescence has not been figured, but it is described by Jacobi from a plant that flowered in 1855 at the botanic garden at Brussels. I refer here as forms, *A. cyanophylla*, Jacobi, Monogr., p. 228; and *A. Beauleuriana*, Jacobi, Nachtrage, ii., p. 25, fig. 36.

43. *A.* (*Euagave*) *americana*, Linn.; Andr. Bot. Rep., t. 433; Bot. Mag., t. 3654; Jacobi, Monogr., p. 63; Nachtrage, p. 24.—Acaulescent. Leaves usually 30—40, sometimes 50—60 in a rosette, oblanceolate-spathulate, 3—6 feet long, 6—9 inches broad above the middle, narrowed to 4—6 inches above the dilated base, where it is 2—4 inches thick, glaucous green, more or less concave all down the face, the outer leaves recurved, the hard dark brown pungent point 1½—2 inches long, the edge repand between the distant unequal spreading nearly straight brown-tipped deltoid-cuspidate prickles, which are ⅛—¼ inch long. Scape, including the thyrsoid panicle, reaching a height of 24—36 feet; branches 20—40, some nearly 1 foot long; flowers in very dense globose clusters, on pedicels ¼—½ inch long. Perianth yellowish green, reaching a length of 2—3½ inches; ovary clavate-trigonous, rather shorter than the segments and tube taken together; tube funnel-shaped, about ½ inch long; segments 9—15 lines long. Filaments inserted at the throat of the tube, twice as long as the segments; anthers ¾—1 inch long. Capsule oblong.

Widely spread in tropical America, and now grown universally through the tropical and warm temperate

Fig. 36.—Agave mexicana var. cyanophylla.

zones of the Old World. It is said to have been introduced into Europe about the middle of the sixteenth century, and to have first flowered at Hampton Court in 1714. I place here as forms *A. Milleri*, Haworth, Jacobi, Monogr., p. 65 (A. virginica, Miller, *non* Linn.—dwarfer than the type); *A. picta*, Salm-Dyck; Jacobi, Monogr., p. 67; and *A. ornata*, Jacobi, Monogr., p. 69 (simply forms with variegated leaves); *A. Fuerstenbergii*, Jacobi, Nachtrage, ii., p. 72; and *A. expansa*, Jacobi, Nachtrage, ii., p. 26, but have not seen authenticated specimens of the two latter. This concludes the Americanæ group. *J. G. Baker.*

REMARKS ON THE FRUIT CROPS, 1877.

The following is the concluding portion of the supplementary reports, obligingly sent to us by our correspondents with the tabular statements published in our last issue. Following the plan adopted in our last number, at p. 172, the counties are arranged in the order of their importance as fruit-producing centres, as shown by the Agricultural Returns for 1876, published by the Statistical and Commercial Department of the Board of Trade, which under the head of "Orchards, &c.," gives the acreage of arable or grass lands, used also for fruit trees of any kind. Thus the three Ridings of Yorkshire contained 2581 acres; Lancashire, 1781; Sussex, 1652; Bucks, 1575; Norfolk, 1440; Nottingham, 1359; Berks, 1345; Cheshire, 1219; Cambridge, 1189; Hants, 1161; Lincoln, 1157; Essex, 1057; Hertford, 1033; Suffolk, 985; Warwick, 899; Stafford, 822; Oxford, 788; Derby, 629; Leicester, 603; Nottingham, 499; Bedford, 372; Cumberland, 262; Hunts, 252; Westmoreland, 181; Northumberland, 153; and Rutland, 53.

York.—The fruit crops in this neighbourhood are in general light. Of some kinds of Apples there are fair crops, whilst of others there is none here. Some trees of Cockpit have a good crop, also the Improved Cockpit, King Apple, Yellow Ingestrie, and some others. *M. Saul, Stourton.*

—— This is with us a bad fruit season, far worse than we have ever before had during the fourteen years I have been here. This in a great measure is due to the unusually severe weather of spring, and also, I think, to the wet and cold autumn of last year. Excepting Currants, Strawberries, Gooseberries, and Raspberries, Pears were the only fruit of which we had an abundant bloom. *John Young, Wentworth.*

—— The fruit crops are the worst I have known the past five years in this locality. Stone fruits especially are almost a complete failure. We have some 60 yards of south wall covered with Moor Park Apricot, and not a single fruit. Wall Plums on various aspects and on standards are as bad. Apples are fair in some parts; a local variety called Cockpit is the best. Marie Louise and Louise Bonne, of Jersey, Pears which usually bear good crops, are a complete failure. I am of opinion that the principal cause of the scarcity of fruit was the wet, sunless autumn last year, and the consequent non-ripening of the wood. We had plenty of bloom, but it was weak and imperfect. *H. J. Clayton, Grimston Park.*

—— On Apples, Pears, and Plums, there was less bloom this season than I have noticed for years. Out of about fifty Apple and Pear trees on the Quince and Paradise stocks, and which flowered better than the orchard and other trees in the garden, there are only three trees with any crops on them, and these are Sturmer, Cockle, and Golden Pippins. *J. Simpson, Wortley Hall Gardens, Sheffield.*

—— The sharp frost in May destroyed the bloom of all stone fruit. Pears and Apples very variable; in sheltered dry situations there are some nice orchards of fruit, in others scarcely any. *Robert C., Kingston, Brantinghamthorpe.*

Lancaster.—We had an abundance of bloom upon all kinds of fruit trees. Apricots set thickly with us but thinned themselves considerably at the time of stoning, notwithstanding the trees had been eased of part of their crop previously. Pears made a fine show at blooming time, but the blossoms fell without setting, and many of the trees have bloomed freely a second time and are now making far too much wood; the result no doubt of hot weather, a heavy rain fall, and having no crop to carry. Cherries cracked a good deal during the recent heavy rains, and Strawberries were damaged to some extent. *F. H., Knowsley.*

Sussex.—A wet cold spring, low night temperatures, and high winds, all sadly injured the blossom, consequently choice fruit is scarce. *J. Rust, Eridge Castle.*

Bucks.—At the commencement of May the condition of hardy fruit trees here gave every promise and prospect of a most fruitful year; a few days afterwards these preconceived notions were, however, entirely dissipated by the advent of a frost of unusual severity, which blackened and killed outright nearly all the Cherries and Plums and great numbers of the Pears also. The Peaches, Nectarines, and Apricots, which hitherto had withstood tolerably well the influence of an inclement season, now to a great extent succumbed to the same fate, leaving but few, and these of only a poor description; the trees likewise in many places, here amongst others, have also been much weakened through blistered leaves and growth as in some instances to cause much concern as to their ultimate recovery. *G. T. Miles, Wycombe Abbey.*

—— Early in the season we had every prospect of a good fruit crop in this district; the trees for miles were one mass of blossom, but the cold winds and frosty nights cut it all up before there were any leaves on the trees to shelter the flowers. This is the worst fruit season in this part that has been known for years. *J. Smith, Mentmore.*

Norfolk.—I cannot help feeling wretched this season about our fruit crops. After thirty-four years' experience this has been by far the worst I ever saw. Having had a very mild winter and tolerable April, though not much sun, then to get a May the scourge of all fruit trees in this district, Peaches and Nectarines only now recovering the blast of those north-easterly winds, far worse than any still frost I ever saw. Pears, Plums, Peaches, Nectarines, Gooseberries, all had to succumb; Apricots all gone three weeks before; and now our only fruit has been and is—Strawberries a fair crop, Raspberries and Currants good, Apples a very fair crop throughout. Our vegetable crops are all promising, Potatos looking admirable, showing no disease yet. All corn crops in this neighbourhood looking well, root crops poor to what they should be. This I attribute to the unkindly state of the soil through a late, wet, cold spring. *Charles Penny, The Gardens, Sandringham.*

—— The fruit crops in this district are, without exception, the worst that has been for many, many years. *William Bishop, The Gardens, Bylaugh Park.*

—— Wall fruit of all kinds in this quarter of Norfolk is a failure; in fact, more so than the bad crops of last season. Protected and unprotected trees suffered nearly alike. I need hardly observe that all kinds of fruit trees promised well, but their blossoms suffered through ungenial weather, especially lack of sunshine. *John Wighton, Cossey Park.*

Notts.—I have not experienced before in this district such a general failure in the crops of Apples, Pears, Plums, and Cherries as has taken place this year. The trees showed abundance of blossoms, but the frosty nights and mornings and cold north-east winds in April and May injured the setting of the fruit. The Apples flowered much later than usual, and could not have felt the effects of the keen frosts in the beginning of May so much as to injure the blossoms, but they seemed paler in colour, and the young fruit dropped after being set. This shows that the abnormal mild and wet weather in January and February, and the unripened condition of the wood in the autumn, were the causes of the failures in the hardy fruit crops this year. The crops of Peaches, Nectarines, and Apricots are thin on the open walls here, but abundant under the protection of glass. Small fruits, such as Gooseberries, Currants, and Raspberries, are an average crop, but the fruit is smaller than usual. Strawberries, an abundant crop of the leading sorts, but not so well flavoured as in some years. *J. Tillery, Welbeck.*

—— We never before had such a quantity of bloom as we had this season. The Apples of which we shall have a few are: Court of Wick, Claygate Pearmain, Wellington, Atkins No. 2 (a grand Apple), Cellini, Golden Nobbs, and Winter Pearmain. Pears: Matthews' Eliza, Bonne d'Ezée, Emile de Heyst, Angelique à Bordeaux, Beurré d'Aremberg, B. Diel, Catinka, small, but has never missed a crop the last ten years. *A. Henderson, Thoresby Park.*

Berks.—I cannot attribute the cause of failure in the stone fruit crop to frost alone—such as Apricots, Plums, and Peaches, set their fruit well, and did not begin to drop till they were the size of Horsebeans. The cause was probably due to the continuation of cold, shady, weather, after the fruit was set. The following are the kinds of Apples that are bearing heavy crops of fruit this season—Rosemary Russet, Frogmore Prolific, Blenheim, Pomona, King of the Pippins, Hawthornden, and Flower of Herts. Among Strawberries, perhaps, the best here were La Grosse Sucré, Mr. Radcliffe, Aromatic, James Veitch, Sir J. Paxton, Fairy Queen, John Powell, and Frogmore Late Pine. *T. Jones, Royal Gardens, Frogmore.*

—— The fruit crops in this neighbourhood are very light indeed, although as far as bloom was concerned the trees never promised better, but the late frosts and cold east winds caused a complete failure of Peaches, Nectarines, Apricots, and Plums; the two former have been very much blistered, but most of them are growing out of it now. Pears are not a tenth of a crop, and what there is do not look promising. Some sorts of Apples, viz., Northern Greening, Keswick Codlin, Eclinville Seedling, Cox's Orange Pippin, and Broad-eyed Pippin are a full average Blenheim Orange, Dutch Codlin, Alfriston, and a few others are nearly an average, but many sorts have little or no fruit on them at all. May Duke and Elton Cherries were a good average, early sorts very scarce, and Morellos hardly half a crop. *Charles Ross, Welford Park.*

Cheshire.—With the exception of Currants, Raspberries, Gooseberries, and Strawberries, this is an exceptionally poor fruit year. The Apples, from what I have seen, are the best of tree fruits, and it is exceptional to find one with a good crop. Cellini Pippin, Hawthornden, and Lord Suffield are amongst the best. Victoria is the best Plum. *R. Mackellar, Abney Hall, Cheadle.*

—— With the exception of small fruits, this is probably the worst fruit year we have had for six or seven years. *Thomas Selwood, Eaton Hall Gardens, Chester.*

—— Apricots on walls protected when the trees were in bloom are an average crop. Peaches and Nectarines the same, but, in common with all fruit trees, Roses, &c., the young foliage was unfavourably affected by the cold winds and frosts, which continued through a great part of April and May. Plums, Pears, and Damsons suffered most, and are very scarce in this district. Some kinds of Apples (as Irish Peach, Keswick, Hawthornden, Lord Suffield, Ribston Pippin, and a few others) are bearing full crops; others, none, or very little. *William Whitaker, Crewe Hall.*

Hants.—Apples are much better than at one time was expected. Lord Suffield, Keswick Codlin, Deux Aux, Golden Noble, and Hawthornden are bearing most freely. As regards fruit crops generally, the present is the worst for many years past, and seems all the more disastrous by reason of the abundant blossom, and consequent high hopes of a good fruit year—all, however, to be blighted ere the treacherous month of May had half run through. Peaches and Nectarines are here quite a failure, though well protected; I therefore attribute their failure to imperfect ripening of wood, through the autumn being so wet and sunless. Pears on walls are excellent, but on pyramids and bushes there are none whatever, so that here is another practical lesson in fruit culture. *W. Wildsmith, Heckfield Place.*

—— The fruit crops in this neighbourhood are not very cheering, but I do not think it is altogether owing to bad weather, the blooms never having that stiff robust appearance about them one sees in the Midland Counties. Plums are very scarce indeed. Trees were covered with nice plump bloom buds, but the birds destroyed nearly all. I never saw them make such havoc amongst fruit trees before. Filberts and Cob Nuts are a wonderful crop. *James Taverner, Woolmer Forest.*

Lincoln.—The fruit crop of 1877 is the poorest I have ever experienced. We had a mild open winter, and at the end of February vegetation was in a very forward state. From that date we had cold east winds with frosty nights, which checked vegetation very much, and during the last week of April and first nine days of May we had sharp frost with cold east winds, which completely scorched, as it were, the bloom and young foliage of Apricots, Pears, Plums, and Cherries, and although protected with Frigi Domo, did not save either fruit or young shoots. The trees about the end of May appeared as if they were killed, but have since recovered, and are now making good growth. Apples, although late in blooming, produced an abundant show of bloom, hopes were, therefore, entertained of an abundant crop; but they also failed, not from frost, but from the cold cutting

east wind, and the wood not having been properly ripened the previous year. *David Lumsden, Bloxholm.*

—— The spring of 1877 will long be remembered by horticulturists. There was ample bloom of all kinds, but the extraordinary frosts in May destroyed the bloom, which has caused Apricots, Peaches, Plums, Pears, &c., to be almost a failure. *Wm. Hurst, Sowerby Park, Gainsborough.*

—— We had an abundant show of Apricots, Plums, and Pears up to March 22; the thermometer that night fell to 17°, which for the most part cut off the above. Apples also suffered severely. *Isaac Dell, Stoke Rochford.*

Essex.—Save in regard to small fruits, I have very little to report favourably, Raspberries being a fine crop amongst them. Of Figs, both the old black and Lee's Perpetual are a good crop—the latter especially, though growing in distended tree-form, being a very heavy crop. Blenheim Orange and Five-crown Pippin Apples of the later crops, and Hawthornden, are the only kinds which have a sprinkling of fruit upon them at this place. Wall fruit crops were lost in many instances owing to the long cold period we experienced, even after they were set, rather than to any severe frosts experienced. *William Earley, Valentine.*

Herts.—Until the severe frosts in the early part of May never could there be a better promise of abundant crops of fruit, Peaches and Apricots being the exception. The wet unfavourable autumn, combined with the sunless spring, was most disastrous to the trees, hence an almost total failure of a crop of fruit. Since the dry warm weather in June the trees have recovered rapidly, and are now making good growth. *Richard Ruffett, Panshanger.*

Suffolk.—Except Figs, all the choicer fruits are an almost entire failure. Plums, of which there was a fine crop set, were swept clean off by the May frost, and quite strewed the ground. Apricots, Peaches, and Nectarines, were destroyed in like manner, and not only was this the case with the fruit, but many trees were crippled to a serious extent, and in some places so much so as to be unable to recover. Some kinds of Pears have set fairly on west walls, but the fruit shows the effect of frost in the irregular way it is swelling, and is therefore likely to be of inferior quality and small. Pyramids, except in very sheltered places, are a failure. Dessert Cherries on walls have been good, but a thin crop, as are likewise Morellos. *J. Sheppard, Wolverstone Park.*

—— This is the worst year that I remember for outdoor fruits. Apricots, Peaches, and Plums, are quite a failure. Protecting the blossoms by whatever means (without glass) seemed to be quite ineffectual to secure a crop. Small fruit of all kinds have been abundant and good. Strawberries and Raspberries I have never seen finer. *T. Blair, Shrubland Park.*

—— Apricots, Pears, Plums, Peaches, are so few and so late that it is needless to describe their quality. The trees are, however, fast recovering from their cold snap in May, and are making fair wood for next year. Apples are dropping a good deal, though the fruit remaining looks clean and healthy. Gooseberries and Currants, red, white, and black, in these gardens, are a full crop. Out-of-door Figs a full crop of full size; Walnuts a partial crop. *D. T. Fish.*

Warwick.—This has been another disastrous year amongst the out-of-door fruits of this country. With our uncertainty of climate the wonder is, not that we should ever have a good year, or even a sprinkling, but that we should ever have any outdoor fruit at all, seeing that we are so frequently visited by severe frosts just at those times when our Pear and Apple blossom requires an atmosphere free of frost. The cold wave of this year appears to have carried general destruction of blossom before it, irrespective of any protection we might expect to have from any favoured local or geological formation, and artificial wall coverings appear to have been of but little use. Otherwise the year is a good one, and well calculated to mature fruits had only a "set" been secured. *W. Miller, Combe Abbey.*

—— The Apple crop in this district is below the average, and, in fact, in many orchards the crop is *nil*. Here, however, taken collectively, there is a fair crop, and in a few instances the crop is prodigious, notably on trees of Kentish Fillbasket, old Hawthornden, and Keswick Codlin, the two former being the most remarkable I ever witnessed. Of Ribston Pippin and other early blooming varieties there are but few, owing to the frosts whilst in bloom. Of Pears on the walls there is a fair crop of such as Beurré Rance, Winter Nellis, Ne Plus Meuris, and Beurré de Capiaumont. Plums are a total failure, Apricots very few; the same remark applies to other stone fruits. Gooseberries scanty, excepting that useful and prolific sort the Green Gage. Currants, black, red, and white, good crops and fine quality. I may add that upon the whole our fruit trees are enjoying an immunity from insects and other blights, coupled with vigorous growth, which augurs well for next year's fruition. *Wm. Gardiner, Eatington Park.*

Stafford.—This is without doubt one of the very worst seasons I have ever known in this district for Apples, Pears, Apricots, and Plums. Of Apples the following are bearing the best crops:—Warwick Codlin, Mank's Codlin, Lord Suffield, Hawthornden, Blenheim Orange, Ribston Pippin. Of Pears:—Glou Morceau, Beurré Rance, Ne Plus Meuris, Winter Nellis (on a wall), and Bishop's Thumb. The show of healthy blossom on all fruit trees was abundant, and without doubt good crops would have followed had it not been for the very unfavourable weather which prevailed during the spring. On May 4, 5, and 6 we had 13°, 15° and 12° respectively, which of itself destroyed most of the Pear, Plum, and Damson blossom. We had not much frost while the Apple trees were in blossom, but very high cold winds prevailed during the whole of the time, which had the effect of blowing off the blossom before it had time to set. *O. Thomas, Drayton Manor.*

—— The fruit crop of 1877 is remarkable for its scarcity, at least in this district; the cause probably may partly be traced to the excessive wet autumn. Our average rainfall for the last thirty-three years equals 24.33; last year we had 32.94; in September we registered 4.51 which is about double our average for that month. Apricots are a total failure except under glass. Apples are a very poor crop, many trees being quite barren. Pears are almost a failure except Jargonelles, Bergamotte d'Esperen and Comte de Lamy. Plums are very bad. *E. Simpson, Wrottesley.*

Oxford.—The fruit crops in this neighbourhood are very partial. Apricots a total failure. Other stone fruits and Pears a trifle better, but much under average. Apples in orchards average a good half crop, with here and there a few trees loaded. Stirling Castle, Atkins' No. 2, Tower of Glamis, Cellini, and King of the Pippins, grown as pyramids, have cropped well. Trees of all kinds bloomed profusely, but failed to set properly, owing to immature wood and bad weather. *W. Crump, Blenheim Palace Gardens.*

Derby.—The wall trees up to the month of May looked very promising. Peaches showed an excellent quantity of flower, which set well, but the three successive nights of frost, 10° each night, followed by bright sunshine, caused them nearly all to drop off. Pears also promised well up to the same time. Standards got completely cut off, but the trees on walls, sheltered from east wind, show a very fine lot of good fruit. Apples showed an excellent quantity of flower, but, as already noted by Mr. Fish, it was very pale in colour, and with very few exceptions the trees are fruitless. Black and Red Currants are excellent. Raspberries are very fine, and good quality. Strawberries very fine crops, British Queen and Kean's Seedling suiting our soil the best. Figs on open walls show a heavy crop, which were unprotected in the winter time. *J. W. Bayne, Kingston Hall.*

—— The present almost sunless spring and long continuance of cold east wind, with severe frost almost nightly during April and May, has been most disastrous to our fruit crops. Trees have also suffered very much. Peaches and Nectarines are sadly blistered and mildewed, and what little fruit we have left continued to shrivel and drop. Apricots are almost a failure, although the trees have been well-protected with hay mats. Plums are a thin crop on west walls, but quite a failure on east walls and standards. There are a few Pears on west walls, but quite a failure on east walls, bushes, and standards. Apples are a thin crop, and small. *J. H. Goodacre, Elvaston Castle.*

Leicester.—Stimulated by warm, moist weather in February and part of March, and an earth temperature that ranged from 41° to 43°, fruit trees began to expand their flower-buds at an unusually early period in the year. A cold, ungenial April and May checked vegetative action, and Apricot, Pear, and Plum blossom fell from the trees less from any actual frost than prolonged cold and chilling north-east winds, the blighting effect of which was never more apparent. It has proved the worst year for Apricots I ever knew, and very few Peaches were saved under glass copings. Poir Pêche, Bergamotte d'Esperen, amongst Pears, have shown in good crops constitutional power to bear cold. Apples bloomed abundantly, and partial crops on Frogmore Prolific. Herefordshire Pearmain, Northern Greening, Bess Pool, give useful hints as to the hardy nature of these kinds. Nut trees produced innumerable catkins, and large crops have followed. Walnuts are abundant. *W. Ingram, Belvoir Castle.*

—— We never had a greater amount of blossom on fruit trees than this year, but the late spring frosts destroyed the greater part of it. Although the flowers did not fall at the time, I noticed that the points of the pistils were nearly all turned brown; consequently the fruit never set. With regard to stating some of the crop under average, does not give much idea of facts, as in some cases, such as Apricots and Plums, there are really none, and the same may be said of Cherries, with the exception of May Duke and Morellos. Pears very few indeed; Peaches and Nectarines more than half a crop; Gooseberries half a crop, all other small fruits abundant and good. *M. Henderson, Cole Orton Hall.*

Northampton.—All small fruits are very good except Gooseberries; other fruits are very scarce indeed. Apricots, Plums, and Raspberries were destroyed by bullfinches taking nearly every fruit-bud. Pear and Peach bloom was cut off by the severe frost on May 5 and 6, when the glass registered 8° of frost. Apples were loaded with bloom, but very badly set. Filberts and Walnuts we have a very heavy crop; in the woods the Hazel is quite loaded. *J. Smith, Althorp Gardens.*

Beds.—Up to May 3 our fruit prospects were never better, Pears, Plums, Cherries, &c., showing masses of bloom. On the 4th and following morning we had 10° of frost, which destroyed all early Cherries, Plums, Peaches, and Nectarines, and leaving only a scattered crop of Pears. Apricots, which looked weak from the first, also fell off. Apples and Morello Cherries we have an average crop, which promises to be good. Gooseberries and Currants plenty. Black Currants being fine in quality. Strawberries looked weak at the blooming period, but ripened off a good crop. *A. McKay, Woburn Abbey.*

Cumberland.—The fruit crops in this neighbourhood are nearly a total failure, excepting small fruits, which are good and plentiful. There is a sprinkling of Apples on some sorts, such as Keswick and Carlisle Codlins, Stirling Castle, and one or two more. We attribute the failure to the cold, backward, bleak, and unseasonable spring weather we had at the blossoming season. *John Taylor, Isel Grange.*

Westmoreland.—The Apricots, Plums, and Pears, which are almost a failure, was very promising early in spring, but the long continuance of bitter easterly winds, and lack of moisture during the blossoming season, I think was more the cause of failure here than any want of ripening of the wood during last autumn. *William Shand, Lowther.*

Durham.—Pears had little blossom, and dropped off after setting. Apples the same. In fact, we have little in this locality. The old Hawthornden has a fine crop, but all through the month of May and June we had cold winds from the sea which scorched a deal of the foliage of Pears, Apples, Raspberries. Gooseberries scarce in exposed places. *Robert Draper Seaham.*

Northumberland.—The fruit crops in this district are very light, much below the average. The bloom on fruit trees of all kinds was very abundant, and gave every appearance of good crops; but the long continuance of wet weather, and little sun, prevented the blooms from setting. I never remember seeing the bloom hang so long on the Peach-trees out-doors as it did this year. Some sorts of Peaches and Nectarines are much better with me this year than others, viz., Prince of Wales, Barrington, and Noblesse Peaches; Pine-apple, Hardwicke Seedling, and Hunt's Tawny, Nectarines have all a fair crop, while other sorts on the same walls have next to none. *A. Ingram, Alnwick Castle.*

Rutland.—Around this neighbourhood fruit crops are on the whole very unsatisfactory, although the prospects early in the season were very promising. All kinds of fruit trees bloomed abundantly. Plums, Peaches, and Nectarines, are a failure. Apricots, where well protected, fair crop. Cherries, with exception of Morellos, are a failure. Apples very scarce. The cold east winds which prevailed here during the greater part of April and May, accompanied with hail-storms and frost, destroyed our crops here. *F. Clarke, Barleythorpe.*

Apiary.

Perhaps the following facts may interest some of your Apiarian readers, as they have been of some interest to me. It has always been understood that only one queen reigned in a colony, and, indeed, from my own observations, I always received this as orthodox. However, this season I have been a little shaken in regard to this, from facts I will here relate. I had a colony which sent off a swarm about June 10, which I hived all right; the bees, however, all went back to the old colony within half an hour. I concluded from this that the queen had either been lost or never came away with the bees, and I found, from after events, that the former conclusion was the correct one, for when the ordinary time had elapsed the piping of the young queens confirmed it, and in a day or so the swarm came off all right with better success this time, as all went well. Still the piping went on in the old colony, and next day I got another swarm, which I united with another. Still the piping went on in the old one, and, as I did not want any more swarms from it, I proceeded to try if I could put a stop to this piping, thinking I had nothing to do but turn up the hive and destroy the young queens in the cells, as I had often done before. I found them with a small part of the cell eaten, and calling and eating vigorously time about—at least this is what they seemed to me to be doing.

After removing the small super I had put on to try and prevent swarms, I was astonished to find, running about along with some bees on the crown of the hive, three healthy queens. I picked them up and brought two of them into the house, and put them under a tumbler—this was about 8 o'clock at night. I went back to the hive to continue my investigations, when I found other two queens, which I picked up also; but, when I brought them in, I was rather taken aback to find one of the previous queens I had put under the tumbler lying dead. I at once removed it, and put in another, and sat down to watch the result. It was not long before the two queens met, and in a shorter time still one of them lay dead, for the one killed the other without any ceremony. Now here was a case where there were at least five queens reigning at once in the same colony. How was it they did not kill each other when in the hive, for they undoubtedly must have met where I found them. Has any of your apiarian readers had any experience of this kind? *W. K.*

P.S. Two days elapsed between the last swarm and the finding of the queens.

A Novel and Simple Honey Extractor.—The simple honey extractor which we figure in the next column (fig. 37) is the best and most efficient for its professed purposes that we have ever known. The large and cumbrous wooden machine, first introduced from Germany several years ago, is too expensive for the large class of cottage beekeepers in this country; but the one we now bring before the notice of our readers, can easily be made by any tin-worker, and will not cost more than a few shillings.

The extractor is made of tin; it is merely an inverted cone, open at the base or neck, which when in use is kept closed by a cork; the handle is made of iron, with a rounded bend at the upper part. Closely fitting on the cone is the box, fig. 38, prepared for the comb; we fasten this on the extractor by means of a long piece of wire, so that the lid, and afterwards the box itself, is securely fastened on the machine. The lower part of the box on which the comb rests is made of stout wires soldered on the tin edge, about ¼ inch apart, to allow the honey to run through into the lower portion. This should be loose, so that it can be cleaned.

Any expert tinman can from our description and figures make it, but when the order is given, we must impress upon our friends that they should be careful to have the size of the box correct; this would be done by having it made to the size of the bars used in the apiary, allowing of course for the extra thickness of the comb. As an act of justice, we must inform our readers that the original of this extractor is an Italian machine, called "*smielatore*," and was introduced to England by Captain Danyell, in the pages of the *Field*; we have made several slight improvements, chiefly to fasten on the box securely.

How to Use the Extractor.—We need scarcely say the extractor is intended only for use with the bar frames, such as are found in the Woodbury hives. Before placing the comb in the box, cut off the caps over the cells with a sharp knife, and place it on the cut side on the wire grating; then fix the machine in the ring of the handle of a long house-brush, or anything similar; now it only remains to turn the machine rapidly, and the whole of the honey on the one side of the comb will run out into the

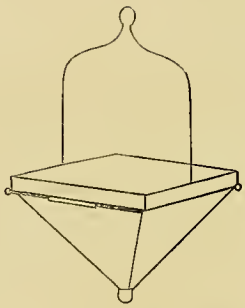


Fig. 37.—Honey extractor, closed.

lower part of the machine; afterwards turn the comb and repeat the process. It is well to fix or to solder a piece of fine copper wire netting, about 4 inches above the neck; this will act like a sieve, and cause the honey to run from the extractor perfectly clean, and free from comb and other impurities.

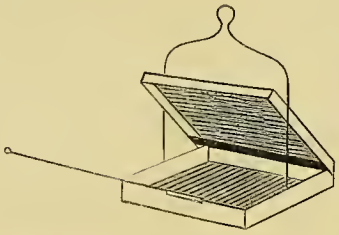


Fig. 38.—Honey extractor: the upper part opened.

A capital—in fact, we have found the best—plan of using the extractor, is to place a large staple in any blank wall, and, if another be fastened on the end of the broom-handle, the machine can be worked far better and with a single hand by the apiarian; but it

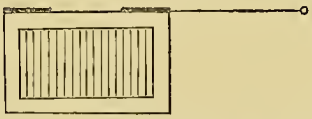


Fig. 39.—Honey extractor: the part on which the comb rests.

will be necessary for some friend to help by holding one end of the handle and working in unison, if it is employed without the iron staple.

We would advise the bee-keeper to practise the swinging of the machine before placing the comb in

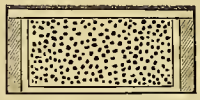


Fig. 40.—Honey extractor: showing the comb fitted into the receptacle.

the box; he will thus have more confidence, and probably avoid breaking the comb.

Carefully wash every part of the extractor before putting it away after using it. This caution is the more needful if we recollect that the bees will soon find out or detect it by the flavour of the honey. It is by this means easy to make them into household pests instead of household pets.

On this occasion we have not space sufficient to tell of the advantages and gains arising from the wise use of this simple machine. Years ago we were wishing to meet with some cheap extractor, and one like the Italian, that we could honestly advise all our friends to purchase. We must not overlook the startling fact that the bees must first gather 20 lb. of honey before they can make 1 lb. of wax; or, put it in another light, they must collect almost 20 lb. of pure honey before they can build up a small cottage skep with combs. Now, if we can devise some method to save all the old combs; and, after taking out the honey, give it back to the hive to again fill with honey, look what an immense saving is effected. For example, use, as we have lately done, a small-sized Woodbury hive in the height of the honey season, especially if the honey dew be plentiful, or we have large broad acres of the Dutch Clover within a fair distance. We can take out the bar-frame at each end of the hive about every third or fourth day, and pass them through the extractor; each time we have an average of 4 lb. of pure honey, which will realise 6*s*. We have hives yielding us 12*s*. weekly from four to five weeks in good average honey years. Is not this a more sensible plan than the one commonly adopted by nearly every cottage bee-keeper, simply because their fathers pursued the same way of working the apiary; that is, let them work the year through, and then cruelly murder the whole colony for the sake of about 12 lb. of sulphur-tainted honey. *R.*

AMATEUR GARDENING.

Flowers.—Looking at plant life in all but its lowest forms it will be found that the great point—the climax to which all its operations tend—is the flower, and the consequent seed.

Artificially or accidentally, from broken bits, or more or less by various modifications of its own ways of growth, the parent plant may be propagated, but reproduction from seed is the chief natural method of keeping up the race, and the various forms and colours and scents which we prize in our favourite flowers have their especial use in guarding the stamens and the pistil with its embryo seeds from injury, in drawing food to nourish them or in attracting insects necessary for proper fertilisation.

The flower itself (unlikely as it may seem at first sight), is really a shortened branch; an axis bearing altered leaves. This may be seen in the Rose, where the blossom is occasionally altered into a leafy shoot growing from the centre of the coloured petals, and in the variety known as the Green Rose (figs. 42, 43) where every part of the blossom, sepals and petals, stamens and pistils, may be found transformed into more or less perfectly developed green leaves. This may be seen also in Clover, double Cherry, and other instances, and the flower being in fact leafage in an altered state will be found often to accompany an altered state of ordinary plant secretions.

The vigorous circulation produced by rich manure and plentiful moisture accompanied by raised temperature gives long shoots, strong leafage, great luxuriance generally, but frequently no flowers.

For these the sap is needed in a more condensed state, less water and more of the material that it holds, and its course must be retarded and the quantity accumulated to bring the dormant flower-buds into action. We see this in the "well-ripened" wood of the Vine or Peach requisite for good bearing, in the Hyacinth flowering on the stores of preceding years, and generally in the fact of plants flowering, not on long, sappy shoots—"thieves," as they are called—but on the more matured growths, whether (as in annuals) of the present season or of the previous one.

How to Make Plants Flower.

If we turn a plant which has been flowering freely out of its pot we shall probably find its roots wound in a great mat round the outside of the ball (fig. 44). This is one way of checking circulation. The plant must first be healthily grown, and then, if flowering does not occur naturally, the development of leafage being checked by the cramping of the roots, the consequent retarded circulation of the more condensed sap throws the flower-buds, which otherwise might have remained dormant, into action.

We should not on any account pull off the leaves, for we do not want less food, but to have it in a more condensed form, and the natural agents are sunshine, warm dry air, and dry ground. Artificially we may throw plants into flower by withholding

water partially or entirely, by root pruning, or taking up the plant and resetting it, and by cutting off the

"Succulent that feeds its giant strength,
But barren, at the expense of neighbouring twigs,"

so that sunlight may be admitted to ripen the wood. We may pinch off the tops of shoots to stop the flow of sap to the extremity, or we may accumulate it by bending down the boughs, or by ringing or tying a ligature round some particular branch which it is wished to throw into blossom.

We may (as in the case of the Wistaria) hasten the season of maturity when flowers can be produced by good feeding, but when this stage is gained the amateur should remember that over manure, with moisture in earth and air accompaning warmth, are stimulants to such vigorous growth as produces leaves rather than flowers, and a good lesson may be taken from the different amount of flowers commonly borne by the same species of plant on the sunny or the shady side of a hedge.

When the flowers are formed we fall again into the common routine. If we take a petal we shall find that as in the leaf there is a thin outer skin with a layer of cells between each side of the leaf, and the flower, like the leaf, being constantly evaporating moisture, like it, requires nourishment, and even more care, for it has but a short life. The flowers want plenty of food to nourish the embryo seeds they guard, and, therefore, must be well but not over-fed. Ordinary liquid manure, or liquid plant stimulants, or moisture that will make the supplies round available, are therefore useful more or less during flowering, and a damp quiet air. Draughts and dry air both do injury by causing excess of evaporation.

Any great quantity of gross food, however, or over-

Fig. 41.—Unrestricted roots.

stimulation of the plant system, should generally be avoided. Some plants bear it, but with some, as with Carnations, the colouring is likely to be injured, or a distortion of the flower may ensue. The stamens may change into petals, petals into leaves, or the flower may become altogether double if the soil is too rich, but though we owe many of our prized double varieties of florists' flowers to careful stimulus, and curious changes may be brought about in the blossom by its judicious application, generally speaking the result of over-feeding is unsatisfactory in amateur hands. As the flower draws greatly on the plant resources, it is very desirable that where it is not needed (as in Rhubarb in the kitchen garden) that it should be cut off in the bud, and in ornamental plants the buds should be thinned to what the plant has power to expand properly, and the flowers (if not wanted for seed) should be removed as soon as they begin to wither.

Though moving is sometimes a good way of throwing a plant into flower, it is generally very injurious when the buds are formed and passing on to the flowering stage; when once they are brought into existence they require a free flow of food, and this should be particularly considered in preparing plants for forcing.

Pinks, Heliotropes, Mignonette and other similar favourites should all be prepared beforehand. Pinks should be the piping of the previous spring nursed in beds through the summer, and potted towards the end of September. Plants of Heliotrope or Mignonette should be established by autumn; Pelargoniums should be cut back early in the summer, before they are needed for winter use, and Roses require still longer preparation.

The plant that is to flower in unnatural warmth at an unnatural time of year must be supplied with resources for its work, and not have exhausted its flowering powers during the summer. It should be well rooted in its pot, with plenty of flowering wood ready to come into play, properly nourished when the stimulus of heat and moisture are applied, but the plant simply taken from the ground (perhaps after flowering during the summer), put into a pot and into heat at once, meets every difficulty unprepared, and in most cases will fail.

Fig 42.—Proliferous rose, to show the branch-like nature of the flower.

Fig. 43.—Proliferous rose.

The time when a plant attracts particular attention by the beauty of its blossoms is just when it ought not to be meddled with. Any check that cuts off the supply of food just then, checks the development of the blossoms. But if it must necessarily be moved from a border it should be taken up with as large a ball as possible, shaded and supplied with sufficient moisture, or if in a pot, it is best to sink it, pot and all, or take it carefully from the pot and plant it without separating the root fibres, leaving proper arrangement of the roots till after the flowering season.

Hints for Gathering Flowers.

In gathering flowers much injury is often caused by breaking off the spray of blossom with the fingers. Sometimes it is tough and will not come off, and a branch is torn away, or the whole plant comes up and is probably sacrificed; at the best a rough stump is left to die back, and cause unsightliness as the least part of the probable damage, whilst if the flower is neatly taken off by scissors or the clean cut of a knife (just above a leaf-bud where it is from a leafy spray), the wound heals, the plant is benefited, and the gatherer gets the exact morsel which he desires.

The periodic action of the plant system in times of opening and closing, and emission of scent from the blossoms, may be utilised for special needs. Lists of these plants would be out of place here, but amongst those which diffuse fragrance in the evening, the Wallflower in spring, and later in the year the Rocket, night-smelling Stock, white Lily, and Mignonette, may especially be mentioned. The Cattleya Eldorado also gives its scent in the evening, and the Epidendrum cuspidatum from midnight till early morning.

In periodic opening and closing,

"The Marigold, that goes to bed with the sun,
And rises with him weeping,"

is a type of many. The early opening of the Convolvulus major may be turned to good account in the part of the garden looked on from the morning rooms of the family. Oxalis corniculata rubra shows its

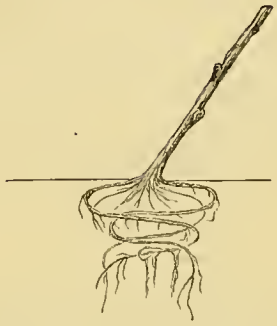


Fig. 44.—Pot bound roots.

bronze leaves rather than its golden stars after midday; the Chicory is an example of closing in the afternoon; and in the number whose expansion is affected by time of day or by weather influence some care is requisite in selection for carpet-bedding. The effect here depending not on form, or scent, or varied beauties, but simply on colour, if one kind of blossom in the design is closed the whole may lose its beauty, not only from its absence, but from colours which are inharmonious being thus thrown together.

Arrangement of Colours.

Generally speaking, the "complementary" colours are most satisfactory; that is to say, one of the three primary colours, red, or yellow, or blue, with the other two (which make up the "complement") blended into one tint (known as a secondary colour), to accompany it. Thus yellow, a primary colour, with its secondary, purple (composed of blue and red), go well together; so do blue and orange (composed of red and yellow), so also red and green (composed of yellow and blue). We can scarcely find a more beautiful natural grouping of colours than of purple Foxglove mixed with yellow Broom; in bedding-out, the orange Gazania and blue Lobelias, or blue Salvias, are satisfactory combinations, and the red Pelargonium owes part of its overwhelming popularity to combining colour-requisites in itself—the primary red of its blossoms with the complementary green of its leaves.

Combinations of white and red are particularly pleasing, for the obvious reason that red in the flowers and green in the leaves, supplying all that is necessary for complement of colour, the added white heightens the effect of the brightness and is a point of repose for the eye even whilst its own brilliancy is enhanced by the glowing tints at its side. White also is almost always beneficial as a dividing

mass in doubtful combinations of colour, and so is a difference in the height of the plants which will allow the tints of their foliage and its shadows to come into play.

The primary colours are apt to look too hard when used together, but taking blue and red as an example if we have a centre of blue Agapanthus with some red flowers round, the eye will pass over the foliage from one colour to the other satisfactorily, and the neutral tints of the different colours lying in the shadows, whether of leaf or flower, have always a softening picturesque effect. Red and yellow, which are painfully gaudy in combined masses, are thus, by the intermixture of white flowers, or green foliage, softened into picturesqueness, and effect may similarly be given to beds containing various shades of one colour. Combinations such as red and orange, or blue and purple, in which the primary colour is repeated in one of those of the secondary, are very difficult to manage without some similar addition or that of appropriate coloured leafage intermixed with the flowering plants.

The extent to which the subject might be pursued is boundless, whether in the grouping of colours, or their distant effects, by which a selection of quiet blue tints may give distance to some particular spot, or red or yellow blossoms enliven and bring near a monotonous background. In spring the eye takes pleasure in warm and sunny tints—golden Winter-Aconite, or Crocuses, and rich rosy purple Erica carnea enlivening the waking up of the year; in the summer with all the gorgeous beauty of tint around, the coolness of white and blue, and (especially near towns) plentiful leafage is often the most pleasing; and in autumn, in the decay of vegetation, and possibly in sprinklings of snow, there is satisfaction again in clear warm colour, cheerfully excluding all idea of decay or dreariness.

The flower like the leaf must have sunshine and food for its double work. We have only considered it here as giving us pleasure by its beauty, of its main work in continuing the race we may have something further on to say. *O.*

ON THE SOURCE OF THE CARBON OF PLANTS.

(*Concluded from p.* 186.)

Experiments were made with plants of French Bean, Nasturtium, Gourd, and Sugar Beet, growing in the open air in pots in good garden soil. From these was selected a leaf, or the upper part of a stem with several leaves, still organically united with the parent plant, which was passed through the hole in the porcelain dish, under the glass shade, and carefully secured air-tight, and from injury to itself, by cork and wadding. The plants for comparison were as nearly alike as possible in every respect, and a control plant grew in the open air between the shades. Both etiolated seedlings, which became green as quickly without carbon-dioxide as in common air, and well developed green Gourd leaves, were tried. The Gourd leaves, which contained starch at the beginning, entirely lost it within a day or two in the atmosphere deprived of carbon-dioxide, while those in the other shade remained still full of it. The shades, and the contents of the dishes, were then changed, so as to bring the starchless leaves into the shade containing carbon-dioxide. During the day these became again full of starch; while within twenty-four hours it had quite disappeared from the leaves in the other shade. In a similar experiment with Sugar-Beet the control plant in the open air was covered with a black pasteboard box, and it was found that the leaves in the shade deprived of carbon-dioxide lost their starch at about the same rate as those in the dark. In no case was starch found in the leaves while they remained in an atmosphere without carbon-dioxide.

The second set of experiments was made with long leaves of Bulrush and Bur-reeds, which were etiolated, and then separated from the plants. With the same general precautions as before, the upper end of the leaf was inserted in the shade without carbon-dioxide, the lower in an atmosphere containing 5 per cent. of carbon-dioxide, whilst the space between was left free to the open air. This intermediate part was obscured by tin-foil, so that no starch could be formed in it at the expense of any carbon-dioxide passing through the tissues from the lower shade, and it was supposed that if such a phenomenon were possible the spacious longitudinal air channels of these plants might be especially favourable to the transmission of the gas. These experiments usually lasted one day, and uniformly gave the same result. Starch was formed abundantly where carbon-dioxide was at disposal in the air, while the excess of it in the lower shade had no effect upon the portion of leaf in the upper shade, which remained entirely free from starch.

The apparatus when arranged was always placed in a light window, shaded by gauze blinds if the sun were too hot; and in these latter experiments it was an interesting circumstance that, in the lower portions of these rather thick leaves, more starch was formed on the side next to the window; therefore, in two cases a piece of looking-glass was placed behind the shade, when, being equally illuminated, starch was formed in equal abundance on both sides of the leaf. This variation in the starch formation, according to the amount of light, showed that that portion of leaf had not always used all the carbon-dioxide at its disposal, and that consequently there was an excess which might have passed upwards through the tissues.

The third set varied from these in having no part of the leaf exposed to free air, thus obviating the possibility of the carbon-dioxide being diffused into it in passing upwards through the plant. A glass vessel containing air without carbon-dioxide was placed within a large shade containing air with 5 per cent. of this gas; and a previously etiolated leaf, with its stem in water, was so fixed as to be partly in the one and partly in the other. After six or eight hours it was examined for starch. Without exception starch was formed abundantly in the parts in the large shade, whilst no trace of it was found in those in the inner vessel, even quite close to the junction between the two.

The remaining two sets of experiments were made to ascertain whether starch formation in leaves, in the open air, is accelerated by giving an excess of carbon-dioxide, either to adjoining parts of the leaves themselves, or to the roots. In the first case leaves separated from the plant were divided lengthways. One half, with the stalk in water, was in a shade with air containing 5 per cent. of carbon-dioxide, its upper part projecting under the glass lid of the shade, which was luted with grease, into the open air. The other half of the same leaf was laid on the lid, on filter paper soaked with boiled water to keep it moist, and put as near as possible to the projecting piece of leaf. In the other cases etiolated leaves, organically united with plants whose roots were in rich humus soil, were divided lengthways; one half, quite cut off, was laid near to the other, and the two were examined and compared after some hours' exposure in sunlight. The results of both these sets of experiments were uniformly the same; careful examination showed that starch was formed as readily and plentifully in those portions of leaves excluded from any other source of carbon-dioxide than that in the air surrounding them, as in those having an excess of it at command.

From these experiments Dr. Moll concludes that starch is never formed in leaves in an atmosphere deprived of carbon-dioxide, however much of it may be at the disposal of the other, under or above-ground, parts of the plant; nor can starch-formation be accelerated in one part of a leaf by an excess of carbon-dioxide being at the disposal of another part of it, either in the air, or through the roots.

The results of these elaborate experiments are doubtless in accordance with the direction of those of other modern inquirers on this subject. At the same time it will probably be felt, that, when long-accepted opinions, which many well-known facts seem to favour, are held to be called in question, we may still ask for further confirmation, before accepting as decisive, conclusions depending on the exact interpretation of experiments made with living organisms exposed to somewhat artificial conditions. It may be hoped, however, that this further instalment of evidence in a given sense will incite to further research. *Nature.*

Garden Operations.

PLANT HOUSES.

Greenhouse Hard-wooded Plants. — Now that a considerable portion of the stock are out in the open air, it will give an opportunity for carrying out any alterations or repairs that may be needed, especially such as re-arrangements of or additions to the heating power. In the whole routine of gardening there is no more false economy than a deficiency of piping. Where this exists, in very severe weather, it necessitates a continual use of the poker in pushing the fire along, the result of which invariably is an increased consumption and waste of fuel. Wherever there is an insufficiency of heating surface, either in houses that have to be kept to a high temperature, or in such as where the requirements are confined to simply excluding frost, I would strongly advise the introduction of additional piping at the present time, when some of the plant houses being comparatively empty, gives an opportunity for disposal of any portion of the stock that is grown where such additions or alterations have to be made. The same holds good in reference to boilers. There are hundreds of places, large and small, throughout the country where it may be said that the existence of large numbers of valuable plants is dependent through trying winters upon the endurance of boilers, in many cases so constructed that their holding together when hard pushed in severe weather can never, with anything like certainty, be calculated upon, even so much as a single week, although they may go on for years doing the work required of them; but either sooner or later, from the defective principles upon which they are made, they give way when their services can be least dispensed with, and where often, with every contrivance and makeshift that can possibly be resorted to, destruction, or serious injury is inflicted, frequently upon large portions of the stock. Where any heating apparatus of a doubtful description exists there is nothing like replacing it in time, and at no season of the year is there so good an opportunity as at present. Re-glazing, painting, repairs of brickwork, and lime-washing, can also now be carried out with much more convenience than when the houses are all filled with the general occupants. One thing I would urge upon those who have not had much experience with plant structures; that in all houses and pits that are kept hot and moist, the wood-work gets saturated with water, and unless thoroughly dried before the application of paint the work is simply useless, as the paint will not adhere for any length of time to moisture-charged timber, and even if it did its effect as a preservative would be of no avail. With metal houses it is not a bad plan to apply a coat of paint inside every year, as by this means the unsightly appearance, and to some extent injury of the plants by rust-impregnated drippings upon them is avoided. In plant-houses of all descriptions there can be no greater mistake committed than letting them go too long without paint. If no painting is required, the whole of the wood-work, both inside and out, will be benefited in looks as well as reality, by being well washed from the dirt accumulated thereon. In houses where a high temperature with considerable moisture is kept up, the slimy conferva that establishes itself upon the woodwork, if allowed to remain, hastens its decay.

Soft-wooded Greenhouse Plants. — The earliest large-flowered Pelargoniums, that bloomed in April and May, and were subsequently headed down after being sufficiently hardened off, will by this time have broke, and made several leaves to each shoot. They should at once be shook out and potted, as it is much better to pot these earliest flowered plants as soon as ready than to put it off until the later cut-down portion are in fit condition, as if the partial disrooting necessary to subject them to at the time of being shook out is deferred till a considerable amount of growth has been made, it will receive a check that will interfere with the progress of the plants through the autumn, and this portion that are re-potted in advance of the others will come into flower earlier than them. There are now a number of very dwarf free-blooming Pelargoniums with somewhat irregular flowers that for decorative purposes are much superior to the show kinds. Many of them have naturally an early flowering habit, amongst which are Duchess of Edinburgh, white fringed flowers, with a small purple blotch at the base of the petals; Empress, white, with violet pencillings, also fringed edged; Madame Charles Keteleer, white centre, dark spot on the top petals; Triomphe de St. Maudé, deep crimson, dwarf habit, and a most profuse flowerer; Quadroon, white, dark spot on upper petals, flowers fringed; Queen Victoria, carmine, edged with white; Duchesse de Morny, rosy petals, maroon spots; Digby Grand, white, dark spot on upper petals, fringed edges. The above are a selection of the very best decorative Pelargoniums grown, and amongst the most serviceable conservatory plants for spring use, as the naturally short-jointed habit of most of them prevents their drawing up weak like the large-flowered show kinds are liable to, when stood close together in the way that becomes necessary in a house devoted to flowering plants. Seeds of Cyclamens should now be sown. Some growers prefer peat in which to grow these plants in all their stages, from the seed-pan up to large-sized flowering bulbs. With me they always succeeded best in good fibrous loam, with one-sixth of leaf-mould, and rotten manure in equal parts added,

and enough sand to keep the soil open. The Cyclamen seeds being somewhat large, will bear covering a little deeper than things of a smaller character. Place the pots at once in a pit or house where they will have a little more warmth than in an ordinary greenhouse, keeping the soil slightly moist until they vegetate, when they ought to be stood close to the glass, and kept on growing through the autumn and winter in an intermediate temperature, pricking them out when large enough to handle, a dozen together, in 6-inch pots. Bulbs of these that have been stood out-of-doors after flowering should, when they have commenced to grow, be shook out, and repotted in soil such as above advised. They ought not to be subjected to this operation until they have begun growth; if potted whilst at rest many of the roots start very slowly or not at all. The present fine strains of this flower have few equals through the winter and spring as decorative subjects, but, as might be supposed from the habitats where their progenitors grew naturally, they are averse to a dry atmosphere; when submitted to such they make very slow progress, and almost invariably become affected with red-spider and aphides, which if allowed to remain on them for only a short time destroys the foliage to an extent that ruins their growth for the season, the corms at the same time appearing to get into a hard, stunted condition, from which they rarely recover so as to be of any use. *T. Baines.*

FRUIT HOUSES.

Orchard-house.—Several of the early Peaches of recent introduction are now ripening, and where a judicious selection of later kinds has been made, this department will give a supply of fruit up to the end of the season. When the fruit shows signs of ripening, the supply of water should be reduced, syringing discontinued, and the trees exposed to a free current of air. Later kinds will derive great benefit from liberal supplies of liquid manure and syringing for some time to come. To prolong the season as much as possible, a few trees may be removed to the open air, where with the temporary protection of spare lights, for throwing off wet, and a curtain of Nottingham netting, for keeping out birds and insects, the fruit will colour and finish better than if kept crowded in the Orchard-house. Remove all trees from which the fruit is cleared to the open air, and treat as has been advised for Cherries; a sheltered but thoroughly open situation will suit them best. Syringe occasionally to keep the foliage clean, and protect the pots from the powerful influence of sun by partially packing in dry fern or litter. Up to the present time there has been a great scarcity of wasps and flies, but should they put in an appearance, some very light material may be drawn over the ventilators, which will now be left open day and night. Unfortunately for amateurs and nurserymen, the Peach and Nectarine lists have been extended with varieties having the prefix "early" as their only recommendation. I have found Early Grosse Mignonne, Abee, Early York, Hales' Early, and Early Ascot, first rate in size, colour, and quality. For succession Dr. Hogg, Grosse Mignonne, Royal George, and Kensington, Bellegarde and Stirling Castle. For coming in late, Barrington, Prince of Wales, and Walburton Admirable, Violette Native, Noblesse and Dymond, should be in every collection; also Albert Victor and Stanwick Elruge Nectarines. Older varieties are too well known to require naming in this list. *W. Coleman.*

Peaches and Nectarines.—The keeping of the foliage in a healthful state as long as possible, and the maintenance of a proper degree of moisture about the roots, are the predominating points which are notable in the management of these subjects at the present season. For these ends it is, therefore, necessary to give the trees heavy syringings frequently, particularly during hot and arid weather; and the borders, "especially inside ones," heavy waterings likewise occasionally. The growths on the trees in early-started divisions will soon, if not already, be showing indications of ripening. When this is the case, and the buds are becoming prominent, keep the house constantly open to the utmost extent, and, if practicable, it is preferable, in the case of very early forced trees, to expose them altogether, by removing the sashes entirely. The advantage accruing to the removal of superfluous shoots where they were too thickly set have been adverted to in the case of early forced trees in a former Calendar; it will, therefore, only be necessary now to advise the practice to be applied in a similar way in the case of later started trees. If any alterations be necessary in the way of root-pruning or partial lifting of any of the trees in the early house, let it be done as soon as the buds are tolerably well developed; for this purpose have the needful requisites on hand in readiness; a slight addition in the way of fresh soil is very stimulating and beneficial to such trees occasionally. Pure loam, with a slight admixture of sharp sand or roadside parings, cannot, as a mixture, be surpassed for this purpose. Let the leaves which fall from the trees be collected every day for the sake of tidiness, and, moreover, as a means of extinguishing in some degree any insect pest which may exist upon them. *G. T. Miles, Wycombe Abbey Gardens.*

Cucumbers.—Where winter Cucumbers are in constant demand, another sowing of Telegraph or some other favourite kind should now be made for filling up the different compartments as they are cleared of Melons. A very important item in the successful management of these plants through the winter is cleanliness, and as Melons are very subject to red spider, too much attention cannot be devoted to the thorough cleansing, washing, and painting of the pits, before the plants are turned out. If the old system of growing on hills is followed a small quantity of good turfy loam, with a liberal admixture of old mortar, and a sprinkling of soot for the destruction of worms, will grow the plants sufficiently strong and firm without the aid of animal manure. When they reach the trellis, and young roots begin to show through the soil, a layer of fresh compost may be added, but large quantities should never be given at one time, as Cucumbers always grow best when the roots are working near the surface of the bed. Houses intended for coming into bearing after Christmas should be relieved of their present occupants, and put into through working order in time for planting early in October. Pots plunged in fermenting materials, or placed over the pipes, are better than hills for this work. Get together a good supply of the different kinds of turf, now in fine condition for winter and spring use. Stack it in high narrow ridges out-of-doors and protect with thatch or shutters, before bad weather sets in. To give time for the preparation of houses for winter work, plants in pits and frames should be made to do duty as long as possible by a free use of the knife, frequent top dressings and liberal supplies of liquid manure. The linings should also be kept turned and renovated, otherwise the plants will collapse when cold nights set in. *W. Coleman.*

KITCHEN GARDEN.

In no part of the year is the benefit to be derived from a liberal application of water and liquid manure more apparent than at the present. As a general rule we have at this season to contend with a dry and parching atmosphere, which in the process of elaboration, or the pumping up, or perhaps ascent of the sap, very soon exhausts any supply the roots are able to obtain, and they thus become dependant upon an artificial supply, and this should be supplied to all growing crops in as liberal a manner as the amount of labour and conveniences at command will permit, either with strong liquid manure from the tank, and pure water alternately, or constantly with a highly diluted solution of liquid manure, say five to one in proportion, less or more according to strength. Without these applications, and continual surface stirring, it is useless to expect tender and succulent vegetables and salads. For this reason we have constantly drawn attention to the necessity of paying particular attention to the practice, and those who have been able to follow it out in a liberal manner will now be able to appreciate its great benefit. Of course all these injunctions to follow this or that practice pre-supposes that, where such things are expected from a gardener, there is placed at his disposal proper materials and the amount of strength necessary to apply them. I greatly fear that it is very often the want of these, and of consideration on the part of employers as to the time which such operations require to be efficiently performed, which causes such unjust dissatisfaction in many cases, where a trifling outlay at busy times when operations press would make all the difference. The labour which the continual applications of liquids to growing plants involves, may be very much economised by following up the practice (so often recommended in these columns) of a systematic course of mulching, and, as at this season the manure from the stables is not in such immediate request at at other seasons, it is good practice to shake it over and, retaining all the droppings and short stuff for the formation of Mushroom beds, to make use of the long litter to cover over the surface of the ground after watering; this mulching is particularly applicable to late Peas and dwarf Beans, as well as between the rows of Scarlet Runners; it is also very useful for all autumn crops of the Brassica tribe, but not for those which are to stand through the winter, as a very free and succulent growth is much more liable to suffer from frost; for this reason Lettuces intended to stand through the winter should not have the soil too heavily manured, although for all intended for autumn and early winter use they should have the assistance of plenty of manure and liberal supplies of moisture to the roots. As soon as Onions begin to show signs of maturity by the tops turning colour, let them be pulled up at once to avoid rerooting, which is very destructive to their keeping properties. Now is the time to sow the different varieties of Tripoli Onions to stand through the winter; the Giant Rocca, and the White and Globe Italian are reliable sorts, and with liberal treatment come very fine; at this season they should have a warm border, and not be sown too thickly. A sowing of Welsh Onion should now be got in; they are very useful to draw young. Continue to make successional sowings of Turnip Radishes; also another small sowing of Bath Cos Lettuce. A late sowing of mixed sorts of Endive to stand in the seed-bed through the winter will be found very useful in spring. Remember to get in a good breadth of Veitch's Red Globe Turnip within the next fortnight; these will come in after Christmas and on into the spring. On or about the 26th of the month sow the main crops of Cauliflowers to stand through the winter in handglasses, frames, and at the foot of south walls. The Frogmore forcing is a good sort to come in early; Early London Market and Large Asiatic for the main crop, and Cattell's Dwarf Late, are good sorts for succession. They should be sown on a warm and sheltered border in the south of England, but are better sown under glass further north, taking care, however, to expose them very freely to the air to harden and keep them dwarf. Commence at once the earthing up of the main crops of Celery, observing first to see that they have a thorough soaking of water the day before, and next to put sufficient earth to allow of its forming a level at the top to catch the water instead of a ridge to throw it off. As the winter approaches the pointed ridge becomes a necessity, in order to prevent rotting, but at present it is a mistaken practice to bring the ridges to a point. At this season of the year a vast amount of vegetable refuse is sure to accumulate in this department, and must be constantly removed to the rubbish-heap, where if there is any annoyance arising from bad smells during the process of fermentation, it is a good plan to keep a strong fire at work, and throw the rubbish thereon. *John Cox Redleaf.*

The Climate and the Flowers of England.—We are so accustomed to complain of our climate, and to hear others do the same, that the warm exuberance of praise bestowed upon it by a writer in the *New York Tribune* comes as a refreshing surprise:—

"The man who could not be happy in England—in so far, at least, as happiness depends on external objects and influences—could not reasonably expect to be happy anywhere. . . . Here [London, July 7] the weather is literally blissful. . . . The sky is softly blue, and full of magnificent bronze clouds, the air is cool, and in the environs of the city is odorous with the scent of the new-mown hay; and the grass and trees in the parks—those copious and sweet lungs of London—are green, dewy, sweet, and beautiful."

The writer goes on to describe the beauty of an English Hawthorn hedge in blossom:—

"We have nothing comparable with it in Northern America, unless perhaps it be the Elder; and even that, with all its fragrance, lacks equal charm of colour. . . . English flowers, it must often have been noticed, are altogether exceptional for substance and pomp. The Roses in particular—though many of them, it should be said, are of French breeds—surpass all competition. It may seem an extravagance to say so, but it is certainly true, that these rich, firm, brilliant flowers affect you like creatures of flesh and blood. They are in this respect only to be described as like nothing in the world so much as the bright lips and blushing cheeks of the handsome English women, who walk among them and vie with them in health and loveliness. It is easy thus to perceive the source of those elements of warmth and sumptuousness which are so conspicuous in the results of English taste. This is a land of flowers. Even in the busiest parts of London people decorate their houses with them, and set the sombre, fog-grimed fronts ablaze with scarlet and gold. These are the prevalent colours (so radically such that they have become national), and when placed against the black tint with which this climate stains the buildings, they have the advantage of a vivid contrast which much augments their splendour. All London wears a 'suit of sables,' variegated with a tracery of white, like lace upon a pall. In some instances the effect is splendid."

The Old Hammersmith Lettuce.—Had we not sown the Hammersmith Hardy Green Lettuce in the open ground in August, last year, we should not have had a Lettuce out-of-doors this spring, almost every one but this having succumbed to the winter. It was sown in a row at the bottom of a Plum-wall in the third week of August, and thinned out so that those left stood in quincuncial order, forming a zigzag . . . . . row, 2 inches apart or so. In April . . . . hundreds of people envied my row of . . . . . Hammersmith Hardy Green Lettuce, for it was a long row of some 120 yards, and we had them in great quantity during April and May. Being a dwarf green Cabbage Lettuce, a great many can be grown in a small space. It is an old-established friend, which I used to be very fond of, and this year it was a friend indeed, for I was in need. It is all very good having an eye to those big crisp Lettuces from France, but when we gardeners in the North find ourselves minus of these, we naturally fall back on our old acquaintances, and this is indeed a veritable and faithful one, being the hardiest and most distinct type of Cabbage Lettuce—one which every gardener would be the better, and certainly none the worse, for having. *Henry Knight, Floors Gardens.*

THE

Gardeners' Chronicle.

SATURDAY, AUGUST 18, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Aug. 20 —	Lee Bridge Horticultural Society's Show.
TUESDAY,	Aug. 21	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M. General meeting at 3 P.M. Coventry and Warwick Horticultural Society's Show. Flower and Fruit Show at the Agricultural Hall. Sale of Imported and Established Orchids at Stevens' Rooms.
WEDNESDAY,	Aug. 22 —	Sale of Dutch Bulbs at Stevens' Rooms.
THURSDAY,	Aug. 23	Reading Horticultural Society's Autumn Show.

IT is not long since we had occasion in these columns to give considerable prominence to an analysis of a work of Mr. DARWIN'S on the subject of the FERTILISATION OF PLANTS, by the Rev. G. HENSLOW, who took exception to some points raised by Mr. DARWIN, more especially as to the alleged necessarily injurious effect of what may be termed "in-and-in breeding." We have now before us another work of a similar character from the same pen.* It is hardly requisite for us to enter at such length into the subject of this volume as into that of its predecessor, and this for two reasons. In the first place the present volume is but an expansion, with many additions, of those memorable papers on the dimorphism of Primula, of Lythrum, of Linum, and other plants, which first appeared some years ago in the *Journal of the Linnean Society*. In the next place, the subject in its main features is so closely similar to that which formed the subject of *The Effects of Cross and Self-Fertilisation in the Vegetable Kingdom*, that, allowing for differences of detail, the same general remarks will apply in the one case as in the other.

In the year 1862 it will be remembered Mr. DARWIN first published his remarkable series of observations on the two forms, or dimorphic condition of the flowers in the species of Primula. It was not without some sense of humiliation and of wasted opportunity that florists and horticulturists found that they had been pottering over "pin-eyes" and "thrum-eyes" for generations, without having the slightest notion of the significance of the variations in question. Even from the restricted point of view of the professed florist, the meaning of the formations in question, and their direct practical bearing on the cultivation and selection of the forms most in consonance with his arbitrarily assumed standard were entirely overlooked. So-called botanists were, with very few exceptions, not one whit better. They had been splitting hairs, counting spots, wrangling whether this was a species and that a variety, discussing whether there were two or fifty British representatives of a particular genus, and so on, without troubling themselves in the least about the causes of the variations they observed in such minuteness of detail, still less about the practical meaning and significance of the observed facts. Instead of treating plants as manifesting ever active life and ceaseless change, and adaptation to outward conditions and inborn endowments, they treated them all as a schoolboy would do so many marbles. It is one of the special features of Mr. DARWIN'S work in all departments that he is the cause of work in others. No better test could be desired of the degree of influence exercised by a great thinker and a great observer than this. Accordingly, we find in this subject of dimorphism, as in others, that Mr. DARWIN'S experiments and deductions have stimulated a large number of observers at home and abroad. They have excited the attention of professed naturalists in America, in Germany, and in Italy, where learned professors have been induced to observe and experiment for themselves, to expound and to extend Mr. DARWIN'S researches. Practical gardeners, like Mr. SCOTT, now of the Calcutta Gardens, and others have not failed to see the profound importance of these observations to their own pursuits. Amateurs have found a new and never-failing source of interest and amusement in observing and studying the endless adaptations, contrivances, and inter-actions designed by the great Architect for the welfare and perpetuation of His creatures. In every case, making allowance for differences in points of detail, substantial agreement with Mr. DARWIN'S main principles as regards the object of these dimorphic forms has been arrived at. The general result of the observations and experiments that have been made on these so-called "heterostyled" plants has been shown to be this—that to ensure the largest number of healthy seedlings the pollen from the anthers of one particular form or size of stamen must be transferred by insect agency or otherwise to the stigma corresponding in point of dimensions with the stamen. In this way there may be in one and the same species, two or three sexual pairs, as distinct practically as the pairs representing the sexes in another species. Without practical experiments this diversity cannot always be determined, the relative length of stamens and styles may vary; the structural arrangements may differ, and yet functionally there may be no diversity. DARWIN himself records how he has been deceived in this way; a caution is thus supplied deserving of careful attention. Where, however, the pollen grains differ in size, this dimorphism may be assumed pretty certainly without resorting to direct experiment.

In the introduction to the present volume, Mr. DARWIN adopts the old Linnean classification into "hermaphrodite" flowers, or those with stamens and pistils in the same flower, as in the Rose; "monœcious," or those in which the male and female flowers are separate, but on the same plant, as in the Hazel; "diœcious," or those in which the flowers of one sex are on one plant and those of the other sex on an entirely distinct plant, as in the Willow; and "polygamous," or those in which hermaphrodite flowers may be found on the same plant with male or with female, or with both flowers, as in the case of the Ash.

These four subdivisions, it is needless to say, were adopted from structural considerations only, before the physiological phenomena connected with them were thought of. To adapt them to the present state of knowledge various subdivisions and modifications have to be made. Thus Mr. DARWIN admits two sub-divisions of hermaphrodite plants, viz:—1, heterostyled or di-tri-morphic flowers, as in the Primrose; and 2, "Cleistogamic" flowers, or flowers adapted expressly for self-fertilisation, inasmuch as the flowers either do not expand, or their buds are inconspicuous, and thus offer no attractions to insects. Such flowers are very common on Violets, though frequently overlooked. They yield more numerous seeds than the brighter coloured flowers.

Monœcious plants like the Hazel, which have the sexes in different flowers on the same plant, may be sub-divided into two classes, according as the anthers are ripe before the pistil, or *vice versa*, the object clearly being to favour the cross fertilisation of different plants. Many hermaphrodite (structurally) flowers are organised in a similar manner.

Diœcious plants, or those with the flowers of the two sexes on different plants, must necessarily be cross fertilised, and as we have just seen many plants structurally monœcious are rendered practically diœcious by the different times at which the stamens and pistils respectively come to maturity. Among diœcious plants the difference between the sexes is sometimes remarkably great: thus among Restiaceæ, sedge-like weeds of Australia and the Cape, it sometimes happens that the male and female plants of the same species are so different that the female much more closely resembles the male of a totally different genus, than it does the male of its own species. Of course this applies only to the general habit and appearance of the stem and foliage, and not to the intimate structure of the flowers. Lastly, we come to polygamous flowers, which Mr. DARWIN divides into two sub-groups, according as the three sexual forms are found on the same individual or on distinct plants. Of the latter case the Ash is an example; some trees bear in some seasons male flowers only, others female flowers only, and others hermaphrodite blossoms. The Ash then may be classed as trioicous. On the other hand, the common Maple bears all three sorts of flowers on the same tree, and is thus monœciously polygamous. Other polygamous plants may be grouped into "gyno-hermaphrodites," inasmuch as they exist under two forms,—one of which bears female flowers only, the other hermaphrodite flowers, as in the common Thyme. Some of the Chenopodiums bear on the same plant hermaphrodite and female flowers, and may therefore be called "gyno-monœcious." On the other hand, there are "andro-monœcious" plants, or plants bearing on the same individual male flowers and hermaphrodite flowers in some species of Galium. No case seems to be known of "andro-diœcious plants," or plants producing hermaphrodite flowers on one indvidual, and males on another. Probably now that attention is prominently drawn to it, illustrations of this form may be found.

We have alluded to these matters in some detail because we believe that the mystery of "bad setters" among Vines and Cucumbers, the existence of "blind Strawberries" and other similar phenomena will find their solution in the facts above mentioned. Indeed, we know already enough to be sure in a general way that this is so. External conditions of temperature and manuring, though not without influence, are less potent in effecting important structural changes than is generally imagined. Thus, in spite of the natural variability of the Cowslip, upwards of seven hundred plants raised by Mr. DARWIN by artificial fertilisation (the visits of insects having been prevented), and treated in the most varied manner as regards food and temperature, yielded no variation whatever except in size. This is an important confirmation of some results obtained in the experiments on the action of manures at Chiswick, inaugurated by the Scientific Committee, some few years since. The fact that a tree will in one year bear male flowers only, and in the next hermaphrodite flowers only, seems to show, however, that external conditions may have some effect, as also the curious case mentioned by the late Mr. HANBURY, of a Papaw, the produce of a female plant which, when grown at Mentone yielded hermaphrodite flowers. But here, for the present at least we must stop, our immediate purpose being to draw attention to Mr. DARWIN'S latest book, not to discuss the general principles of sexuality in plants.

* *The Different Forms of Flowers on Plants of the same Species.* By Charles Darwin. (Murray.)

THE main provisions of the "DESTRUCTIVE INSECTS ACT, 1877," the full text of which is given in another column, are directed against the Colorado beetle. Not a word is said about any other insect, in spite of the title of the Act. The Act provides that the Privy Council may, if it see fit, prohibit the importation of Potatos or Potato stalks and leaves, or of any substance likely to introduce "the said insect." The Privy Council may take steps to prevent the spread of the said beetle, and direct the removal

or destruction of the crop if necessary, and prohibit the sale of living specimens of the insect. Compensation may be given in cases where the crop is destroyed to the extent of not more than three-fourths of the value of the crop at the time. The local authorities charged with the carrying out the provisions of the Act are the same as those empowered to act in the Contagious Diseases (Animals) Act of 1869.

So far well. The Potato crop is already in course of being lifted, so that for this year, at any rate, there will not be so very much food for the insect should it unhappily spread. Between now and next spring it may be possible to instil a little more knowledge of common insects into the heads of school children and others—a knowledge which in the long run may, perhaps, be as useful as any Act of Parliament. As it is, it is lamentable to see so many farmers and gardeners completely destitute of a knowledge of common things of the greatest moment to them in their respective businesses.

We have been plied lately with numerous specimens of ladybirds and other common insects in all stages. That farmers and gardeners should not know their friends, but should confound them with foes, is a truly lamentable circumstance, and one which will never be met till instruction in elementary natural history forms an essential part of the education of children, at any rate in rural districts. Almost every child is a born naturalist, but it is rarely that his natural faculties are developed by proper training. So far as mental discipline is concerned, natural history, properly taught, is at least as valuable as any other subject that enters into the school curriculum, and much more so than some; while, as far as regards adaptation to the requirements of life, the present scare about the Colorado beetle, and the ignorance it has brought to light, form sufficient witnesses of its importance. We repeat, then, that however suitable the Act may be for the exigencies of the moment, proper instruction in "common things" will in the end be far more beneficial in all ways.

—— We are glad to take advantage of the opportunity offered by the recent exhibition by Messrs. Veitch & Sons of an example of Lisianthus Russellianus, to draw attention to the remarkable merits of this gorgeous plant, which seems to be very little known at the present day. It was introduced from Texas in 1835, and in our earlier volumes will be found many records of its successful culture. The late Mr. James Cuthill, of Camberwell, achieved a reputation for growing this plant, and his mode of treatment is published at p. 36 of our volume for 1844. Mr. W. Thomson, then of Wrotham Park, Barnet, also gives an account of his method of treatment (1843, p. 804), and concludes by stating that,

Fig. 45.—Lisianthus russellianus.

in 1839, he had a plant with above 300 blooms expanded at one time, and that during the season of 1843 he had grown upwards of two dozen plants without a single failure, some of them between the beginning of July and the end of September, producing from 400 to 600 blooms. Both these eminent growers recommend to sow the seed in March, and both agree that no plant is more susceptible of injury from the application of water during the winter season. Our illustration annexed (fig. 45) was drawn from Messrs. Veitch's plant.

—— A supplement to the *London Gazette*, issued yesterday, contains two Orders in Council, under the Destructive Insects Act (see p. 198), applicable to Great Britain only. The first, which is to take effect from and after August 31, provides as follows:—"It shall not be lawful for any person to land Potato Haulm, leaves, or stalks brought from the United States of America, Canada, or the German Empire. The Commissioners of Her Majesty's Customs may in any case, if they think fit, order the collection and destruction of any sand, dirt, or other refuse imported with Potatos brought from the United States of America, Canada, or the German Empire, and detain the Potatos until such destruction has been effected." The second Order provides:—"If the owner of, or any person having under his charge, any crop of Potatos, or other crop, or vegetable, or substance, finds, or knows to be found, thereon, the Colorado beetle, in any stage of existence, he shall, with all practicable speed, give notice of the same being so found to a constable of the police establishment for the place where the same is found. The constable shall forthwith give notice thereof to the Local Authority; and the Local Authority shall forthwith give notice thereof by telegraph to the Privy Council. It shall not be lawful for any person to sell, or expose or offer for sale, or keep, any living specimen of the Colorado beetle, in any stage of existence, or to distribute in any manner any such specimens. If any person fails to do anything which he is required by this Order to do, or does anything in contravention of this Order, he shall be deemed guilty of an offence against this Order, and shall for each offence be liable to a penalty not exceeding ten pounds."

The Bristol correspondent of the *Times* telegraphed on Wednesday night:—"This morning considerable interest was taken in the discovery of a live Colorado beetle in the Cape mail carriage on its arrival at Bristol. As the same mail carriage had been used on Monday last for the conveyance of the American mail from Plymouth to Paddington, the sorters were of opinion that, instead of coming from the Cape mail, it had been deposited from the American mail, and had remained in the mail carriage till discovered lying on the floor by the sorters. Having been properly secured, it was sent on to London to be delivered into the hands of the foreign branch Post Office officials."

—— *Apropos* of the forthcoming International Horticultural Tournament, to be held at Carlisle, on September 6, 7, 8, next, it may be interesting to our readers to note a few of the special local features of that interesting and historical city. Approached as it is by the London and North-Western Railway, and the Midland from London and the south, by the North-Eastern from Newcastle and the east, by the Maryport and Carlisle from Whitehaven and the west, and by the North British, the Caledonian and the Glasgow and South-Western from all parts of Scotland, whilst a short line to Silloth connects it by boat to Ireland and the Isle of Man, it may be said to hold a truly central and International position, with direct access from all points of the compass. The position chosen in which to hold the show is a level holm, or field, about 27 acres in extent, called the Sorceries, belonging to the Corporation, and kindly granted by that body to the Flower Show Committee for the purposes of the show. It is every inch historical ground, and we are quite sure that on the show days many a Saxon and Scot will grip hands in a friendlier way than did their forefathers on the selfsame spot; and we may fondly hope that in the heat of horticultural rivalry none of them will invoke the spirit of some fiery, fighting, great-great-grandfather. From a large central marquee will extend four tents, each above 100 yards long, in the shape of a cross. One of these will be appropriated to fruit, another to vegetables, another to stove and greenhouse plants, and the fourth to dinner-table decorations, bouquets, &c., whilst the central marquee will be occupied by large Palms, Tree Ferns, and plants which require large head-room. Spaces for refreshment rooms, for the band, &c., are also marked on the same large scale, and, as the music will be of the best description, a delightful promenade by the banks of the Eden will be enjoyed. Above frowns the old castle, which will interest many, as will also the fine cathedral and its monuments. Conspicuous near by is the fine bridge which spans the Eden at this point, giving access to the rugged banks of Etterby Scaur on the left and to the lovely grounds of Rickerby Park, the seat of Mills McInnes, Esq. These grounds are open to the public, and are much frequented. Proceeding northwards, we come to the romantic village of Stanwix, through which passed the high road between England and Scotland in the old coaching days. Proceeding onwards down the Scotland Road, the visitor will come upon the extensive nurseries of Messrs. Little & Ballantyne, which, to the horticulturist, will be well worthy of a visit. Here the growth of Larch, Scots Fir, and hardy trees in general, is carried out on the largest scale, Roses and fruit trees are also largely grown. The hothouses are well stocked with the usual stove and greenhouse plants most in demand. To those fond of the old-fashioned herbaceous plants which used to gladden our younger eyes, and which the rage for Mrs. Pollock and her class has driven out of our gardens, the herbaceous ground will form an attraction, and choice Alpines are grown in large quantities, to meet the ever-increasing demand. These are all correctly and distinctly labelled, and shrubs arranged in an effective and masterly manner. The Pinetum will also be noticed, where specimens of all the varieties of Conifers which have been introduced to this country have been planted, as it were, into a trial-ground, to show their aspects, habits, and capabilities. Here also is the original plant of the new Wellingtonia gigantea pendula, a tree destined to form a part of every Coniferous collection in the world, and a fit companion for its noble congener, the original Wellingtonia gigantea. Bounding the eastern side of the nursery are the remains of the old Roman wall which so much attracts antiquaries, and along the line of which so many interesting relics of our earlier history as a country have been found. About 10 miles farther on the Scotland road is Netherby Hall, the seat of Sir F. U. Graham, for ever celebrated by Sir W. Scott as the scene where "Young Lochinvar came out of the west," and so cleverly abstracted his bride. Next week we purpose to give a short sketch of the most noteworthy places in the neighbourhood of the city which may be worth visiting.

—— In connection with a series of Grand Concerts to be held in the Agricultural Hall, Islington, during the week commencing Tuesday, August 28, it is intended to decorate the building with flowers and fruit; and with the object of securing the best possible decorations a number of prizes varying from £5 to £50 will be given for artistically arranged groups, of various sizes, of fine foliage plants, flowers or fruit; for the best stalls of plants, artificial flowers, and fruit, garden tools and appliances, horticultural buildings, fountains, vases, tiles, and other ornaments. Entries close on August 21, and schedules, which will be ready in a few days, may be obtained from Mr. F. W. Wilson, Agricultural Hall, who has been entrusted with the management of the exhibition.

—— The Peach wall at Chiswick affords this season an instructive lesson on the value of some of the new varieties of Peaches and Nectarines raised by Mr. Rivers, as several of them are bearing good crops, whilst the old-established sorts growing by their side are almost destitute of fruit. The new and remarkably handsome Lord Napier Nectarine may be seen there now in grand form, every tree of this variety carrying a fine crop of fruit, large in size, brilliant in colour, and what is of most importance nearly ripe, and in advance of all others. It was raised from seed of the Early Albert Peach (also one of Mr. Rivers' seedlings), and, as an early, good looking, and fine-flavoured variety, has no rival. Next in point of earliness to that good Peach, Hale's Early, must be placed Mr. Rivers seedling, named Goshawk, the fruits of which are of good size, rich soft colour, and excellent flavour. It is a very fine Peach, and in before Early York. As a late Peach Desse Tardive is one of the best of good sorts, and much deserving wider cultivation than it now obtains. It does not come in till the end of September, has the fine appearance of a Bellegarde, and a delicious flavour. This is also one of the few sorts bearing a crop this year.

—— We are requested to state that Mr. Robert Osborn has purchased, as from January 1 last, the nursery and seed business carried on for many years at Fulham and Sunbury by his late uncle and father, William and Thomas Osborn, and his grandfather, Robert Osborn. This arrangement has received the sanction of the Judge of the Chancery Division of the High Court, under whose direction and control the business has been conducted for the last few years.

—— Messrs. Dick Radclyffe & Co., 129, High Holborn, have, we are informed, been awarded a silver medal at the Cape Exhibition for seeds, and also one at Oporto, for ferneries and aquariums.

—— Mr. Thomas Elsley, of 32, Great Portland Street, W., has brought under our notice an ingenious instrument for the cleansing of trees from caterpillars, invented by a Frenchman, M. Damaniou, of Rozière, near Sainte Foy-la-grande, Gironde, and which, after a careful trial by the engineer-in-chief in charge of the public thoroughfares in the department of the Seine, has been adopted by the French Minister of Public Works, for the cleansing of trees on the public roadways. The instrument consists of a brass tube about 4 feet long and 1 inch in diameter, enclosing another of the same length, which is worked by telescopic action. To one end of this an indiarubber tube of equal length, with a mouthpiece, is affixed; and at the opposite end is a small brass receptacle for oil, with a fine spray nozzle. Petroleum, being the most deadly liquid known for the destruction of caterpillars, is preferred to all other oils for use in this instrument, through which it is blown in the form of a dense fine spray on to the nests of the insects, causing immediate destruction to them without injuring the trees. We have not put the instrument to a practical test, but have no doubt of its capabilility for the work intended, and have much pleasure in bringing it before the notice of our readers.

—— In addition to the singular facts which we have recorded lately with reference to the non-production of offsets by certain varieties of Tulips, we may note another circumstance, equally peculiar, which Mr. Parker, of Tooting, brought under our notice a few days ago, and which consists in a variety raised more than twenty years ago, called Goldham's Mary, which always produces an offset in the axil of the first leaf, and reproduces itself in no other manner.

—— A remarkable peculiarity of the season is well illustrated in the astonishing growth generally being made by French Beans. Some of the varieties have attained more than twice their usual height, and especially is this the case at Chiswick with such varieties as the Negro and Sir Joseph Paxton. The former is quite 2 feet high, and the latter, one of the dwarfest of all, has reached nearly 3 feet.

—— That Hollies will thrive well in London it needs but a visit to Victoria Park to show. Surely, winter and summer, few things look better than our native Holly! For town squares what more handsome?

—— One of the most exquisite of Pelargoniums raised by M. Sisley, named after Dr. Denny, and exhibited by Mr. Cannell, was handed round at the meeting of the Pelargonium Society. Its colours are those of the finest Masdevallias. The flower is irreproachable in size, shape, and substance; the colour mostly a rich magenta, while on each of the two upper petals occurs a spot of glowing crimson scarlet, the effect of which is quite marvellous. It is probably the most beautiful of all the varieties of which we have any knowledge.

—— A somewhat Curious Experience in Plant Judging occurred a few days since at the Shepton Mallet Flower Show. The class for six Fuchsias was under consideration, and one lot of plants were so good that there was no question as to

their fitness for the first place, but for the fact that two named Arabella and Victoria were so remarkably alike in growth, foliage, and flower that it was almost impossible to distinguish them as distinct varieties. After much doubt, one of the judges fortunately proposed to compare the length of the styles of the flowers, and this settled the matter, as those of one kind were in all cases at least half an inch longer than those of the other. We are very much afraid the distinction is not to be relied on.

—— How is it various species of SMILAX are not more grown as climbers? The rich green colour of their foliage ought to prove a recommendation. At Kew they are quite hardy, and grow vigorously. Fine specimens may be seen just now in the borders near the temperate house.

—— The PELARGONIUM SOCIETY held its annual meeting on Wednesday last, at Chiswick, by permission of the Royal Horticultural Society. There was a large attendance, and most of the members now enrolled signified their intention of continuing to support the Society. Following the unwritten law which had been adopted at former meetings, and which required that the chairman should be changed by a kind of annual rotation, Mr. G. F. Wilson retired from that office, receiving the cordial thanks of the Society for his services, and was replaced by Mr. Charles Turner, who has been for the last year vice-chairman. Mr. J. McIntosh was selected to succeed Mr. Turner, and Dr. Denny and Mr. T. Moore were respectively re-elected treasurer and secretary. The general committee was constructed as before, with the substitution of Mr. E. Foster, Mr. James, Mr. H. Veitch, and Mr. G. F. Wilson, for Mr. Laxton, Mr. Rollisson, and Mr. Williams; and the executive committee was strengthened by adding the names of Mr. W. B. Kellock and Mr. Kinghorn. Considerable discussion took place as to the arrangements for the coming season, it being elicited as the unanimous opinion of the meeting that the exhibition should be held at South Kensington early in June, the completing of the arrangements being left to the executive committee. The members afterwards lunched together in the great vinery, and if not exactly beneath their own Vines, at least beneath a glorious canopy of Grapes, the crop being one of the finest we have seen. The Pelargonium Society sets a good example to other kindred societies, inasmuch as while preserving its own independence, it recognises the claims of the Royal Horticultural Society as the head centre of all the horticultural societies of the kingdom.

—— AURICULAS are apt to throw up their flower-stems at this season of the year, much to the concern of some cultivators, as all autumn flowers (except in the case of seedlings, which may afford some clue to their probable character), are generally unsatisfactory. It is well to pinch out the truss of flower buds only, not the stem, as when the latter is pinched away the base of the stem will sometimes rot and spread it to the plants. If only the buds be pinched out, the stem gradually fades away, and does not become an agent for spreading rot. It may be remarked that the moist summer appears favourable to the development of the Auricula, and that collections of plants are looking remarkably well.

—— The Gardens of the MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY at Old Trafford are now in such excellent condition under the admirable management of Mr. BRUCE FINDLAY, as to well repay a visit. Everything appears so luxuriant that it is difficult to realise the fact that the gardens are only some two miles or so from the Exchange at Manchester, as the crow flies. The order observed in the numerous plant-houses, and the condition of the plants are particularly noticeable, the largest and smallest plants alike being clean and healthy in appearance. In one of the greenhouses were some capital specimen flowering plants of Francoa appendiculata and F. racemosa, most attractive subjects for greenhouse decoration at this season of the year. A well-grown specimen of the handsome New Zealand Grevillea longifolia was particularly noticeable. The fine stretch of green sward, the winding walks around the circumference of the gardens, and the many flower-beds and borders, are also in fine condition, and they afford an excellent lounging place for the citizens of Manchester who are Fellows of the Society. The beds in the long annex, which is so useful on the occasion of the Great Whitsun Shows, are planted with Dahlias, and there will be an attractive Dahlia garden when the plants get fully into bloom. How difficult it is getting to carry on practical gardening operations in the immediate neighbourhood of Manchester is shown by the fact that there is scientific authority for the statement that every twenty-four hours there is discharged into the atmosphere within a radius of from 4 to 6 miles from the Manchester Exchange, 60 tons of sulphuric acid; and if a dry time happens followed by rain, the acid is washed down into the soil, and Roses, Tulips, and many other things are seriously affected by it. Let us hope the Manchester Botanical Gardens will long be spared such a terrible scourge.

—— If a forcible illustration of the generally uncongenial character of the season were required, it would be found in the fact that there has not been held this summer any GOOSEBERRY show in Sheffield, where the berries have exceeded 14 dwt. in weight. The lack of warmth, and more particularly of sun, have prevented the berries acquiring that plumpness so necessary to weight and a foremost position on the exhibition table. In a favourable season the finest exhibition varieties will attain a weight of 34 dwt.

—— The horticultural body generally, and especially those members of the profession who are in the habit of attending the exhibitions of the Manchester Botanical and Horticultural Society at Old Trafford, will learn with much satisfaction that the Council of the Society have recently presented Mrs. FINDLAY with a handsome tea and coffee service, in recognition of her kindness to the many visitors to the gardens on all occasions, and especially at the times of the great shows. Those who have partaken of Mrs. FINDLAY'S hospitality on these occasions, and experienced the genial welcome that is never denied to the greatest stranger, will be particularly gratified at this act of the Council, which manifests on their part a delicate appreciation of kindly services the value of which it would be very difficult to estimate.

—— The CARYOTA ALBERTI, from North Queensland, named many years ago by BARON VON MUELLER, in honour of the late Prince CONSORT, and two years ago fully described in the *Linnæa*, has attained, according to Mr. W. HILL, in the Brisbane Botanic Garden since 1864 a height of 50 feet, and a circumference of the stem of 3 feet.

—— A correspondent, writing from the neighbourhood of Winchester, informs us that a friend of his has not had a CUCUMBER to send to table this year owing to their all being EATEN BY A CAT, who was suspected and proved to be the depredator by placing some cut pieces before her, which she ate as though they were pieces of meat.

—— The valuable natural history and miscellaneous library of the late Mr. John Russell Reeves was sold by auction recently, and realised £1415 11s. Amongst the choicer articles a series of 772 caricatures by Gillray sold for £185; a set of Gould's superb publications on natural history for £483 14s.; Curtis' Botanical Magazine, £93; Sowerby's English Botany, £16; Donovan's Entomology, £19; Curtis' British Entomology, £15 15s.; Doubleday and Westwood's Diurnal Lepidoptera, £20; Gray's Genera of Birds, £31; Wilson & Bonaparte's Ornithology, £17 5s.; Reeve's Conchologia Systematica et Iconica, £103 10s.; Zoological Society's Transactions and Proceedings, £42 14s., &c.

—— An interesting case, showing how slight an alteration may cause a very great change in appearance, is presented to us by a specimen of VALERIANELLA AURICULA (Lamb's Lettuce), kindly sent us from the Isle of Wight by Mr. STRATTON. The flowers are rather more closely packed than usual, while the limb of the calyx is dilated into a large three-lobed, leafy cup, entirely altering the appearance of the flower. The corolla and the style are also more or less leafy.

—— We observe that the *Floral Magazine* is now under the editorship of Mr. RICHARD DEAN, the illustrations being by Mr. J. N. FITCH, whose drawings recall those of his more widely known relative. The figure of one of Mr. DOUGLAS' hybrid Columbines in the August Number is particularly satisfactory. Mr. DEAN'S special knowledge of florists' flowers, and his connection with the brotherhood, will be of great service to the magazine.

—— HERBACEOUS PLANTS are happily more in vogue than they were ten years ago—the eternal glare of "scarlets" has a little abated. At any rate, colours are better blended. Carpet bedding and "leaf gardening" have something to do with this, as the colours are softer, and blend better than those of the ordinary run of bedding plants. Still, flower beds and carpet beds, with their formality and artificial look, are only in place in certain localities and in small quantities. The herbaceous border, on the other hand, is capable of indefinite extension, while, if a plant is wanted for an isolated position, what grander plant can be chosen than an Artichoke (Cynara), a Gunnera, or an Acanthus, such as Mr. Ware's fine variety, called Candelabrum. For the back rows of the herbaceous border at this season the Rudbeckias are magnificent, the flowers yellow or rose lilac; with them may be associated the blue flowered Eclinops ruthenicus with its singular globes of flowers, the splendid Thistle Cirsium eriophorum, the profusely flowering Œnothera Lanarckii, the bright yellow Achellea filipendulina, the pink Asclepias speciosa Phloxes. Dahlias and Hollyhocks are of course in place, with Larkspurs, Aconites, and Rockets earlier in the season. For the centre rows Centaurea atropurpurea, the scarlet Monarda didyma, Statices of kinds, Morina longifolia, a very striking plant, Gaura Lindheimeri, Epilobium rosmarinifolium, Lythrum virgatum, Cuphea purpurea, Eryngium alpinum and E. amethystinum. Of lower growing things suitable for edging are the grey leaved Scabiosa Parnassii, with its pinkish flower-heads, Prunella grandiflora, a stately plant, withal of low stature, various species of Acæna, Erigeron mucronatum (better known as Vittadinia triloba, and many others. A visit to the herbaceous ground at Kew, the borders at Chiswick, or the beds in the Botanic Garden in the Regent's Park, will suggest many more subjects. Indeed, a fortnightly, or at longest a monthly visit to a good collection throughout the year, would supply useful hints, and remedy the sterility of flower-beds when the bedding plants are gone.

—— Mr. EDWARDS, formerly gardener to Sir JOHN LUBBOCK, High Elms, Kent, is appointed gardener to Earl CADOGAN, Babraham Hall, Cambridge. Mr. EDWARDS is well known as a successful and painstaking gardener.

—— The heating apparatus of the Palm House at Kew is undergoing reconstruction, and steps have been taken to prevent in future the very serious inconvenience arising from flooding, which prevailed during so many months last winter and spring.

—— The old, we mean the veritable FUCHSIA COCCINEA—not what ordinarily goes by the name—is a very slender-stemmed elegant plant, with slim dainty flowers. It was discovered in the Oxford Garden a few years ago, and may now be seen decorating the show house at Kew (No. 4), just one of the plants that ought to be there, for it is very pretty and cannot be bought. In the same house Fuchsia Venus de Medici, trained along the rafters, has been in bloom for months, and a beautiful thing it is. Kew is rich in Fuchsias just now. The temperate house, always one of the greatest treats to the visitor who loves plants and does not mind a walk to see them, contains just now a beautiful set of these pre-eminently graceful plants.

—— The handsome STOBÆA BERKHEYA PURPUREA, figured by us, p. 1261, 1872, from the garden of Mr. WILSON SAUNDERS, is now in bloom at Kew. Though a fine and striking plant, it is more ragged and untidy-looking than it was in an apparently neglected corner at Reigate. It is curious to see how different herbaceous plants look in different situations. What is handsome in one place is weedy in another. How splendid the Gypsophilas are in some soils, how dishevelled in others.

—— We suppose no one but the officials in charge has any but an approximate idea of the richness of KEW. One reason why the botanical public, even,

fail to appreciate the extent of the collections is to be found in the circumstance that the collections are widely scattered over the pleasure-grounds, whose recesses relatively few can find time to explore; and another reason is the confused way in which things of the most varied character are grouped together in the same beds. Surely this might be altered with advantage.

—— We have lately met with a case which seems to support the theory of the general DIFFUSION OF THE SAP in plants, including its descent; and, though it is but a repetition of similar cases already noted it may as well be put on record. In the nursery of Mr. G. JACKMAN, of Woking, may be seen two separate lots of the common Ash, worked standard high with buds of the golden variegated Weeping Ash. One lot was worked one year, the other two years ago. In the former we noticed several cases in which the bud had died, and where the growth of the stocks above the point of insertion is this year more or less variegated with the same golden colour as that marking the foliage of the inserted buds. In the other case, we noted on some of the plants where the buds had taken, and produced healthy variegated branches, that variegated shoots had also sprung from the stock, near the ground, and fully 6 feet below the point where the buds were inserted. If this growth was not influenced by the circulation of the sap, to what does it owe its markings? and if these are to be attributed to sap circulation, surely it must have been a downward current which carried the influence so far below the point where the variegated blood was introduced.

—— One of the finest of the pale-coloured hardy varieties of CLEMATIS is Otto Fröbel, which is now blooming splendidly with Mr. G. JACKMAN in his nursery at Woking. The plant appears to be remarkable for vigour, and the flowers are of immense size and perfect in form, the sepals being sufficiently broad to be well imbricated. The colour is a French-white, and therefore somewhat wanting in purity, but the fine qualities of the flower in other respects amply atones for this deficiency, and no one who plants it could possibly be disappointed if the plant thrives. It is by no means a novelty, being a continental variety sent out some years since. Another excellent light-coloured variety is Mr. CRIPPS' Lady Caroline Nevill, which is more deeply tinted and barred with mauve-lilac than Otto Fröbel, and not equal to it in size, but it is, nevertheless, a large-flowered sort, and one which can be honestly recommended as a first-class variety, very showy, and very free in producing its attractive blossoms. Star of India is another of Mr. CRIPPS' flowers which is blooming remarkably well this season, and in which the bar of rich Indian-red, almost crimson, is very strikingly effective.

—— M. COSSON, an eminent botanist, specially acquainted with the climate and vegetation of Northern Africa, opposes the project of converting the Desert of Sahara into an inland sea. The altered climatal conditions, says he, would be hostile to the Date Palm, the great food plant of the district. The artesian wells would become brackish and the water unfit for irrigation and the support of vegetation, while the general hygienic condition of the country would be deteriorated by the combination of moisture and excessive heat.

—— STOKESIA CYANEA, flowering on the rock-work at Kew, is the finest of the Compositæ in flower at this season. It grows 2 feet or more high, and the flower-heads are equal in size to those of Scabiosa caucasica, but deeper in colour. Meconopsis Wallichii still remains in bloom, though long past its best. The rare Arnebia echioides is again blooming, though no larger than last year. Allium pulchellum, with lilac flowers, is one of the prettier of a select few of this genus, which may be grown on any rockwork. Francoa ramosa is much admired, though whether most for its pretty spikes of pink flowers or its broad foliage it is difficult to say. Neja gracilis is an extremely pretty and tiny shrub; its branches are very slender, bearing hairy filiform leaves, and comparatively large, bright, yellow flower-heads. The origin of the name of this plant, which we were told by one who was an eye witness of the incident, is curious. Professor Don, after puzzling his brains for some time and without success to find an appropriate name, at last determined to inscribe certain letters on slips of paper, and to draw these one by one till some euphonious combination occurred. The letters n, e, j, a, were thus drawn out in succession, and Neja was the name adopted.

—— Amongst other things disposed of by Mr. STEVENS at the recent sale at the Royal Vineyard Nursery, Hammersmith, was a cast-iron saddle boiler of peculiar construction which had been in use there for forty-two years, and which Mr. CHARLES LEE stated was the best boiler that the firm had ever had. It was designed by Mr. THOMSON, late of the Penge Nursery, who also fixed similar boilers in 1839 in the nursery which he started in that year at Hammersmith, and which afterwards passed into the hands of Mr. MACINTOSH, which boilers we are assured were in good working order a few years ago. It was purchased by its inventor, Mr. THOMSON.

—— By way of contributing to the information already possessed as to naturalising plants of a generally accepted exotic character, it may be remarked that the two plants of TRACHELOSPERMUM JASMINOIDES Mr. PETTIGREW, of Cardiff Castle Gardens, planted against the south-east wall of his cottage, have done remarkably well without having had any covering during the past two winters. The plants have put forth vigorous leading shoots, and are now blooming freely. The position is a sheltered one, but it is rather moist, and, being in the borough of Cardiff, is sometimes surrounded with atmospheric conditions not of the most favourable character. At Llanrhymney Hall, near Cardiff, the residence of GEORGE WILLIAMS, Esq., there can be seen growing against the front of the mansion a plant of Clianthus puniceus which is supposed to be ten to twelve years old. It covers a space of wall 12 to 14 feet in height and 20 feet in width. It flowers very freely during the proper season, and is an object of considerable beauty when it is dressed in its richest floral garb.

—— PHYGELIUS CAPENSIS is flowering in great beauty on the wall of the Orchid House at Kew, and, though quite hardy, it reaches in this position a more perfect development than in the open. It has the aspect of PENTSTEMON, and the panicles of scarlet flowers are 2 feet in height.

—— Some pillar-trained plants of the CLEMATIS JACKMANNI, growing in the London Road Nursery of the Messrs. Sutton, at Reading, finely illustrate the value of these hardy climbers for shrubbery decoration. They are not tied in with stiff and formal gait, but grow somewhat loosely and form almost pyramids of foliage and flower. The hardy and robust dark kinds are specially suited for this mode of culture. At the same place a most charming effect is produced by the combination in lines of the deep blue Delphinium formosum, and the bright pale blue variety, Belladonna. The first head of bloom produces the seed crop, which is harvested, and this is succeeded by a continuity of flower that lasts late into the autumn.

—— At the recent horticultural exhibition at Weston-super-Mare, CAMPANULA MACROSTYLA was a conspicuous object on a stand of miscellaneous cut flowers, shown by Mr. STEPHEN BROWN, nurseryman, Weston-super-Mare. It is a species from Asia Minor, an annual, and it bears large, erect, cup-like flowers, of a pale ground colour, handsomely reticulated with purple. The blooms are of unusual size for a Campanula. At the same exhibition Mr. BROWN had excellent specimens of Petunias in pots, well-grown and freely-flowered, and of a handsome bushy habit of growth. The varieties were in keeping with the excellent character of the plants, which were pretty well all that could be desired as exhibition specimens.

—— The bedding display—the carpet bedding especially—at VICTORIA PARK, is well worth a visit at the present time. Quite a new phase has been entered upon. The groundwork of the majority of the beds consists of two dense growing dwarf green plants—Herniaria glabra, which is Mr. MCINTIRE's favourite, and Mentha Gibraltarica. Within these all the more delicate figures are wrought out with excellent effect. This step will go far to clear this style of bedding from the reproach of over gaudiness. The chief bedding-plants employed, or what are considered best this season, are, Pelargoniums, Waltham seedling—a monument to the memory of DONALD BEATON; Cleopatra, a splendid pink; Nimrod and Vesuvius, rare scarlets; Lucius, Crystal Palace, Princess Alexandra, &c.; and the parti-coloured or salmon, Madame Rudersdorff, for soft or various coloured—the latter bring here masses of bloom.

THE EDGE END NURSERY, NEAR BURNLEY.

THIS nursery which has under the management of Mr. Henry Walton so long been famed for its collections of hard-wooded plants, is at the present time so replete with this class of plants, and withal in such health and vigour that perhaps a short notice of the result of a visit a few days ago may be of sufficient interest to find a place in your pages. Brierfield, the nearest station to the nurseries, lies in a north-easterly direction from Burnley, and is easily reached on the Lancashire and Yorkshire Railway, trains passing through very frequently during the day. To all such as purpose making additions to their collections of Camellias, Azaleas, Ericas, specimen stove plants, &c., I should strongly advise a journey here, feeling sure they will meet with many plants of a very desirable nature. In company with the worthy proprietor we were conducted through the houses, and certainly the satisfaction with which he pointed out and referred to many of the plants cannot be considered as more than natural, considering that for nearly thirty-six years he has laboured and devoted his energies to the establishment of the place as now seen, and many a time taxed mind and brain for the furtherance of objects dear to him for their own worth, in that they pertained to horticulture, as well also as from the fact that through them a business connection must be made, and sustained with credit to himself and satisfaction to his clients.

In a span-roof house devoted to the culture of Heaths, &c., we met with fine examples of E. Victoria Regina, Marnockiana, æmula, Lindleyana, Shannoni, and Shannoni glabra, ampullacea, obbata, Kingscottiana, &c., all very vigorous and free, and many densely flowered. Here also we saw the new E. opulenta in flower, and it is truly one that will make its mark, among this beautiful and interesting class of plants. The flowers are of a bright crimson lake, and are produced in immense terminal whorls of from ten to fifteen blooms each. Here too was E. tricolor profusa, a very desirable variety, and effusa, the flowers of which are of a bright crimson scarlet, appearing in whorls of from ten to twelve. Of Lowii we observed a number of plants coming on very nicely, whilst in another house was a fine lot of smaller plants of all the sorts, coming on to take the place of the larger ones as they are sent away. Passing through two other houses devoted to greenhouse plants, we observed a capital lot of such things as Boronias, bouvardias, Daphnes; as well also as a quantity of choice flowering Rhododendrons, among which are to be found Veitchianum, Princess Royal, Princess Alice, retusum, Countess of Derby, Countess of Sefton, &c.

Near to these houses were several devoted to miscellaneous subjects, propagating, grafting, &c., all filled with plants in various stages of growth. Leaving these we pass into the flowering stove where are many large plants such as Allamandas, Dipladenias, Clerodendrons, Bougainvilleas, whilst on the side stages was a quantity of the new Crotons, Dracænas, Aralia Veitchii, gracillima, &c.

In a large house devoted chiefly to fine foliage plants, we noticed some fine specimens of Crotons—pictus, most superbly coloured, variegatus and angustifolius, each being about 5 feet high and 4 to 5 feet through. Cycas revoluta was a grand plant, having from eighty to ninety of its strong dark green and shining fronds. Eucephalartos Lehmanni, Cycas pubescens, Dion edule, Cocos Weddelliana, Geonoma gracilis were also represented by fine and vigorous specimens. The Fern houses were filled with good useful plants, among which we noticed the new Sadleria cyatheoides, fine plants of Todea superba, and Wilkesiana, Hymenophyllum demissum, and Davallia Tyermannii.

The houses devoted to Orchids, which are not so numerous now as they have been in years past, nevertheless contain many good plants deserving mention. Miltonia spectabilis is very strong and full of flower, represented by several fine plants; Lælia elegans, Cattleya Warneri, Trianæ, Cypripedium caudatum,

Oncidium Marshallianum, Cypripedium Veitchii, &c., were all very strong and in robust health. Several houses next followed in which Camellias exclusively are grown, and here are to be seen such a collection of home-worked plants, and specimens from 6 inches high to specimens of 8 to 10 feet high, that few can rival or excel. The health and vigour of the whole of them, the uniform dark green, shining leaves indicate at once that here at least the culture of Camellias is understood, and the increase of good sorts is in like manner well under control. Fancy a house 110 feet long by 24 wide, with a bed running nearly the whole of the length 12 feet wide, filled with plants from 3 feet to 5 feet high, and bushy in proportion, whilst towering over these are tall specimens of Seaforthia elegans, Dicksonia squarrosa and antarctica, Alsophila australis, &c.; and the front stage filled with a choice collection of Agaves, such as regale, univittata, filifera, applanata, schidigera, Seemanii, Verschaffeltii, Yucca filamentosa variegata, aloifolia, variegata, quadricolor, Beaucarnea glauca, having long narrow leaves, &c.; and some idea will be obtained of the quantity and richness of the nursery in respect to saleable plants of this class. A thousand plants of double white Camellia will convey an idea of the high esteem in which this old variety is still held, whilst the fact that 170 varieties are grown will pretty clearly indicate that every new variety as it appears is obtained and quickly worked up.

Of the varieties of Azalea indica the same remarks would apply, several houses being devoted to them, and any new variety, when once proved to be of real worth, is worked up and increased with a rapidity that only those can understand who are dependent on a full and early supply for liberal support, and customers who are anxious for the possession of plants that are thoroughly good, and can be supplied with such as early as possible. Here were numbers of the new ones, such as Madame Corsi, Imbricata, Triomphe des Double Blancs, John Gould Veitch, Marshal MacMahon, &c., that were coming nicely on, whilst older sorts were also well represented. A number of good plants of Dracæna indivisa, in an Azalea house raised on pots, were very effective, and several fine plants, too, of Lapageria alba were in very robust health. The seldom seen Philesia buxifolia was here in flower. A fine plant of Phormium tenax variegata had been in bloom, the spike being 10 feet high, was bearing several seed pods. A large span-roof house was filled with pot Vines, the new sorts being well represented; but nothing at present is found to supplant the old Black Hamburgh and Muscat of Alexandria, and these have the lead in this department. Though our notes were taken during a fearful storm of thunder and lightning, and as opportunity offered we had to run from one house to another, many pleasant recollections however remain of the kindness and pleasant intercourse with Mr. Walton, and should any of your numerous readers pay him a visit it is to be hoped that the elements may be more propitious, and that their minds and thoughts may be directed to the plants about them, and that they may not labour under such great meteorological disadvantages. *W. S.*

THE CULFORD GRAPE VINE SPORT.

This sport has already been so freely discussed, some time since, in your own columns, as well as in those of the *Journal of Horticulture*, the *Gardener*, and possibly other gardening periodicals, that it may be considered that enough has already been written about it; and I certainly should not have ventured to reintroduce the subject, were it not on account of the circumstance of the bunch of Grapes in question having been non-existent during the time when discussions about it were taking place; and the only evidence of its having existed was to be found in the assertions of a few of those who had seen it. It will be recollected that great doubts were entertained, as to the correctness of these statements, by some writers upon the subject, who had not, however, seen the bunch in question themselves.

I have now only to state that at the present time a bunch is borne upon the same Vine and upon the same spur, which appears to be in all respects similar to that which was produced during the year 1874, so that any one interested in the matter may now see and examine it. It may, perhaps, be in the recollection of some of your readers that I stated in your columns that I had sent eyes from a shoot produced from the same spur, during the following season, to Mr. W. Thomson, of the Tweed Vineyard, at Clovenford; and I think that he has stated that he succeeded in striking them, so that it is possible that some of the plants so raised may now be bearing fruit, and, if so, it will be very interesting to know if the fruit differs in any degree from the true Trebbiano type. No doubt Mr. Thomson will kindly furnish this information. It will be distinctly understood that the shoot from which Mr. Thomson had eyes bore no fruit, but was produced by the same spur which had produced the shoot which bore the remarkable bunch during the former season. As regards the bunch of the present season I may state that the berries composing it are now (August 14) at least twice the size of the berries of the Trebbiano variety growing upon the same rod; and the fruit of the former appears to be

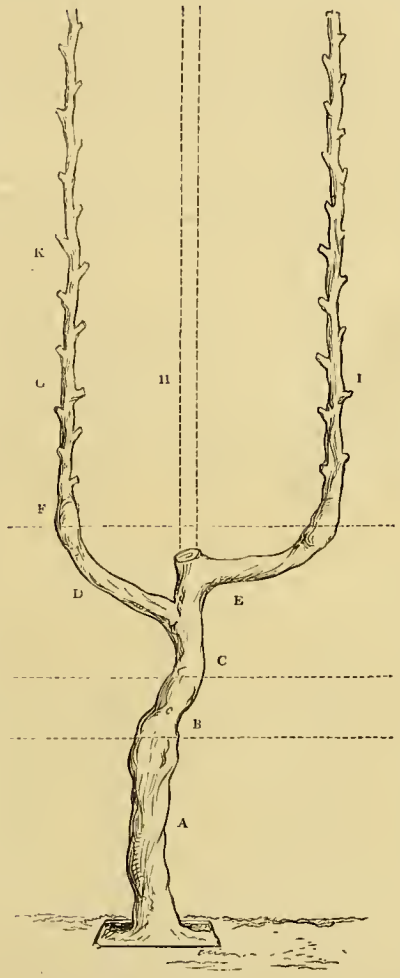


Fig. 46.

A, Stem of West's St. Peter's Vine; B, Showing where it was grafted with Black Alicante; C, Showing height of front wall; D, E, The Black Alicante stem grafted at the point F with G, Trebbiano; H, Golden Champion (removed); and I, Mrs. Pince's Black Muscat; K, Indicates the position on the Trebbiano rod where the bunch of Golden Champion was produced.

rapidly approaching a ripe condition, which is very far from being the case as regards the latter.

For the benefit of those of your readers who may not have read the correspondence which took place upon this subject, or who having read it may now have forgotten all about it, I will, with your permission, as briefly as possible, recapitulate the circumstances of the case, which are as follows:—Some twenty-five years ago a house here was planted with a variety of the Grape Vine known as "West's St. Peter's," at that time considered one of the best late keeping kinds; and some six or seven years afterwards the Vine in question was cut down and grafted with the Black Alicante; and some few years afterwards three distinct shoots of the Alicante had inarched upon them three distinct varieties of the Grape Vine, viz., Mrs. Pince's Black Muscat, Trebbiano, and Golden Champion; and during several years the three sorts continued to grow and to produce their respective fruit.

It was in the course of time, however, considered desirable to have only late or long-keeping kinds in this house; and as the Golden Champion was not found to be a long keeper here, at least, it was cut out altogether, at a point some few inches below its junction with the Alicante, on which it had been inarched. This, I think, was done during the month of January, 1874; and during that season the two remaining rods bore their respective fruits as usual, with this exception, viz., the Trebbiano rod, near its centre, produced a bunch distinct from all the other bunches upon the same rod, and so wonderfully like the fruit of the well-known Golden Champion, that no one who saw, handled, and tasted it could perceive the least difference between the two. This bunch of Grapes was produced at the end of the shoot, and the wood buds between the rod and the bunch were inserted as eyes in the usual way, but from some cause they failed to grow; and during the two succeeding seasons, viz., 1875 and 1876, although shoots were produced from the spur, they nevertheless failed to show fruit. It is somewhat strange that the appearance of this sport should have been regarded with so much suspicion as it was. Sports, it is well known, have occurred on more than one or two occasions in various sections or families of the vegetable kingdom, and the cause or causes which have produced them are just as obscure as is that which has produced the sport in question.

It may not unnaturally be supposed that the circumstance of the Golden Champion variety having for some time grown upon the same stock, may have in some way influenced the Trebbiano rod, so as to produce the result which has been described. But should this be admitted, it will hardly, I fear, accord with Mr. Murray's doctrine of the non-descent of the sap, as it will be seen that only by the action of a descending current through the stock, could a communication exist between the rods. *P. Grieve, Culford Gardens, Bury St. Edmunds.*

Home Correspondence.

Self-sown Seedling Potatos.—Believing it will be of interest to your general readers, and to Potato fanciers in particular, we beg to submit the following facts, it being the only instance of self-sown seedling Potatos that has come under our notice. On the shore of Cara Lake, which is 17 miles due west of Killarney, and three miles from Dingle Bay, on the Atlantic, is a farm of more than local repute, owned by J. B. Kennedy, Esq., an enthusiast in the Potato line, not so much a propagator of new varieties as a producer of seed stocks of unrivalled purity. Here it is that Nature, with truly liberal hand, has given an unlooked for growth of many thousands of seedling Potatos. Perhaps it will be quite time enough to talk of pedigree when the discerning eye of the scientific proprietor has minimised his present brood down to a dozen or so of promising varieties; but just to show that there is reason to be sanguine of some real acquisition, it might be well to mention that the parent plums dropped off as fine a crop of Paterson's Victoria as ever graced a farm, and lay buried all winter in the field, which is a friable peaty loam. Possibly some of your many readers and able correspondents may have heard of similar spontaneous production, and will communicate the fact through your columns, or favour Mr. Kennedy with their opinion of the above. *McKenzie & Sons, Cork.*

Larch Injured by Autumn Frosts.—I enclose twigs of Larches, shewing the effects of August frost; the top buds are not killed, but all the side shoots are similar to those sent. There was frost during several nights last week. I am now upwards of sixty years old, and never knew Larches cut in August; most certainly seasons are changing. Forty years ago Peaches and Nectarines were ripened on walls without difficulty, but for some years the crop has been most uncertain. *John Carter, Keighley.*

The Spiral Twist.—On reading the article in your paper of January 13, relative to the misunderstandings which sometimes occur in describing the growth of climbing plants, through using the terms "right and left,"—as these terms apparently vary according to the position the person using them is standing, I thought it would be better to drop those terms which may be misunderstood, and adopt those which cannot, look at them as you may, vary in the slightest degree, viz., east, west, north, and south,

which I would propose to use in the following manner :—We all know that all climbing plants which need description as to method of growth must climb round something ; let that something be called its centre. Well, that centre, look at it as you will, stand where you like, must have a north and a south side to it, and the plant climbing round that centre must, on passing, say its south side, be pointing either east or west. Would it not, therefore, be easily understood if botanists, in describing the growth of a climbing plant, were to say that on its south centre it grew east or west? *Australian.*

Five Crops of Melons from the same Plant in One Year.—Some years ago Mr. Wildsmith sent a communication to the *Gardeners' Chronicle,* stating that he had taken three crops of Melons from the same plants in one season, and, notwithstanding that communications of Mr. Wildsmith's are at all times worthy of serious and respectful consideration, the results stated to have been achieved in his communication respecting the Melons were at the time received very dubiously by some of your readers, perhaps myself included. But if I ever had any doubt upon the matter, my own experience this year has completely obliterated them, and hence my excuse for troubling you with these few notes, trusting, however, that they may not be without interest to a few of your many amateur readers, who, perhaps, for the want of more glass accommodation cannot grow so many of these deliciously cooling summer fruits as they would wish to do. The seeds of the Melons (Longford Green-flesh) were sown on January 18 last, and were planted in a hot-water pit on the 10th of the following month, from which plants we commenced cutting the first week in May, and have continued doing so since, I might almost say without intermission. One of the fruits of the second crop weighed 10 lb.—the ordinary size being from 3 to 6 lb. each. Having finished the first crop (of course we had and have still successional pits coming on), I was led—through the healthy appearance of the foliage—to examine the plants, when, not to my surprise, I found a most beautiful and equal set of fruit. I, therefore, set to and thinned the shoots out a little, cutting out all the old I possibly could, picking off any shabby leaves that were on the plants, and broke the surface of the bed a little; this done, and having left four fruits (sixteen) to each light, the bed received a couple of tubs of clear water, after which it immediately received one or two tubs of liquid manure. Thus treated after the perfecting of each crop, with the usual stopping and syringing twice a day on bright days, they have ripened their first and second, third and fourth crops, and are now finishing their fifth crop of fruit varying from 4 lb. to 8 or 9 lb. each, and, judging from their present appearance, they will ripen two or three more crops, for not only is the foliage healthy and gross, but there is another nice crop of fruit set, and swelling off nicely. Several gardeners have seen them, and, on being told how long they were in bearing, expressed their surprise at the satisfactory results, and the healthiness of the plants. Your readers will understand that I do not advance the above as any achievement of mine, nor anything new, but simply to corroborate a statement made some seven years ago, which I have alluded to was then received—if received at all—with considerable doubt, and partly to interest and perhaps benefit some of your uninitiated readers. *H. W. Ward, Longford Castle, Aug.* 14.

Feathery Columbine (see p. 187).—There is no doubt that the plant inquired for is Thalictrum aquilegifolium, an old garden favourite, which is still to be met with frequently enough in old-fashioned country gardens, where it is usually known as Feathered Columbine. Its very elegant foliage renders it a useful plant for bouquets. The flowers are usually cream-coloured, but French writers (who call it Colombine plumeuse, or Columbine plumacée) mention a variety with lilac-rose-coloured, and another with lilac-purple blossoms. This latter is probably the variety formosum, which was figured in the *Botanical Magazine,* t. 2025 : the commoner form is given at t. 1818 of the same work. It is a native of Southern and Central Europe, extending to Siberia, and has been in cultivation in this country since 1731. *B. M.*

The Colorado Beetle. — There has been so much said and so much anxiety felt respecting the above beetle that I thought a few lines from one who has battled with them for three years would not come amiss. We have only had them for the above period in the Eastern States, but they have had them in the Western States for some eight years or more. They originated in Colorado, thereby taking its name. They attack not only potatos but tomatos and egg plants, which all belong to the genus Solanum. In Long Island last year many market gardeners lost their entire crop of tomatos by their ravages. But we think no more of their depredations, as we have an effectual remedy in Paris green, which we make into a solution—one tablespoonful to a pail of water—keeping it stirred, as it does not dissolve, and sprinkling the vines over by means of a "whisp broom," or syringe, the former being preferable, as the solution goes farther. Three or four doses will secure your crop. I would sooner contend with the beetles than with the potato blight you have here. Last year we lost our crops, but this by using Paris green we expect to get as good a crop as we ever had. A good many people would not use it, as they were afraid of it. A man coming from New York to Poughkeepsie last year on one of the Hudson River steamers died on the way, and the report spread that he died from eating Potatos that Paris green had been used upon. They held a *post mortem* examination upon him, but found no trace of poison, as he died from a different complaint, and many others were reported, which, of course, were false. It cannot poison the Potatos, neither does it hurt the foliage if it is applied as stated above. I knew a man last year who thought he could keep the beetles down by hand-picking ; but they got the best of him. But he was like a good many more—he was afraid of the remedy. So he made a kind of trough and dragged it through the drills, beating the haulms to get the beetles into the trough. It did not take long to get it full. When full he would empty it and and set them on fire with kerosene oil. They cannot fly in the morning or in the evening, but do as soon as the sun gets hot ; the hotter it is the better they like it. Try the above receipt as soon as you get them, if get them you do, but I hope you will not. *W. G. Saltford, Ilsington Gardens, Puddletown, Dorchester, Aug.* 14

The Stamfordian Tomato.—This variety was sent out by Messrs. James Dickson & Sons, Chester, last spring, under the name of Jackson's Favourite Tomato. *F. Jackson, Braxted Park, Witham, Essex.*

Hale's Early Peach.—Seeing in your last week's report of the Royal Horticultural Society's Fruit Committee meeting (see p. 181) that this excellent Peach received a First-class Certificate, I am induced to mention that I gathered three ripe fruits, on August 7, from a tree on the open walls. In 1874 I gathered from the same tree on July 7. I consider it in every respect equal to Royal George, with the advantage of being much earlier. This season, in an early Peach-house, side by side, and under precisely the same conditions, I gathered Hale's Early three weeks sooner than that variety. *John Austen, Ashton Court Gardens, Bristol, Aug.* 14

Butcher's Broom (Ruscus aculeatus).—This plant is used for a variety of purposes, both in this country and on the Continent. The tender shoots which the roots send out in spring are often sought for by the poor, who boil them instead of Asparagus, a plant they, at that particular stage of growth, somewhat resemble. The roots are sweet to the taste at first, and afterwards bitter. They were once used largely in medicine, and are still considered in many local districts to possess powerful aperient qualities, combined with other virtues which render them valuable, as your correspondent, Mr. T. Smith, observes, in cases of dropsy. Many of our old foreign doctors speak of the Butcher's Broom as an unfailing remedy in this disease, and some extol the powdered root as as anti-scrofulous. The scarlet seeds were at one time used as a substitute for coffee, but their medicinal properties led to a discontinuance of their general use. For dropsical persons they are still often recommended by "village quacks" and "old women." By the way, I have often noticed that some of these "old women" have been successful with herbs and plants in cases where the educated qualified practitioner has failed to effect a cure ; so I am disposed to believe in "simples," "the doctrine of signatures," and many other nearly exploded notions. The ancient name for this plant was Bruscus, derived, it is said, from "brus," Box, and "kelm," which is Celtic for Holly. Virgil refers to it most distinctly as the Box Holly (I am told) in both his eclogues of Georgics. It obtained the name of Butcher's Broom in the following unromantic fashion. These "prosperous gentlemen" were wont to use its branches to sweep their blocks with. The Italians turn them to better service ; they make exceedingly pretty beehives with them ; but I like the branches best when they have their ripe fruit on, then they form a welcome member of certain winter nosegays, wherein various berrie play a prominent part. *Helen Watney, Liss.*

Rendle's Patent Hothouses.—Last season I had a house re-roofed on Rendle's system. It is a well-known fact that the most important things in Grape-growing are light, ventilation, and, above all, a water-tight structure, and Rendle's houses in an eminent degree combine all. The Vines are 17 inches from the glass, and we began forcing in January. Although for nine years past I have always been fortunate in securing a full and profitable crop of Grapes, this year the crop is heavy, and very much superior to what they have ever been before—berries large and finely coloured. I send you a bunch for opinion. I am very much impressed with this system of growing, and although it is one sheet of glass not one leaf has been scorched. *R. Gilbert.*

The Floral Committee's Votes of Thanks.—I could wish that some member of this committee would enlighten the public as to the principle which influences that body in the formal awarding of votes of thanks to exhibitors of subjects before it at the South Kensington meetings. I should imagine that all who assisted to make those meetings interesting were equally deserving of thanks. At the last meeting I noticed that a member of the committee received a special vote of thanks for three pieces of cut flower, whilst collections of plants and cut flowers from others received no such award. *X.*

Orchids in July.—I venture to send you the following list of Orchids, which have been in flower in my collection during the month of July :—

Acrides odoratum (two varieties)
,, japonicum
,, roseum
Anguloa Clowesii
,, Ruckeri
Arundina (? affinis)
Brassavola nodosa
Broughtonia sanguinea
Cattleya Aclandiæ
,, Mossiæ (two varieties)
,, superba
,, ,, splendida
Ceelogyne corrugata
Cymbidium aloifolium
Cypripedium barbatum
,, niveum
Dendrobium transparens
" Devonianum (several varieties)
,, tortile
,, moschatum
,, calceolus (if this and the preceding are not distinct species, they are strongly marked varieties)
,, dixanthum
,, Parishii (two varieties)
,, nodatum
,, crystallinum
,, aduncum (two varieties)
,, amœnum
,, ,, roseum
,, chrysanthum
,, chlorops
,, suavissimum
,, triadenium
,, Bensonæ
,, chrysotoxum
,, crumenatum
Dendrochilum filiforme
Epidendrum ambiguum
,, crassifolium
,, cochleatum (two varieties)
Epidendrum macrochilum atropurp.
,, vitellinum majus
,, ? A little thing whose genus and species I have not identified
Huntleya cerina
Lælia purpurata
Lycaste aromatica
Masdevallia Veitchiana
,, Harryana purpurea
,, ochthodes
,, coriacea
Maxillaria graminea
,, rufescens
,, ,, ——?
Mesospinidium sanguineum
Miltonia flavescens
,, Regnellii
Odontoglossum Lindleyanum
,, nebulosum
,, Schlieperianum
,, Rossii
,, vexillarium
Oncidium cucullatum
,, exasperatum
,, Kramerianum
,, altissimum
,, varicos., Rogersii
,, hastatum (two varieties)
,, obryzatum (two varieties)
,, serratum
,, flexuosum
Phalænopsis grandiflora
,, Luddemanniana
,, Wightii
Promenæa stapelioides
Saccolabium ampullaceum (two varieties)
,, curvifolium
Sobralia macrantha
Stanhopea tigrina
Trichopilia tortilis
Vanda Roxburghii

P. H. Gosse, Sandhurst, Torquay.

A Golden Variegated Dahlia.—Do you know of a golden variegated Dahlia? One of our men was out the other day and saw it. The party that has it can't account for its variegation. It is from 4 to 5 feet high, and is a beautiful object. *E. W.* [Yes ; there is one ; but it is not common. Eds.].

THE BRITISH ASSOCIATION.

The address of the President, Dr. Allen Thomson, of Glasgow, to the meeting of the Association at Plymouth, was mainly devoted to the question of the development of existing creatures from simpler ancestors. Dr. Thomson, in the course of his discourse, pointed out how the doctrine of spontaneous generation received but little support now-a-days, the general belief being in the origin of all organised beings from pre-existing germs ; as to the original germ or germs nothing is definitely known. Before proceeding with the discussion of this special subject, he called attention to the remarkable change in the manner of viewing biological questions which has taken place in this country during the last half-century.

Fixity of Species.

In the three earlier decades of this century it was the common belief, in this country at least, shared by men of science as well as by the larger body of persons who had given no special attention to the subject, that the various forms of plants and animals recognised by naturalists in their systematic arrangements of genera and species were permanently fixed and unalterable, that they were not subject to greater changes than might occur as occasional variations, and that such was the tendency to the maintenance of uniformity in their specific characters that, when varieties did arise, there was a natural disposition to the return, in the course of succeeding generations, to the fixed form and nature supposed to belong to the parental stock ; and it was also a necessary part of this view of the permanency of species that each was considered to have been originally produced from an individual having the exact form which

its descendants ever afterwards retained. To this scientific dogma was further added the quasi-religious view that in the exercise of infinite wisdom and goodness, the Creator, when He called the successive species of plants and animals into existence, conferred upon each precisely the organisation and the properties adapting it best for the kind of life for which it was designed in the general scheme of creation.

Variability of Species.

How different is the position of matters in this respect in our day!—when the cautious naturalist receives and adopts with the greatest reserve the statement of fixed and permanent specific characters as belonging to the different forms of organised beings, and is fully persuaded of the constant tendency to variation which all species show even in the present condition of the earth, and of the still greater liability to change which must have existed in the earlier period of its formation—when the belief prevails that, so far from being the direct product of distinct acts of creation, the various forms of plants and animals have been gradually evolved in a slow gradation of increasing complexity—and when it is recognised by a large majority of naturalists that the explanation of this wonderful relation of connection between previously existing and later forms is to be found in the constant tendency to variation during development and growth, and the perpetuation of such variations by hereditary transmission through successive generations in the long but incalculable lapse of the earth's natural mutations. These were in their essential features the views now known as Darwinism, which were first simultaneously brought forward by Wallace and Darwin in 1858, and which, after being more fully elaborated in the works of the latter, and ably supported by the former, secured, in the incredibly short space of ten or twelve years, the general approval of a large portion of the scientific world.

Ancestry of Living Beings.

It was now familiarly known that almost all (if not, indeed, all) the plants and animals existing on the earth's surface derived their origin from parents or previously existing beings, whose form and nature they closely reproduced in their life's history. By far the greater number sprang from germs in the form of visible and known spores, seeds, or eggs; a few might be traced to germs, or to vestiges of the parental body, the exact nature of which might be doubtful; and some, including even a certain number of those also produced from known germs, were either constantly or occasionally multiplied by budding, or by a process of cleavage or direct and visible division of the parent body. The germ constituting the basis of new formation, whether it had the form of spore, seed, or ovum, was of the simplest kind of organisation, and the process by which a new plant or animal was produced was necessarily one of gradual change, and of advance from a simpler to a more complex form and structure—it was one of "evolution," or, as he would rather name it, "development."

Practical Applications.

The practical applications of the increased knowledge of the origin of minute animal and vegetable organisms were so numerous that it would occupy a much longer time than was at his disposal to give any detailed account of them; but they were of such immense importance in their commercial, social, and sanitary relations that they ought never to be lost sight of. It was now proved beyond doubt that the origin of putrefaction and fermentation was dependent on the presence in these substances which were the seat of change in these processes, or in the surrounding air, of the germs of minute organisms of an animal or vegetable nature, and that the maintenance of the chemical changes in which these processes mainly consist was coincident with and casually (if not essentially) dependent upon the growth and multiplication of these organisms. Professor Lister had the merit of being the first to apply the germ theory of putrefaction to explain the formation of putrid matters in the living body; and he had founded on this theory the well-known antiseptic treatment of wounds, the importance of which it would be difficult to over estimate. The success or failure of plans for the preservation of meat and other articles of food without question depended on the possibility of the complete exclusion of the germs which are the cause of putrefaction and fermentation; and their management must therefore be founded on the most accurate knowledge of these organisms, and the circumstances influencing the persistence of their vitality and the vigour of their growth. The theory of biogenesis had also lately been the guide in the investigation of the causes of various forms of disease, both in the lower animals and in man, with the result of showing that in many of them the infective substance consists, in all probability, of germs of minute animal or vegetable organisms. There was very great probability, indeed, that all the zymotic diseases had a similar origin.

Development of Plants.

Turning now to the mode of development of a new being in those belonging to the higher groups, in the higher or phanerogamic plants the combination of two parts of the flower was necessary to the production of a seed containing the embryo or young plant. The careful and minute investigation of a long line of illustrious vegetable physiologists had brought to light the details of the process by which fertilisation is effected. The essential part of the process of production in phanerogamic plants was the formation in the parent plant of cells of two different kinds, which by themselves had little or no independent power of further growth, but which, by their union, gave rise to a product in which the power of development was raised to the highest degree. By further researches it was known that the same law prevailed in all the remaining members of the vegetable kingdom, with the exception only of the very simplest forms. In viewing the reproductive process in the series of cryptogamic plants, the difference between the two productive elements became more prominent, or more highly specialised, in the cryptogamic than in the phanerogamic plants; and in the simpler and lower forms this difference gradually disappeared till it was lost in complete uniformity of the productive elements. The germinal element consisted of a simple primordial cell, varying in different kinds of plants, but in all of them probably containing the essential substance protoplasm; and the most immediate result or effect of fertilisation was the multiplication, by repeated fissiparous division (or splitting) of the previously existing cells. The new individual resulting from this cellular growth usually remained within the parent body, without, however, direct union or continuity of tissue, till the embryo had attained some advancement, as in the well-known case of the seeds of a phanerogam; but there were many varieties in the mode of its disposal among the lower plants. In the statement which he had made of some of the more remarkable phenomena of organic production it had been his object mainly to show that they were all more or less closely related together by a chain of similarity of a very marked and unmistakable character; that in their simplest forms they were indeed, in so far as our powers of observation enabled us to know them, identical; that in the lower grades of animal and vegetable life they were so similar as to pass by insensible gradations into each other; and that in the higher forms, while they diverged most widely in some of their aspects in the bodies belonging to the two great kingdoms of organic nature, and in the larger groups distinguishable within each of them, yet it was still possible, from the fundamental similarity of the phenomena, to trace in the transitional forms of all their varieties one great general plan of organisation. In its simplest and earliest form that plan comprised a minute mass of common nitrogenous hydrocarbon compound to which the name of protoplasm had been given, exhibiting the vital properties of assimilation, reproduction, and irritability. The second stage in this plan was the nucleated and enclosed condition of the protoplasmic mass in the organised cell. They next recognised the differentiation of two productive elements, and their combination for the formation of a more highly endowed organising element in the embryonic germ-sphere or cell; and the fourth stage of advance in the complexity of the organising phenomena was in the multiplication of the fertilised embryo-cell and its conversion into continuous organised strata, by further histological changes in which the morphological foundations of the future embryo or new being were laid. The formative or organising property therefore resided in the living substance of every organised cell and in each of its component molecules, and was a necessary part of the physical and chemical constitution of the organising elements in the conditions of life; and it scarcely needed to be said that these conditions might be as varied as the countless numbers of the molecules which composed the smallest particles of their substance. But, setting aside all speculation, it appeared to him that no one could have engaged in the study of embryological development for any time without becoming convinced that the phenomena which had been ascertained as to the first origin and formation of textures and organs in any individual animal were of so uniform a character as to indicate a law of connection and continuity between them; nor would his study of the phenomena of development in different animals have gone far before he was equally strongly convinced of the similarity of plan in the development of the larger groups, and, to some extent, of the whole. He considered it impossible, therefore, for any one to be a faithful student of embryology in the present state of science without at the same time becoming an evolutionist. There might still be many difficulties, some inconsistencies, and much to learn, and there might remain beyond much which we should never know; but he could not conceive any doctrine professing to bring the phenomena of embryonic development within a general law which was not, like the theory of Darwin, consistent with their fundamental identity, their endless variability, their subjugation to varying external influences and conditions, and, with the possibility of the transmission of the vital conditions and properties, with all their variations, from individual to individual, and, in the long lapse of ages, from race to race. He regarded it, therefore, as no exaggerated representation of the present state of our knowledge to say that the ontogenetic development of the individual in the higher animals repeated in its more general character, and in many of its specific phenomena, the philogenetic development of the race.

If they admitted the progressive nature of the changes of development, their similarity in different groups, and their common characters in all animals, nay, even in some respects in both plants and animals, they could scarcely refuse to recognise the possibility of continuous derivation in the history of their origin; and however far they might be, by reason of the imperfection of their knowledge from realising the precise nature of the chain of connection by which the actual descent has taken place, still there could be little doubt remaining in the minds of any unprejudiced student of embryology that it was only by the employment of such an hypothesis as that of evolution that further investigation in these several departments would be promoted, so as to bring us to a fuller comprehension of the most general law which regulates the adaptation of structure to function in the universe.

Reports of Societies.

Olney Horticultural: *Aug.* 4.—That the people of Olney and the dwellers in the adjacent villages should look upon this annual exhibition with favour, is not to be wondered at, for it is the occasion of an annual holiday, and the usually quiet village becomes quite lively with an influx of visitors on the show day. The show in itself was small, but yet very attractive for the district; and amateurs, understanding by this persons who do not employ a gardener, and cottagers vie with each other in competition for the prizes, and stage some remarkably good things. Potatos are quite a feature, and there is always a keen competition among the amateur cultivators. The sorts are generally good, and some of the samples would take good positions at the exhibition of the National Potato Society in London. The leading cultivators are Messrs. J. Lord and W. Snow, both of Olney; the Giant King proved a very good, flattish-round, exhibition variety. Fruit was somewhat limited owing to the season, but generally good; vegetables were numerous, and of remarkably good quality. Among cut flowers the collections of wild flowers were very interesting, showing that this part of the country has a wealth of these indigenous floral beauties.

In the open classes a group of six very good stove and greenhouse plants were shown by Mr. H. Ward, gr. to W. Jeffrey, Esq., Northampton, and consisted of Vanda tricolor, a fine variety of V. suavis, Euphorbia splendens, Clerodendron Balfourianum Pandanus Veitchii, Cycas revoluta, and Phormium Colensoi variegatum; 2d, Messrs. Hall & Co., nurserymen, Northampton. The best specimen plant was a fine Dracæna excelsa from Messrs. Ball & Co. A fine Nerium Oleander was shown by Mr. H. Chattle, Northampton. Mr. Ward had the best six Ferns, consisting of Adiantum farleyense, Neottopteris Nidus, Adiantum formosum, Pteris cretica albolineata, Dicksonia antarctica, and a Stag's-horn Fern. Some small but nicely grown Caladiums came from Messrs. Ball & Co., Northampton.

Messrs. Jno. Perkins & Co., Market Square, Northampton, had some well grown and flowered Zonal Pelargoniums, and staged, in addition, a large group of miscellaneous flowering plants, all well grown and very interesting. A group of plants, both foliage and flowering, came from Messrs. Ball & Co., and to both collections extra prizes were awarded.

In the open class cut flowers comprised stove and greenhouse plants, Zonal Pelargoniums, admirably shown by Messrs. Ball & Co., Zinnias, fine and varied in colour, Panzies, Verbenas, &c. The fine weather brought a great many visitors to the town from Northampton and elsewhere.

The Birmingham Horticultural Exhibition: *Aug.* 10 *and* 11.—The Botanic Gardens is a charming place for a flower show, and the plants are arranged here under a large tent, in which there are raised beds and banks, as at the Regent's Park. The gardens themselves are admirably laid out, and are rich in ornamental trees and shrubs, and so charmingly situated, that no more appropriate place could be found in the neighbourhood of Birmingham.

Fuchsias formed the most striking feature of the show, 33 specimen plants being staged for the various prizes, and each a perfect example of what a Fuchsia should be. The whole lot were even in height, bushy to the bottom, wonderfully well grown, and beautifully flowered. The chief exhibitors were W. Mathews, Esq. and Henry Heaton, Esq.

The first prize lot of flowering and ornamental plants exhibited by Mr. Walter Jones, gr. to C. E. Mathews, Esq., contained a grand Statice profusa, and the entire group were of first-class excellence. The same exhibitor had, in other classes, a very fine Cocos Weddelliana in flower, a superb Clerodendron Balfourianum, Abutilon Boule de Neige, which makes

a striking plant when well flowered; six very fine Caladiums, which took the 1st prize; a pretty group of new Dracænas, and a fine plant of the beautiful Croton Weismanni, richly coloured. Mr. John Crisp, gr. to B. Scarf, Esq., had also a good 2d prize lot of twelve flowering and ornamental plants. Mr. W. Dyer, gr. to T. W. Webley, Esq., obtained the 1st prize for six ornamental plants, which included very fine examples of Cyanophyllum magnificum and Croton variegatus, highly coloured. The same exhibitor took 1st prize for six Ferns, splendid plants, especially an Adiantum farleyense.

A good lot of really good Petunias were staged, not too large, and well flowered and well grown. Some capital Gloxinias were shown, and Mr. Stacey, gr. to to F. Osler, Esq., took the 1st prize for three fine well-grown plants of Erica Aitonia, E. profusa, and E. tricolor Eppsii. Cockscombs and Achimenes were also very good, and the Zonal Pelargoniums were not too large, and were well grown and well flowered. Two specimen plants of a blunt pyramidal form were striking objects of first-rate culture, and gave an idea of the superiority of this form over the usually flat style of growth we invariably see. There was a nice display of exotic Ferns, two or three collections of British Ferns, some pans of Lycopods exceedingly well done, and a few really good pans of Achimenes.

Mr. R. H. Vertegans, Chad Valley Nurseries, sent (not for competition) a large basket of Bouvardia Humboldtii corymbiflora in full bloom—a grand plant for decorative work, as well as for bouquet use; examples of Lobelia Ebor, a very fine dark blue; L. Miss Egerton, a most useful white, and other kinds for comparison; a fine collection of Caladiums, and a group of Begonia metallica. Messrs. Felton & Sons contributed a nice collection of rare ornamental plants, which included Encholirion Saundersii, a pretty, double, pink-flowered Zonal Pelargonium, with foliage marked as in Cloth of Gold, but much whiter in colour—a really good thing; also Maranta virginalis major and Tillandsia tesselata, both very desirable plants.

Messrs. Evans & Pountney exhibited samples of their registered Venetian window-box, the front of which is composed of horizontal strips of iron to admit of planting Golden Feather and other foliage plants in lines or otherwise, and which gives to the front of the box a most ornamental appearance.

Some excellent bouquets were shown, and Mr. Samuel Brown, one of our old Birmingham florists, exhibited some first-class Carnations and Picotees, such as Charles Turner is in the habit of turning out. There were a few good Dahlias, and amongst Roses, Reynolds' Hole, Antoine Marton, Fisher Holmes, and E. Y. Teas were especially good.

The display of fruit was not large, but very good.

The arrangement of the exhibition was perfect, thanks to Mr. Latham.

Cheadle Floral and Horticultural: *Aug.* 10 *and* 11.—The tenth annual exhibition of the above Society was held in a large field very conveniently situated and easy of access, which was kindly placed at the disposal of the committee by Dr. Godson, a gentleman residing in the immediate vicinity. Favoured with beautiful weather, this show was certainly one of the finest that this deserving Society has ever held, and the numbers who visited it was a certain sign that this annual display is eagerly looked forward to, and highly appreciated by a very large number from the surrounding districts in Cheshire, as well also by a great many on the northern banks of the river Mersey. The fact that the number of exhibits amounted to the high figure of 569 will at once be understood as indicating the widespread interest taken in the Society; and when, as was the case on this occasion, the whole of the subjects were of unusual excellence, the committee may well take heart, resting assured that here at least they are fostering and encouraging a healthy rivalry among amateurs and gardeners, and that with such an object in view, supplemented with a liberal schedule, they are meeting with a large amount of success. This result, of course, brings great credit to the Society; but in this case, and many others of a like nature, the chief benefit accrues to those who have the culture of the plants, fruits, &c., and with the culture the gratification of beholding their labour and diligence producing results that may truthfully be described as first-class. In the large tent, which was 200 feet long by 56 wide, a fine collection of plants was staged, the centre and side tables being as full as they could be. Two other tents, 100 feet by 27, and one other, about 60 feet by 25, were also taken up by the large number of exhibits, whilst on the grounds were some well designed summer-houses, horticultural implements, and other articles usually seen at meetings of this description In the open class for ten stove and greenhouse plants, flowering and ornamental, the 1st prize was taken by E. Cole & Sons, among whose plants were Statice profusa, a splendid piece, densely flowered, Ixora coccinea, with about forty expanded heads of bloom, and others in a very forward state, Allamanda nobilis very fine, Erica Lindleyana, Geonoma Schottii, and a remarkably well-coloured plant of Croton Johanois—this makes a grand exhibition plant. In the corresponding class for amateurs the 1st prize was awarded to H. Samson, Esq., Bowdon, gr. W. Lingard, who staged capital plants of Erica Holfordii, a good Stephanotis, Erica Aitonia superba, and E. Parmentieria rosea, Croton variegatus, &c. The 2d prize fell to E. Bowdon, Esq.; a fine lot was staged by J. Rylands, Esq., G. Smith gr. For six stove and greenhouse plants, J. Rylands was placed 1st, whose plants of Dipladenia amabilis, Erica venosa, and Jacksoni were all that could be desired; a fine Latania rubra was also in this collection. S. Schloss, Esq. (W. Cardwell, gr.), was 2d, who had a capital Ixora coccinea; the 3d prize fell to E. Bowdon. For six fine foliaged plants the 1st prize was taken by E. Bowdon, who had fine plants of Dicksonia antarctica, Phormium tenax variegatum, Dasylirion, Cocos Weddelliana, Croton Wiesmanni, and Thrinax elegans; J. Rylands was 2d, among whose plants we observed a fine plant of Todea superba, and also Nepenthes Hookeri in good condition; Mr. Gammon and Mrs. Sykes were placed equal 3d. This class was well contested. For six Exotic Ferns H. Samson was 1st with fine examples of Gleichenia speluncæ, flabellata, and semivestita, Dicksonia antarctica, Cibotium Schiedei and C. spectabilis; S. Schloss was 2d, who had Gleichenia speluncæ and Brainea insignis in capital order. For four Adiantums, J. Rylands was again to the front, his plants of A. lunulatum and gracillimum being in their very best; E. Coward, Esq., was 2d; D. Adamson, Esq., taking the 3d. Six Caladiums: This class was well contested, the 1st prize being awarded to D. Adamson, Esq. (J. Brierley, gr.), who showed Beethoven, Meyerbeer, and Argyrites, in fine condition; Mrs. Sykes was placed 2d. Lilium lancifolium was shown by the latter lady, who was placed 1st, the 2d being taken by D. Maclure, Esq. For three pots of Achimenes, D. Adamson, Esq., was deservedly placed 1st, his plants of Carl Wolforth, Dentoni, and Edmond Bossier, being really splendid. For four Fuchsias, T. H. Sykes, Esq. (S. Moorhouse, gr.), staged fine pyramids of Wave of Life, Venus de Medicis, Rose of Castille, and Inimitable. Lilium auratum was shown by E. Birks, Esq., and placed 1st. Some splendid examples of Coxcombs were staged, and capital plants of Celosia pyramidalis plumosa, the prizes in the latter class being taken by D. Maclure 1st, and W. Sykes 2d. Some capital pans of Lycopods were staged by G. W. Mould, Esq., Mrs. Sykes, and Dr. Reed—prizes awarded in the order named. In this tent were plants staged by Mr. Mackellar, gr. to Sir James Watts (not for competition), including among others, Erica æmula, Irhyana, Holfordii, fine specimen, 3 to 4 feet through; a Peristeria elata, with ten spikes of its singular and interesting flowers; two fine specimens of Yucca filamentosa variegata, and a very distinct form of Dicksonia antarctica.

The fruit and vegetables, which completely filled one of the second-size tents, was uniformly good. The 1st prize for six dishes of fruit being taken by Mrs. Sykes, gr. G. Kemp, the 2d falling to D. Adamson, Esq. For two bunches of black Grapes, the 2d prize only was awarded to E. Bowdon, whilst for two bunches of Muscats the 1st was awarded to H. Sampson, Esq., the 2d to J. Rylands. T. H. Sykes took 1st for the heaviest bunch of Grapes with Black Hamburghs, the 2d again falling to J. Rylands. Sir J. Watts sent two trays of fruit, not for competition, which included fine bunches of Muscats, Black Hamburgh, two bunches on a lateral, Peaches, Pine, Cherries, &c.—a very creditable lot. For ten distinct varieties of vegetables, the 1st was taken by J. P. Tambaci, Esq., gr. G. Kemp, the 2d by—Holder, Esq.; 3d, by Dr. Reed.

For groups of twenty plants arranged for effect a number of collections were staged, a tent being almost entirely devoted to these and groups of bedding plants. In the former case prizes were taken in the order named by Mrs. Sykes, D. Adamson, R. Gammon, and G. W. Mould being equal 3d. Bouquets, cut blooms, and stands of flowers were numerous, and showed much patience and skill. Collections of wild flowers were also very interesting. Some very fine vegetables were staged by cottagers, competition in most cases being very severe.

Some fine stands of Roses were exhibited by W. Paul & Son, Cheshunt, and also by E. Cole & Sons, Withington. A large number of miscellaneous plants were staged by J. Hooley, nurseryman, of Stockport. Space forbids mention of many other things of a highly meritorious character. Enough however, will have been noticed to show that the Committee here are doing a real good work. *W. S.*

A Live White Blackbird may now be seen at the "Ship" Inn, Leigh, Essex. It was taken from the nest, in which there were four other blackbirds. It is now about ten weeks old. I saw it myself a few days ago. *R.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, August 15, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity, Sat. = 100.	Wind. Average Direction.	Rainfall.
Aug.	In.	In.	°	°	°	°	°				In.
9	29.52	−0.24	70.6	55.2	15.4	69.8	− 1.3	53.8	78	S.S.W.: S.W.	0.19
10	29.70	−0.05	70.2	54.6	15.6	60.7	− 1.4	52.5	74	S.W.	0.04
11	29.84	+0.08	68.0	55.0	13.0	60.0	− 2.2	49.1	67	WNW	0.00
12	29.87	+0.11	71.4	51.6	19.8	59.8	− 2.4	50.8	72	N.W.	0.00
13	29.72	−0.04	70.3	57.9	12.4	61.9	− 0.3	55.8	81	NNW: N.	0.00
14	29.64	−0.04	80.1	59.7	20.4	67.6	+ 5.6	55.1	64	N.	0.00
15	29.74	−0.13	77.0	57.0	20.0	64.0	+ 2.3	56.7	77	NNE: N.: WSW	0.02
											sum
Mean	29.72	−0.04	72.5	55.9	16.6	62.1	0.0	53.4	73	variable	0.25

Aug. 9.—Fine, but dull and cloudy. Occasional showers of rain.
— 10.—Fine, but cloudy, and showery at times.
— 11.—A fine day, but generally cloudy.
— 12.—Fine day, but frequently very cloudy and dull.
— 13.—Fine, but cloudy. A few slight showers.
— 14.—A very fine clear warm day.
— 15.—Overcast, dull, with slight rain till 10.30 A.M. Fine and bright afterwards. Warm. Cloudless at night.

London: *Barometer.*—During the week ending Saturday, August 11, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.08 inches at the beginning of the week to 30.09 inches by the morning of the 5th, decreased to 29.49 inches by the evening of the 7th, increased to 29.52 inches by the morning of the 8th, decreased to 29.49 inches by the afternoon of the same day, and increased to 30.07 inches by the end of the week. The mean reading for the week at sea level was 29.82 inches, being 0.14 inch below that of the preceding week, and 0.12 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 76° on the 5th to 68° on the 11th; the mean for the week was 71¼°. The lowest temperatures of the air observed by night ranged from 54¼° on the 10th to 61° on the 7th; the mean for the week was 56¾°. The mean daily range of temperature in the week was 14½°, the greatest range in the day being 20¾° on the 5th, and the least 9°, on the 7th.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows: — 5th, 63°.9, + 1°.8; 6th, 65°.7, + 3°.6; 7th, 63°.8, + 1°.8; 8th, 60°.8, − 1°.2; 9th, 60°.8, − 1°.3; 10th, 60°.7, − 1°.4; 11th, 60°.0, − 2°.2. The mean temperature of the air for the week was 62°.3, being 0°.2 above the average of sixty years observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 134° on the 5th, 126° on the 9th, and 120° on the 8th; on the 7th the reading did not rise above 81°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 42¾° on the 11th, 46°¾ on the 5th, and 47¼° on the 6th; the mean of the seven low readings was 49½°.

Wind.—The direction of the wind was S.W. and its strength gentle. The weather during the week was generally fine but showery, and the sky cloudy. Thunder was heard during the afternoon of Wednesday the 8th inst.

Rain fell on five days during the week; the amount collected was 0.76 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 80° at Cambridge, 79¾° at Nottingham, 79¼° at Bristol, and 78¾° at Leicester; at Sunderland the highest temperature was 70°, the mean value from all stations was 75¼°. The lowest temperatures of the air observed by night were 45¼° at Bristol, 47° at Truro, and 47½° at Nottingham; at Blackheath 54½° was the lowest temperature in the week, the mean from all stations was 50½°. The range of temperature in the week was the greatest at Bristol 34°, and the least at Sunderland 18°; the mean range of temperature from all stations was 24¾°.

The mean of the seven high day temperatures was the highest at Cambridge 75°, Nottingham 72¾°, and Norwich 72¼°; and the lowest at Sunderland, 65¾°. The general mean from all stations was 69¾°. The mean of the seven low night temperatures was the

lowest at Eccles, 52¾°, and the highest at Portsmouth, 58°; the mean value from all stations was 55⅛°. The mean daily range of temperature was the greatest at Cambridge, 20½°, and the least at Plymouth, 9¾°; the mean daily range from all stations was 14½°.

The mean temperature of the air for the week from all stations was 60¾°, being 2° lower than the value for the corresponding week in 1876. The highest were 63° at Cambridge; and the lowest 58½° at Wolverhampton, Liverpool and Sunderland.

Rain fell on every day in the week at Sunderland, and on five days at most other stations. The amounts measured varied from 1.64 at Truro, 1.55 at Plymouth, and 1.24 inch at Bristol, to half an inch at Portsmouth, Leicester, Liverpool, and Leeds; the average fall over the country was 0.88 inch.

The weather during the week was gloomy, dull and showery; and the sky cloudy. Thunderstorms occurred at Wolverhampton and Bradford, on the 8th inst.

Scotland: *Temperature.*—The highest temperatures of the air varied from 75° at Dundee to 65¾° at Aberdeen; the mean value from all stations was 70½°. The lowest temperatures of the air ranged from 46° at Edinburgh and Aberdeen to 49¼° at Glasgow; the mean from all stations was 47½°. The mean range of temperature from all stations was 23°.

The mean temperature of the air for the week from all stations was 59°, being ¾° higher than the value for the corresponding week in 1876. The highest was at Dundee, 60°, and the lowest at Aberdeen, 58¼°.

Rain.—The fall of rain in the week varied in amount from 1¼ inch at Aberdeen, and rather more than 1 inch at Glasgow, to half an inch at Edinburgh; the average fall over the country was eight-tenths of an inch.

Dublin.—The highest temperature of the air was 72¼°, the lowest 50½°, the range 21¾°, the mean 61°, and the fall of rain 0.47 inch.

JAMES GLAISHER.

Obituary.

We learn with very great regret of the death of Dr. Hugh Algernon Weddell, who died on July 22, at Poitiers. Dr. Weddell was of English extraction, but had long resided in France, where he was for some years an *aide naturaliste* of the Jardin des Plantes. On behalf of the French Government he undertook during five years a voyage in Southern Peru and Bolivia, contributing largely to our knowledge of the botany of those regions. The account of his travels is given in his *Voyage dans le Nord de la Bolivie*, while the botanical details may be found in his *Chloris Andina; or Description of the Alpine Plants of the Cordilleras*, a work, unfortunately, never completed. Some notes on the vegetation of Brazil, Bolivia, and Peru, translated from the French, are contained in the sixth volume of the *Journal of the Horticultural Society, London*, 1851. Previous to the publication of the *Chloris Andina*, however, he had earned for himself a well founded and widely extended reputation for his *Histoire Naturelle des Quinquinas; or, Monograph of the Genus Cinchona*, a splendid publication which has formed the basis of what has since been written on the systematic history of the Cinchona. Other monographs from his pen were those on the large and varied family of Nettles, Urticaceæ, those on Balanophoreæ, besides numerous minor ones on such subjects as hybrid Orchids, Cystoliths, Caoutchouc, Coca, Ipecacuanha, and latterly Lichens, Weddell having embraced the doctrine propounded by Schwendener that lichens are really fungi living parasitically on Algæ. Dr. Weddell was present at the Botanical Congress at Amsterdam in April last, but was then in ill-health. His loss will be felt severely, as his amiable character, no less than his wide scientific attainments, endeared him to a large circle of friends, English as well as French.

Answers to Correspondents.

Covent Garden Market Prices: *A Subscriber.* The prices quoted in our last number were a fair average of the market prices ruling on August 9. Those published in the *Times* of the 11th inst. are, we believe, the retail prices realised for the very best samples, probably on the previous day. The prices vary from day to day, and sometimes frequently during a single day, so that exact figures cannot be given.

Cucumber: *E. B.* Your coiled Cucumber, in the form of a ram's horn, may be explained by the fact that the growth on one side has been checked, while that on the other has gone on.

Dahlias: *T. S.* We can give you no better advice, than recommend you to pay a visit to some of the most successful growers, and take a practical lesson.

Fuchsia: *E. Bland.* Judging from the single flower there is nothing novel about your seedling Fuchsia. There are several in the same way, and unless it has a very good habit it should not be sent out.

Garden Walls: *W. W.* There is nothing better that we can recommend than a wall built of ordinary bricks, but hollow, *i.e.*, with 4½ inches of a cavity in centre—this keeps it drier and warmer. The wall should then be wired according to plans being continually advertised in our columns.

Grass: *A. Z.* The Sheep's Fescue—Festuca ovina, Poa pratensis, Dactylis glomerata, or a mixture of these.

Grapes: *S., Rose Hill.* Yours is a very singular case. It does not seem the same as the ordinary scald, but not only is the whole berry affected, but there has been no sun to account for it, added to which your statement as to shade is against such a theory. As it is not confined to one house there must be some climatic cause which is quite beyond your control. You should, at any rate, burn all the affected bunches, and trust that, after you have got your Vines into as good health as possible, you may have an excellent crop next year. We should also recommend you to remove the present soil, and whitewash the house, and the sooner the better, unless sufficient Grapes are left to make them worth preserving. *M. J. B.*—*C. W. S.* The berries were in such a state of putrescence that we had no opportunity of ascertaining the early stage of the disease. It does not seem to be the same with the disease of "S., Rose Hill;" but we fear that there is something in the season which induces decay,—possibly the small comparative portion of direct sun-light, a defect which is as injurious to the vegetable as to the animal kingdom. In both cases there does not seem to be the slightest defect of treatment. The very best cultivators will sometimes meet with such untoward and unmanageable cases. *M. J. B.*—*W. D.* The berries are injured by the well-known Rust, which may have arisen from any of several causes, such as cold draughts, or handling or rubbing against them when thinning, or the injudicious use of sulphur at an early stage of their growth.

Herbaceous Plants: *G.* We will endeavour to comply with your request.

Insects: *J. L.* The larva of the handsome Privet moth—Sphinx ligustri.—*J. Kitley.* Smashed beyond recognition before it reached us. Such minute subjects should always be sent in a quill.—*P. W. J.* The insects are all dried up, so as not to be visible. They are, no doubt, a species of Spring-tail, some of which are injurious to plants,—not Thrips. *A. M.*

Melons: *F. P. J.* The Melon leaves received were sun-scorched and filthy dirty. A little timely attention to ventilation would have prevented the former, and persistent fumigation, or dressing with Gisburst Compound, would have kept down the insects; as it is, you have got a nice collection!

Names of Plants: *Levi Hartley.* The Orchid of which you send leaf is perhaps Pescatoria lamellosa, but without better material we cannot be certain. The Dendrobium is D. moschatum; and the other we have been unable to name, and have sent to Prof. Reichenbach.—*H. & Co.* 1, Sedum spurium; 2, Centaurea montana; 3, Althea officinalis; 4, Carduus heterophyllus; 5, Sedum kamschatkicum; 6, Centaurea; 7, Actæa racemosa; 9, Sedum spurium, white variety.—*K. S.* Polygonum cuspidatum.—*J. M.* Smilax aspera.—*R. C. Appleton.* Epidendrum amictum. Will you kindly send us a good leaf for the herbarium.—*J. C., Greenland.* Possibly Zephyranthus Atamasco, of North America, but send a better specimen next year.—*John Leman.* 1, Pelargonium fragrans; 2, Achillea decolorans; 3, Artemisia; specimen insufficient.—*R. B., Redhill.* Spiræa callosa.—*Edward Morse.* Trichocentrum albo-purpureum. Will you kindly send us a leaf and another flower for the herbarium.—*T. D. M.* Odontoglossum cordatum.—*J. S., Cork.* 1, Centaurea Scabiosa albiflora; 2, Cirsium acaule; 3, Veronica canescens; 4, Potentilla colorata; 5, Veronica cuneifolia; 6, Heuchera caulescens.—*Greenbank.* We cannot even make a guess at the solitary, smashed, and rotten flower you send; carefully pack a good specimen, and we will then name it. Correspondents should not expect too much from us; we do not name plants by inspiration, and, if they wish for a correct name, should furnish us with a good specimen, and not a solitary leaf or flower, or a wretched scrap, rendered still more deplorable by H.M. post officials.—*J. M.* Hypericum hircinum.—*H. S.* Euphorbia Lathyris.—*A. Z.* Caragana spinosa and Olearia Haastii.—*E. E.* Aconitum variegatum.—*F. H. K.* Tellima grandifolia, a North American plant; quite hardy, and almost naturalised in some places.—*Reader.* We cannot name plants from mere rooted cuttings.

Nut Bushes: *W. J.* Your plants will probably bear freely when they get thoroughly established. Pruned trees want taking in hand from the first, but it is quite unnecessary in ordinary cases.

Peach Roots Dead: *G. S.* We can only suggest from your account that they may possibly have had an overdose of guano.

Pear Leaves: *W. Partridge.* The fungus on your Pear leaves is the Æcidium condition of Roestelia cancellata. All we can recommend you to do is to remove the leaves and burn them.

Potatos: *G. Cooling.* Your seedling varieties, numbered 1 and 2, were both handsome in appearance and of good quality when cooked, qualities equally conspicuous in many others already in cultivation.

Red Cabbage: *W. P.* Red Cabbage is as much a vegetable as a Beet, or an Onion, and you were wrongfully disqualified, if the terms of the schedule did not specially exclude it. How can it be classed as a salad plant?

Red-spider: *G. G.* If the plants are bearing fruit, syringe them well with clean cold water only.

The Feathery Columbine. If *J. G.* cannot get Thalictrum aquilegifolium from any of the nurseries near him I shall have pleasure in sending him a plant if he will send his address to *J. Clarke, Gr., Cothelstone, Taunton, Somerset.*

Vines Mildewed: *Wrestler.* Keep the atmosphere of the house a little drier, and dust the affected leaves with flowers of sulphur, or dress them with Speed's Mildew Annihilator.

Vines Shanking: *H. C.* The cause of your Vines shanking so much is no doubt owing to the roots penetrating into the cold subsoil. The remedies you adopted last year were only half sufficient, you must take up all the roots, do not be afraid. The berries not setting is due to a lowness of temperature, chills it may be, and this is also conducive to shanking. Is it the true Black Hamburgh?

Vriesia reticulata: *J. C. P.* It has not been long in cultivation, and consequently has not often been seen in flower.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received.—Messrs. Paul & Son (The Old Nurseries, Cheshunt), Autumn Catalogue of Bulbs, Strawberries, &c.—Louis Van Houtte (Ghent, Belgium), Catalogue of Azaleas, Camellias, Rhododendrons, &c.—R. Parker (Exotic Nursery, Tooting, S.W.), Catalogue of Hardy Alpine and Herbaceous Plants, Fruit Trees, &c.—H. Cannell (Swanley Junction, Kent), General Autumn Catalogue.—Thomas Kennedy & Co. (Dumfries), Catalogue of Select Dutch Flower Roots.—Messrs. Haage & Schmidt (Erfurt, Prussia), Catalogue of Seeds, Bulbs, Plants, &c.—Dickson, Brown, & Tait (43 and 45, Corporation Street, Manchester), Autumn Catalogue of Dutch and French Flowering Bulbs.

Communication Received.—Amateur (in a future number).—P. H. G. (we will endeavour to meet your wishes).—W. G.—E. G.—J. W.—G. Lee.—Mrs. T. M. W. (next week).—B. W.

DIED, suddenly, at Hillegom, near Haarlem, aged 71, Mr. Rudolf Van der Schoot, florist, of the firm of Messrs. R. Van der Schoot & Son.

Markets.

COVENT GARDEN, August 16.

The soft fruit being nearly over, our market begins to assume a quieter appearance. Apples and Nuts are almost the only home produce we have now to dispose of, the supply of Plums being almost nil. Grapes are a heavy trade, except for very good samples, large quantities reaching us from the Channel Islands at a very low price. Pines and Peaches are in better demand. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Melons, each	4 0–10 0
Apricots, per doz.	1 6– 3 0	Oranges, per 100	12 0–20 0
Currants, red, ½-siev.	3 0– 3 6	Peaches, per doz.	3 0–18 0
— black, p. ½-sieve	6 6– 7 0	Pears, per doz.	1 0– 2 0
Grapes, per lb.	1 6– 6 0	Pine-apples, per lb.	5 0– 8 0
Lemons, per 100	8 0–12 0	Figs, green, each	0 4– 1 0

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	2 0– ..	Mint, green, bunch	0 6– ..
Beans, French, per bushel	3 0– ..	Mushrooms, per pott.	1 0– 3 0
Beet, per doz.	1 0– 2 0	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Eddoes, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	1 6– 3 0
Leeks, per bunch	0 2– 0 4	Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos (new):—Jersey Kidneys, finished; Kent Regents, 100s. to 120s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	4 0–12 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	1 0– 2 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	2 0– 9 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	2 0– 9 0
Gardenia, per doz.	2 0– 9 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Sweet Sultan, 12 bun.	3 0– 6 0
Lilies (in variety), 12 sprays	1 0– 2 0	Tropæolum, 12 bun.	1 0– 4 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Heliotrope, per doz.	4 0–12 0
Begonias, per doz.	6 0–12 0	Hydrangea, per doz.	6 0–24 0
Bouvardias, do.	12 0–24 0	Liliums in var., each	1 6– 6 0
China Asters, dozen	4 0–12 0	Mignonette, per doz.	3 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargoniums, p. doz.	9 0–18 0
Cyperus, do.	6 0–12 0	— scarlet, per doz.	2 0– 9 0
Dracæna terminalis	30 0–60 0	Petunias, per doz.	4 0–12 0
— viridis, per doz.	18 0–24 0	Rhodanthe, per doz.	6 0–12 0
Ferns, in var., p. doz.	4 0– ..	Roses, fairy, p. doz.	4 0–12 0
Ficus elastica, each	2 6–15 0	Solanums	12 0–24 0
Fuchsias, per dozen	2 0–12 0	Valotta purpur., doz.	9 0–18 0
Heaths, variety, doz.	12 0–60 0		

SEEDS.

LONDON: *August* 15.—The seed market has been fairly attended this week, and in those kinds of seeds needed for present sowing there has been a good trade doing. The three varieties now most in request are Mustard, Rape, and Trifolium incarnatum. For the first-named we have a brisk sale at full rates, whilst Rapeseed (on account of its extremely deficient yield, which becomes more and more apparent) must be noted 1*s.* to 2*s.* per qr. dearer. Trifolium now comes to hand more freely; its abundant supply keeps prices at a low level. Winter Vetches have opened at a moderate figure; as yet no large quantity has appeared at market. New Rye continues in short supply, in consequence of which rather high rates are realised. For large blue Peas of the new crop there is a brisk inquiry; fine samples will, it is feared, be scarce. In red Clover seed hardly any transactions are just now taking place. A few parcels of Trefoil and white Clover have lately changed hands at a slight increase on previous currencies. Canary seed has during the last few days met with more attention; and values have exhibited an upward tendency; the same can also be said of Hemp seed. Feeding Linseed is steady. *John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was again dull, and Wheat was quoted at prices nominally the same as last week, the tendency being perhaps towards reduction. Some new Talavera Wheat, weighing 64 lb. to the bushel, realised 72*s.* per quarter., while some of about 62 lb. or 63 lb. weight made 68*s.* per quarter. There was also some new Kentish Wheat, which changed hands at 64*s.* to 65*s.* per quarter. Barley was well held, though indifferently sought after; while Maize, which was in moderate request, was the turn in favour of the seller. Oats were hard to move, and in some instances were 6*d.* cheaper. Malt was unchanged. Beans and Peas were not very well supported, while as regards flour the market was distinctly weak. On Wednesday the trade was heavy. There was no material change in prices, business being too limited to test the strength of the market, but where there was any pressure to realise, a decided reduction had to be submitted to as regards Wheat and most other classes of produce. Barley remained firm. Average prices of corn for the week ending August 11:—Wheat, 65*s.* 2*d.*; Barley, 34*s.* 7*d.*; Oats, 27*s.* 4*d.* For the corresponding week last year:—Wheat, 45*s.* 10*d.*; Barley, 32. 2*d.*; Oats, 29*s.* 5*d.*

CATTLE.

At the Metropolitan market on Monday there was a few more beasts than on that day se'night, but there was a demand for them, and that day's prices were freely given. The supply of sheep was very small; though trade was by no means brisk. The top quotation was, however, exceeded for a few choicest qualities. Lambs were not very plentiful, but the trade for them has fallen off, and prices on the average were lower. The few calves on offer made a good price. Quotations:—Beasts, 5*s.* 8*d.* to 6*s.*, and 5*s.* 6*d.* to 5*s.* 8*d.*; second quality beasts, 4*s.* 4*d.* to 5*s.*; calves, 5*s.* to 6*s.* 4*d.*; sheep, 6*s.* 8*d.* to 7*s.*, and 6*s.* 4*d.* to 6*s.* 8*d.*; ewes and second quality, 5*s.* 6*d.* to 5*s.* 10*d.*; lambs, 6*s.* 8*d.* to 7*s.* 8*d.*; and pigs, 4*s.* to 5*s.* 4*d.*—On Thursday the supply of beasts was limited, but equal to the demand, which ruled quiet at about Monday's prices. Sheep, a short supply; trade was quiet but prices were maintained. Lambs sold at late rates. Calves and pigs were weak.

HAY.

At Whitechapel on Tuesday all classes of fodder except straw were firm. The demand was steady. Prime old Clover, 100*s.* to 140*s.*; inferior, 85*s.* to 96*s.*; good new Clover, 100*s.* to 126*s.*; prime old meadow hay, 90*s.* to 124*s.*; inferior, 70*s.* to 85*s.*; good new hay, 80*s.* to 100*s.*; and straw, 44*s.* to 58*s.* per load.—On Thursday a fair supply of fodder was on sale, with a dull trade. Quotations:—Prime old Clover, 100*s.* to 137*s.*; inferior, 85*s.* to 95*s.*; prime old meadow hay, 90*s.* to 120*s.*; inferior, 70*s.* to 85*s.*; good new, 80*s.* to 100*s.*; and straw, 44*s.* to 58*s.* per load.—Cumberland Market quotations:—Superior old hay, 120*s.* to 130*s.*; inferior, 90*s.* to 105*s.*; new hay, 80*s.* to 105*s.*; superior old Clover, 132*s.* to 140*s.*; inferior, 100*s.* to 110*s.*; new Clover, 90*s.* to 120*s.*; and straw, 54*s.* to 58*s.* per load.

POTATOS.

At the Borough and Spitalfields markets on Monday, there was a steady demand for Potatos of all descriptions not absolutely diseased, and the following are the quotations:—Kent Regents, 110*s.* to 160*s.*; Essex do., 110*s.* to 145*s.*; shaws, 90*s.* to 100*s.*; kidneys, 60*s.* to 80*s.*; Early Rose, 80*s.* to 100*s.* per ton.

THE NEW SEEDLING ROSE.

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	Per packet—s. d.
AURICULA, choicest mixed, alpine	6d. and 1 0
CALCEOLARIA HYBRIDA, very choice, mixed	1s. „ 2 6
CINERARIA HYBRIDA, from named flowers	1s. „ 2 6
CARNATION and PICOTEE, from stage flowers	1s. „ 2 6
HOLLYHOCK, Prize English	6d. „ 1 0
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Clapham's superb, very fine	1 0
MYOSOTIS DISSITIFLORA—Forget-me-not	0 6
PANSY, choicest mixed English	6d. and 1 0
PRIMULA SINENSIS, choicest mixed	1s. „ 2 6
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
„ East Lothian, splendid	0 6
SWEET WILLIAM, very choice, mixed	0 6
WALLFLOWERS, splendid double, mixed	6d. and 1 0
GREENHOUSE PERENNIALS, 12 fine varieties	6 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4 6

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PRIMULA SINENSIS FIMBRIATA, double-flowered, mixed, 2*s.* 6*d.* and 5*s.* per packet.

PRIMULA SINENSIS FIMBRIATA, Maiden's Blush, new double, 2*s.* 6*d.* and 5*s.* per packet.

CINERARIA and CALCEOLARIA, 2*s.* 6*d.* each packet.

CYCLAMEN PERSICUM GRANDIFLORUM, 1*s.* and 2*s.* 6*d.* per packet.

PANSIES, best English, and blotched flowers, 1*s.* 6*d.* each pkt.

CARNATION and PICOTEE, 2*s* 6*d.* each packet.

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HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36*s.* to 42*s.* per dozen.

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
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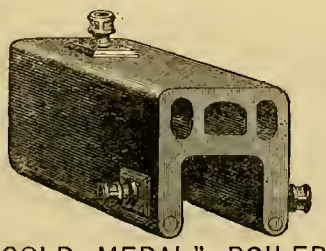

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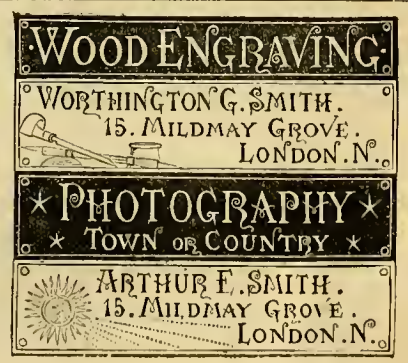

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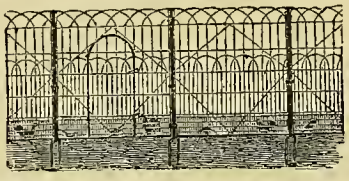

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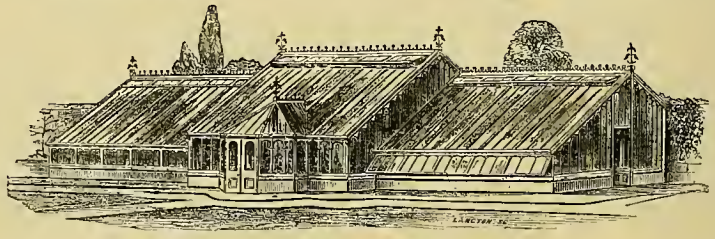

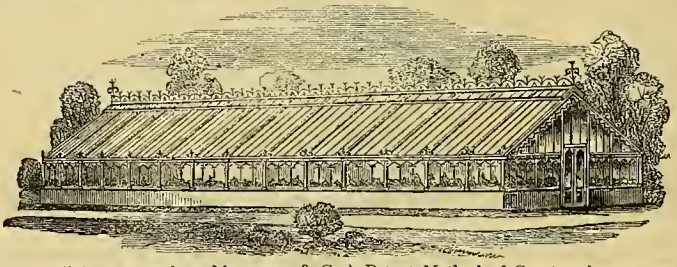

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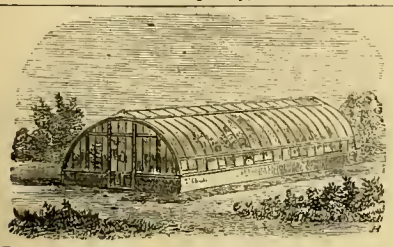

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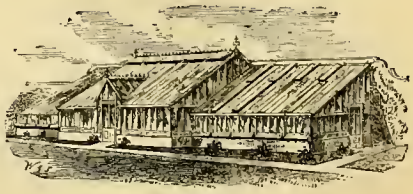

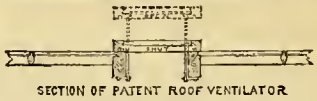

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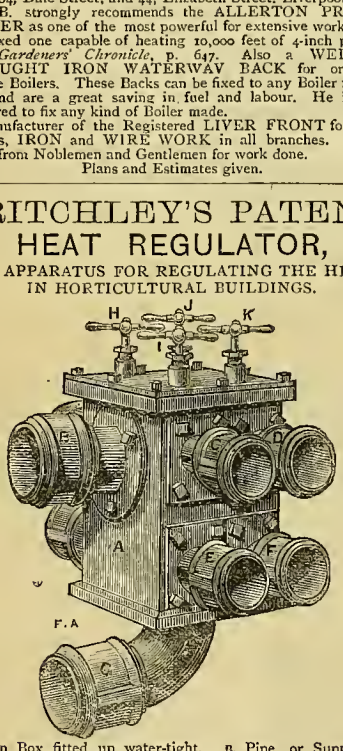

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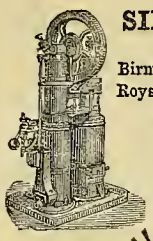

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No Labor Required.

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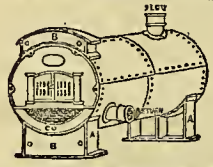

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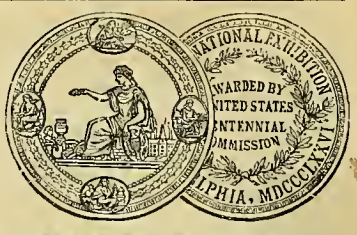

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"Gentlemen,—Herewith enclosed I beg to hand you cheque in settlement of account for Boiler which please to acknowledge.

"I have now the pleasure to inform you that the Boiler has been tried twice, and so far has proved very satisfactory. At present I have only about 1000 feet of 4-in. piping connected to Boiler, which it heated in a very short time with a small consumption of fuel. The return pipe close to Boiler was as hot as the flow; in fact the pipes were all hot alike. The draught is so great in the one I have that soon after the fire was lighted, although everything was damp, the fire was soon at a white heat. With such a draught it will burn any kind of rubbish. When I start fires again I will measure the fuel and time it, and if I have then the same high opinion of it as I have at present I shall require one that will heat about 7000 feet of 4-in. piping. I shall be pleased to show the Boiler to any one that would like to see it if they call at my Nurseries.—I am, yours faithfully. "JOHN TURTLE."

"43, High Street, Boston, June 15, 1877.

"Messrs. Wm. Wright & Co., Airdrie (N.B.).

"Gentlemen,—The Boiler you sent us is giving great satisfaction.—Yours truly,
(Signed) "C. T. and H. T. WRIGHT."

"Hawthornden, Willaston, near Chester, July 19 1877.

"Dear Sirs,— . . . . I feel it my duty to the Boiler o tell you that it does its work to my thorough satisfaction, and seems to have a wonderful digestion.—Yours truly,
(Signed) "ARTHUR S. WALFORD."

"The Gardens, Kenmure Castle, New Galloway, "June 5, 1877.

"Messrs. Wm. Wright & Co.

"Gentlemen,—As we were making additions to our hothouses early in spring, rather than have another fire we decided to put in a larger Boiler, and as I was anxious to have a trial of your one I got my desire gratified, and after three months' trial, and that during some very cold weather, I am now in a position to state more fully its capabilities for work. During the whole time I have not had the least difficulty in keeping up plenty of heat, and that with a very moderate fire. I find your Boiler very easy kept going with fuel, and that of a very inferior description from what we had to use with the old saddle one (that I attribute to the excellent draught it has). The attention is also a good deal less, with little refuse or soot about it. It is of admirable construction, affording the greatest facilities in case of accident. The replacing of a section is a mere trifle compered to having to put in a new Boiler Altogether, I have not the least hesitation in saying your Boiler is a great improvement on any I have yet seen or tried.—I am, Gentlemen, yours truly, "THOMAS DUFF."

"Windy Bank Terrace, Littlebro', "June 13, 1877.

"Messrs. Wm. Wright & Co., Airdrie (N.B.)

"Gentlemen,— . . . Sorry to say I had but poor faith in your Boiler at first, but I am now of opinion that it will become a *great favourite* here. It is giving us great satisfaction. I think it is as Mr. Lewin says, "the dirtiest rubbish seems to suit it best." I shall be happy to show it to gardeners and others interested who may wish to inspect it.—I am, Gentlemen, yours respectfully,
(Signed), "J. LAW."

"Mains, Thornhebank, June 8, 1877.

"Messrs. Wm. Wright & Co., Hotwater Engineers, Airdrie.

"Dear Sirs,—I have been mostly from home since the Hotwater Apparatus was erected here, but I learn from the gardener that he is well pleased with it. I have therefore made up my mind to use it for a new house that I intend erecting this season.—Yours truly,
(Signed) "JOHN DENHOLM, Jun."

"Black Hall, Ivybridge, August 6, 1877.

"Messrs. W. Wright & Co., Airdrie (N.B.).

"Dear Sirs,— . . . . A grand point in yours is the lofty bottom section. I have been working it at slow speed since put up. I tell my employer it is like a high-spirited horse and wants a tight rein. I am highly pleased with it.—I am, dear Sirs, yours very truly,
(Signed) "D. ADAMS."

We may also say that the Boilers' performances have even exceeded our own expectations, great as these were, as many of the points, correct enough in appearance in theory, had to be tried in actual work before their value could be fully known. In practice, however, our conclusions have been borne out in the most complete and satisfactory manner; and we have now no hesitation in saying that for power, speed, economy, simplicity, cheapness, and general adaptability, our Patent Endless-Flame-Impact stands unrivalled amongst Hot-Water Boilers.

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "Our Boilers and Heating," which will be handed to all applicants, post-free.

We are prepared to supply THIRTY DIFFERENT BOILERS of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.
BOILERS SPECIALLY DESIGNED FOR LOW AND OTHER INCONVENIENT POSITION.

WM. WRIGHT & CO., HOT-WATER ENGINEERS, AIRDRIE, NEAR GLASGOW, N.B.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by William Richards, at the Office of Messrs. Bradbury, Agnew, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, August 18, 1877.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The GREAT SUMMER SHOW of the Royal Horticultural Society in 1878 will be held in the Gardens, South Kensington, from TUESDAY, May 28, until FRIDAY, May 31, inclusive. Schedules can be obtained on application to the SECRETARY.

Royal Horticultural Society, South Kensington, S.W.

CRYSTAL PALACE.—TWENTY-SECOND ANNUAL EXHIBITION of FRUIT and CUT FLOWERS, FRIDAY and SATURDAY, September 21 and 22. Schedules may be had on application to Secretary and Manager.

N.B. Rule 12 is cancelled.

BISHOP AUCKLAND FLOWER SHOW, AUGUST 31, 1877.

GREAT PLANT and GENERAL SHOW, GRAND AUTUMNAL ROSE SHOW, SPECIAL FRUIT SHOW. ENTRIES CLOSE AUGUST 20. Schedules on application to J. C. HENDY, Secretary.

THE KENNINGTON AMATEUR HORTICULTURAL SOCIETY.

The GRAND ANNUAL EXHIBITION of FLOWERS and FRUIT of the above society will be held at the "Marble Rink," Clapham Road, S.W., on TUESDAY and WEDNESDAY, September 4 and 5. Extra Special Prizes open to any one, given by Mr. Timewell. Also special Prizes given by Mr. Stiles, the secretary. Particulars can be obtained by applying to. Mr. STILES, 31, Trigon Road, Kennington, S E.

BANBURY HORTICULTURAL SOCIETY.—SEPTEMBER 5 and 6.

SCHEDULE OF OPEN PRIZES.

No Entrance Fee.

	1st Prize.	2d Prize.
1. Twelve STOVE or GREENHOUSE PLANTS in bloom	£10 0 0	£5 0 0
2. Six STOVE or GREENHOUSE PLANTS, in bloom or ornamental	5 0 0	3 0 0
3. Twelve ORNAMENTAL FOLIAGE PLANTS	3 0 0	2 0 0
4. COLLECTION of FRUIT, not less than 9 varieties	3 0 0	2 0 0
5. GRAPES, Black, best 3 bunches	2 0 0	1 0 0
6. GRAPES, White, best 3 bunches	2 0 0	1 0 0
7. Forty-eight ROSES, not less than 24 varieties	2 0 0	1 0 0
8. GLADIOLUS, single spikes, 12 vars.	1 0 0	0 10 0

The Band of the Royal Marines will play both days, and the ANNUAL SHOW of the OXFORDSHIRE AGRICULTURAL SOCIETY will be held at the same time. Schedules containing full particulars will be forwarded to exhibitors on application to E. JARVIS HARTLEY, Sec.

NOTICE.—The Prizes of £5, £2, and £1, offered by Mr. J. R. PEARSON, of Chilwell, for the best SINGLE BUNCH of his NEW GRAPE GOLDEN QUEEN, will be competed for at the CRYSTAL PALACE FRUIT and FLOWER SHOW, September 21 and 22. The Awards will be made by the Crystal Palace Judges.

We propose to OFFER PRIZES to the SAME AMOUNT NEXT YEAR, for the best Bunch of MRS. PEARSON.

To the Trade.

JAMES CARTER AND CO. have received their FIRST CONSIGNMENT OF DUTCH ROOTS. And as the same have been personally selected by themselves, in Holland, they think they will be found of good value. CATALOGUE sent in exchange for business card. High Holborn, London, W.C.

NEW REGAL PELARGONIUM, "PRINCE OF WALES."

Much brighter in colour, larger in truss, and very superior in every way to Pelargonium "Captain Raikes." Price One Guinea each.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

VINES.—Splendid Planting and Fruiting Canes, of leading varieties, perfectly ripened without bottom heat. Lists and Prices on application to JAMES DICKSON AND SONS, Newton Nurseries, Chester.

MR. A. PETITHUGUENIN, NÉGOCIANT, à Genlis, France. Côte d'Or, demande à acheter des GRAINES de SAINFOIN à la COMMISSION.

To the Trade.

ROSE BLOOMS. Price until further notice 8s. per 100, at CRANSTON'S NURSERIES, King's Acre, Hereford.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium CATALOGUES free on application.

Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

CINERARIAS.—100,000 Wetherall's choicest Strain, Blue and all colours, strong healthy plants, 6s. per 100, 50s. per 1000. JOHN MUNRO, Potters Bar, N.

DENDROBIUM AINSWORTHII.—A few Plants of this magnificent New Hybrid Dendrobium. For Cut and Description, see *Gardeners' Chronicle*, August 11, p. 166 and 167. Price on application to GEORGE TOLL, 358, Stretford Road, Manchester.

HOLLYHOCKS.—Strong Seedlings, raised from a collection of the very finest named sorts, 25s. per 100, cash. J. JACKSON, Nursery, Kidderminster.

PINES.—A very fine Lot of Fruiting and Succession PINES, including Smooth Cayenne, Queen's, Baroness Rothschild, Black Jamaica, &c. To be sold cheap. Apply for full particulars as to prices, &c., to CHARLES TURNER, The Royal Nurseries, Slough.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers AZALEA INDICA, MOLLIS and PONTICA, CAMELLIAS, SPIRÆA JAPONICA, PALMS and DRACÆNAS. CATALOGUES free on application.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges. RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

WANTED, SECOND-HAND 4-INCH PIPING. State quantity, if fixed with Gutta-percha Rings, and lowest cash prices per yard. M., Merton Abbey Nursery, S.W.

PRICKLY COMFREY (SYMPHYTUM ASPERRIMUM). Whole Roots purchased by THOS. CHRISTY AND CO., 155, Fenchurch Street, London.

WANTED, Seedling PRIMULA SINENSIS FIMBRIATA, red and white; also Seedling CINERARIA, ready for potting off; a large quantity of GERANIUM, Vesuvius, cuttings. State price and particulars to J. COWAN, The Vineyard, Garston, Liverpool.

WANTED, GERANIUM CUTTINGS, leading Bedding varieties, including Tricolors and Bronzes. State names of sorts, and price per 100, to SMITH AND SANDERS, Nurserymen, Glasgow.

To Gentlemen's Gardeners and Others.

WANTED GERANIUM CUTTINGS—Vesuvius, Gem, and Master Christine. Also good varieties of Tricolors, Gold and Bronze. State varieties and price per 1000.—M., The Nursery, Merton Abbey, S.W.

Geranium Cuttings.

WANTED, the following varieties, VESUVIUS, MME. VAUCHER, MASTER CHRISTINE. State Price per 100 or 1000, to Mr. MILES, West Brighton Nurseries, Cliftonville, Sussex.

WANTED, about 200,000 strong ASH and CHESTNUT PLANTS, from 3 to 6 feet; also 12,000 CROWN BOB GOOSEBERRIES. State lowest Price per 1000, and quantity. Address, W. KENNETT AND SONS, Nurserymen, Canterbury.

Sutton's Choice Strains of

FLORISTS' FLOWERS. SUTTON'S CALCEOLARIA "PERFECTION," 3s. 6d. per packet.

SUTTON'S PRIZE PRIMULA, 2s. 6d. per packet.
SUTTON'S SUPERB CINERARIA, 2s. 6d. per packet.
SUTTON'S PRIZE CYCLAMEN, 2s. 6d. per packet.
Post-free.
The Queen's Seedsmen, Reading.

ADOLPHE D'HAENE, NURSERYMAN, Ghent, Belgium (Successor to ALEXIS DALLIERE).
AZALEA INDICA, well set with buds, £5 per 100.
CAMELLIAS, well set with buds, from £6 to £8 per 100.
SPIRÆA JAPONICA (strong clumps for forcing), £1 per 100.
Large stock of young PALMS, prices and dimensions forwarded on application.

Hyacinths, Tulips, Crocus, Gladioli, &c.

OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.
ANT. ROOZEN AND SON, Overveen, near Haarlem, Holland.

DUTCH BULBS, &c.—The most complete Catalogue in the Trade, post-free for 3d., returned to purchasers.—GIBBS AND COMPANY, Seedsmen and Importers of Bulbs, Woodbridge, Suffolk.

WATKINS AND SIMPSON'S Wholesale CATALOGUE of DUTCH and other BULBS is now ready, and may be had on application. Any Customer not having received one by post will oblige us by letting us know. 1, Savoy Hill, Strand, London, W.C.

Flowering Bulbs,

JAMES DICKSON AND SONS beg to draw attention to their large and excellent importations. CATALOGUES post-free. 108, Eastgate Street, Chester.

B. MALLER begs to announce that his stock of ERICA HYEMALIS and other varieties is very extensive, and in excellent condition this season. He has also a large quantity of ADIANTUM CUNEATUM, SOLANUMS, BOUVARDIAS, &c. The usual Trade Sale will be held in September. An inspection is respectfully solicited. Burnt Ash Nursery, Lee, S.E.

MINIER, NASH AND CO.'S CATALOGUE of HYACINTHS, and other DUTCH FLOWER ROOTS is now ready, and may be had on application. Friends who have not received a copy will please write. 60, Strand, London, W.C.

LILY OF THE VALLEY.—I beg to inform all my numerous Customers, buyers of the above, that the Roots are unusually fine this year, and that I can furnish extra strong flowering roots at 45s. per 1000, carriage free to London. Orders are requested as early as possible. ROBERT NEWMANN, Nurseries, Erfurt, Prussia.

FOR SALE, four magnificently shaped Standard BAY TREES, in tubs, 9 to 10 feet high, about 4 feet on the stem and 5 feet through. Price 20 Guineas. W. I. LUCKING, Pleasantfield, Willesden.

Common Sanfoin and Giant Sanfoin.

MESSRS. LEVAVASSEUR AND SON, SEEDSMEN, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on commission.

Garden Fruit Tree Culture.

PEACHES and NECTARINES. — Good crops are now ripening in the Orchard Houses, and an early inspection is invited. THOMAS RIVERS AND SON, Nurseries, Sawbridgworth, Herts.

Daniels' Defiance

GIANT EARLY MARROW CABBAGE.—The earliest, sweetest, largest and best Cabbage in cultivation. Sow at once. Seed, with cultural directions, 1s. 6d. per packet, post-free 1s. 8d. DANIELS BROS., The Queen's Seedsmen, Norwich.

Cabbage Plants.

H. J. HARDY begs to offer fine strong Plants of— ROBINSON'S DRUMHEAD, ENFIELD MARKET, } 3s. 6d. per 1000. Carriage and package free. Terms cash. H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade.

NEW TURNIP SEEDS for PRESENT SOWING.

H. AND F. SHARPE have just harvested their new crop of WHITE-FLESHED TURNIP SEEDS, and are prepared to make special offers to the Trade at very moderate prices. The Seed is ready for immediate delivery.—Seed Growing Establishment, Wisbech.

GIANT ROCCA ONION.—The largest and best in cultivation for autumn sowing; frequently weighs from 2 to 2 lb. each. Sow at once. Seed, with complete cultural instructions, 1s. per ounce, post-free, 1s. 2d. DANIELS BROS., Seedsmen to the Prince of Wales, Norwich.

JOHN MATTHEWS respectfully requests his Friends to favour him as early as convenient with their Orders for Autumn Supply of FLOWER POTS, &c. Royal Pottery, Weston-super-Mare.

SALES BY AUCTION.

The Whitfield Museum.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions to SELL by AUCTION, at the Alexandra Palace, Muswell Hill, on TUESDAY and WEDNESDAY, August 28 and 29, at 1 o'Clock precisely each day, the celebrated COLLECTION of CURIOSITIES of NATURE and WORKS of ART formed by the late R. G. Whitfield, Esq., consisting of Paddles, War Clubs, Spears, Bows and Arrows, Canoes, Native Dresses, Musical Instruments, &c., from the South Sea Islands; Japanese and Chinese Soapstone, Bronze and other Ornaments, Suits of English Armour, Gold inlaid Weapons of War, Heads and Horns of Animals, Stuffed Birds under Glass Shades and in Cases, Skeletons, Corals, Stuffed Animals, Busts and Figures of Eminent Persons, Glass Show-cases, &c.

On view at the Alexandra Palace, and Catalogues had of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, August 29, at half-past 12 o'Clock precisely, a consignment of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS, just arrived from well-known Farms in Holland, in large and small lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, August 30, at half-past 12 o'Clock precisely, a quantity of PLANTS for TABLE DECORATION, &c., comprising the following:—

Aralia filicifolia,	Geonoma princeps,
,, gracillina,	Kentia gracilis,
,, elegantissima,	,, Lindeni,
Calamus asperrinus,	Livistine Hoogendoorpi,
Cocos Weddelliana,	Pandanus Pancheri,
Croton Aodreanum,	Pritchardia filifera,

&c., &c., &c.

On view the morning of Sale, and Catalogues had.

Dutch Flower Roots.

MESSRS. PROTHEROE AND MORRIS beg to announce that their first SALE of selected HYACINTHS for Glasses and Borders, also of TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS from Holland will take place in the large Estate Rooms at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, September 10, at half-past 11 o'Clock precisely. The lots will be arranged to suit the trade and private buyers.

Catalogues may be had at 98, Gracechurch Street, E.C.

Cheadle, near Manchester.

CAPES, DUNN, AND PILCHER have received instructions from the Executor of the late Mrs. Douglas, to SELL by AUCTION on SATURDAY, September 8, commencing at 12 o'Clock, at the Gardens of "Brunstwood," Cheadle, near Manchester: the extensive and splendid COLLECTION of CHOICE EXOTIC and GREENHOUSE PLANTS, comprising 27 large Camellias, well set with flower-buds; 24 large Azaleas; a selection of Orchids, including a fine plant of Cœlogyne cristata, Peristeria elata, Cypripediums, and others; several fine Tree Ferns; a good assortment of Stove Ferns; Plants of beautiful ornamental foliage; half-specimen Ericas; 20 Yucca filamentosa; 15 large specimen Lilium lancifolium and auratum; and a large miscellaneous Collection of Hard and Soft-wooded Plants.

May be viewed on Saturday, September 1, and throughout the following week. Catalogues will be forwarded on application to the Auctioneers, 8, Clarence Street, Manchester.

Ember Nursery, Thames Ditton.

By order of the Executors of the late Mr. J. Lewis.

TO BE DISPOSED OF, on easy terms, the thoroughly genuine BUSINESS, connected with this old established Nursery. The Nursery comprises Dwelling House, about 9 acres of first-class Land, Fully stocked, and about 11,500 feet super of modern Glass. Lease 16 years unexpired. Rent £75 per annum. Greenhouses belonging to tenant and also the indoor stock and utensils in trade to be taken by valuation.

N.B. To facilitate the disposal of the Business, it is proposed to effect an AUCTION SALE of the whole of the valuable OUT-DOOR STOCK, thus giving the Purchaser the opportunity of buying at a cheap rate what stock he might require to carry on the business.

Particulars to be obtained only of PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

To Nurserymen and Others.

TO BE DISPOSED OF, one of the oldest established NURSERY BUSINESSES in the North of England, with valuable connection.

The executors of the late Mr. John Harrison, of the North of England Nurseries, Catterick Bridge and Scorton, are open to treat with a gentleman possessing capital, for the disposal of the business, which has an established connection of nearly 50 years.

The Nurseries consist of about 60 acres of Freehold Land, about 40 acres of which are stocked with a choice Collection of Roses and General Nursery Stock. There are good Residences in the Grounds, and fine Ranges of Glass, close to the Catterick Bridge Station of the North-Eastern Railway, situate between Darlington and Richmond, and offering unusual facilities for doing a large and profitable business. A large portion of the purchase money could remain on security of the property at a reasonable rate of interest. Possession could be given at any time as a going concern. Principals or their Solicitors only may apply to the undersigned,

A. E. HARRISON, Solicitor, Church Yard, Rotherham.

To Florists.

The Owner of a Square in the South of London is willing

TO LET, the CENTRE ENCLOSURE, on advantageous terms, to a Florist who will keep the same in tasteful order. There is also a Small Residence, with extra Land for Forcing Pits, and a fair demand for Flowers, Plants, and Gardening.

Apply to WARING AND NICHOLSON, Architects and Surveyors, 53, Parliament Street, Westminster, S.W.

To the Trade.

HYMENOPHYLLUM TUNBRIDGENSIS, nice tufts, in 4-inch pots, 18*s.* per dozen.
STATICE HALFORDII, 4-inch pots, 9*s.* per dozen.
,, ARBORESCENS, 4-inch pots, 9*s.* per dozen.
DRACÆNA INDIVISA, nice young plants, 9*s.* per dozen.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, and the ERECTION of FARM BUILDINGS and COTTAGES.

The Land, Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

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2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

STRAWBERRY PLANTS.—Strong well-rooted plants of the under-named varieties, 3*s.* 6*d.* per 100, purchasers' selection:—Aromatic, Amateur, Ananas Perpetual, Ascot Pine-apple, British Queen, Bicton Pine, Black Prince, Cockscomb, Comte de Paris, Cornucopia, Comte de Zans, Crimson Queen, Dr. Hogg, Duke of Edinburgh, Eleanor, Exquisite, Early Prolific, Enchantress, Eliza, Fairy Queen, Filbert Pine, Frogmore Pine, Grove End Scarlet, Garibaldi, Haiquin, James Veitch, John Powell, Keens' Seedling, La Grosse Sucrée, Leon St. Lannier, La Constante, Lucas, Marguerite, Newton Seedling, Oscar, Prince of Wales, Prince Arthur, President, Premier, Princess of Wales, Royalty, Sir J. Paxton, Sabreur, Stirling Castle, Sir John Falstaff, Souvenir de Kieff, Scarlet Pine, Countess, Vicomtesse Héricart de Thury, Victoria, Unza Fritz, Wonderful, W. J. Nicholson. Our selection, 2*s.* 6*d.* per 100, 20*s.* per 1000, in ten or twenty sorts, all true to name.

HARRISON'S MUSK, 2 plants 1*s.*, 12 for 3*s.* 6*d.*

PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2*s.* per dozen.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

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CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12*s.* per dozen; extra strong plants, 2 years old, 18*s.* per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

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Those best adapted for forcing are marked with an asterisk.

Aromatic	*Auguste Nicaise
Beauty	British Queen
Dr. Hogg	Duc de Magenta
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DICKSONS AND CO. invite inspection of their celebrated BEDDING VIOLAS and PANSIES, which for some months have been, and are now, in great beauty. The collection in their Pilrig Park Nursery numbers upwards of 130 sorts, so that intending purchasers have an opportunity rarely offered of making the best possible selection. Blooms can be sent by post on receipt of six stamps.

D. & Co. also call attention to their SEEDLING FANCY PANSIES, which are remarkably fine this season.

Seed Warehouse, 1, Waterloo Place, Edinburgh.
(Established upwards of a Century.)

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

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Hyacinths, Tulips, Crocus, &c.

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C. G. VAN TUBERGEN, JUN., Haarlem, Holland.—Wholesale CATALOGUE of DUTCH BULBS, now ready, will be sent post-free on application.

G. G. VAN T. has a quantity of fine fresh SEED of the magnificent LILIUM GIGANTEUM, which he now offers to the Trade at the following low prices, viz.:—In Packets of 100 Seeds, 1*s.* 3*d.*; 500 Seeds, 5*s.*; 1000 Seeds, 8*s.* 4*d.* Orders may be sent to his Agents,

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CALCEOLARIA.—Geo. Wheeler's Superb Strain, being in habit very compact, stout, and dwarf, of great variety in colour, and beautifully marked. Is inferior to none. Retail packets, 2*s.* 6*d.*, 1*s.* 6*d.* and 1*s.* each. Trade packets, 21*s.* to 5*s.* each.

G. W. distributed his first raised hybrid Calceolaria in 1830, at 21*s.* each in trade; and in 1832 supplied many sorts of 6 plants each to the trade at 42*s.* the set.

IMPERIAL CABBAGE.—G. Wheeler's Improved Genuine, after a test of about half a century, still maintains its character of first-rate Early. A limited quantity still on hand at the rate of 1*s.* 2*d.* per ounce.

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CRANSTON'S NURSERIES
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(ESTABLISHED 1785.)

THE LARGEST ROSE GARDENS IN ENGLAND.

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Beg to announce that their ROSES (extending over many acres) are now in full bloom.

As considerable time will be required to inspect the whole of their Collection, Visitors to the Nurseries should take the morning trains arriving at Barr's Court, or Barton Stations, 2½ miles from the Nurseries, where conveyances are to be had.

Rose Blooms for Decoration supplied.

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STRAWBERRY PLANTS.—Purchasers' selection from Fifty-five of the best sorts known. For LIST see large Advertisement in *Gardeners' Chronicle*, August 11. 3*s.* 6*d.* per 100, our selection; 2*s.* 6*d.* per 100, 20*s.* per 1000, all true to name.

HARRISON'S MUSK, 2 plants 1*s.*, 12 for 3*s.* 6*d.*

PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2*s.* per dozen.

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Come and See.

My 700 Varieties of

PELARGONIUMS, now a grand sight, same with VERBENAS, PETUNIAS, FUCHSIAS, LOBELIAS, ANTIRRHINUMS, PANSIES, VIOLAS, ROSES, &c., now in full bloom—in fact, the whole Nursery is highly interesting, and will continue so throughout the season, as all the choicest Florist Flowers are under the most careful cultivation, and all lovers of the same are invited.

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H. CANNELL begs to assure the Public generally that the above now creates quite a sensation in Covent Garden—in fact, there is quite a mania for it, probably a more saleable and profitabe was never sent out. H. C. will send two plants, post-free, for 1*s.*, 20*s.* per 100.

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H. CANNELL begs to announce that he has many thousands of PRIMULAS, CALCEOLARIAS, and CINERARIAS, at 1*s.* 6*d.* per dozen. They are now just ready for potting off. All of them are of James' First Prize Exhibition varieties. Special prices for large quantities.

Strawberries all the Year Round.

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H. CANNELL begs to inform the Public that he has many thousands of the above invaluable variety, established in small 60's, just ready for shifting, 15*s.* per 100; Plants from Ground, 6*s.* per 100. From the fact of his being situated in the midst of hundreds of acres of the Kentish Fruit Plantations enables him to offer really all the best and most approved kinds of Strawberries in cultivation. A half-penny card will bring you full and valuable particulars.

Swanley, Kent.

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B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.

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A B C Descriptive Bulb Guide.

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MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.

The New CATALOGUE, just issued, sent to applicants.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMAN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted several millions of 1-year THORN. Priced CATALOGUES may be had of

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OSBORN & SONS

BEG TO ANNOUNCE THAT THEIR

ANNUAL CATALOGUE OF THE ABOVE

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It contains a Choice Selection of HYACINTHS, TULIPS, CROCUS, NARCISSUS, LILIUMS, and various other BULBS; also a Select List of VEGETABLE and FLOWER SEEDS for Autumn Sowing.

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NEW STRAWBERRIES.

JAMES VEITCH & SONS

Beg to announce that they are now prepared to execute Orders for the two following Strawberries, which are offered by them for the first time, and which they can with confidence recommend:—

LOXFORD HALL SEEDLING.

Fruit large and handsome, conical, occasionally flattened and Cockscomb shaped, seeds prominent, skin bright crimson, flesh firm, juicy, and exquisitely flavoured. This is a seedling raised by Mr. Douglas, of Loxford Hall, from a cross between British Queen and La Constante, and retains the rich flavour of the former with the sturdy robust growth and fertility of the latter. Awarded First Prizes at the Metropolitan Exhibitions.

9s. per dozen; 60s. per 100.

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Fruit medium-sized, obovate and conical, seeds rather prominent, very dark red, flesh firm, bright red, of a fine brisk rich flavour; plant of very vigorous growth, a great cropper, and very early. Received a First-class Certificate from the Royal Horticultural Society.

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All other kinds also ready in small pots, and runners from open ground.

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6000 CAMELLIAS. CAMELLIAS, 6000.

HENRY WALTON

Begs most respectfully to call attention to his unrivalled Collection of the above, of all the finest varieties in cultivation, and well set with buds.

These are all English grown plants in the best possible health and vigour.

Price per dozen, from 42s., 63s., 84s., 105s. to 120s., according to size and varieties.

Single Plants from 20s. to 100s.

One very fine specimen of Double White, 9 feet by 9 feet, well set with buds.

Also a very fine Collection of AZALEAS, in 5-inch pots.

Nice bushy heads, full of bloom buds, from 18s., 24s. to 30s. per dozen, according to varieties.

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SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO.,
KING'S ACRE, near HEREFORD.

Autumn 1877.

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Our beautifully Illustrated CATALOGUE of choice HYACINTHS, TULIPS, CROCUSES, LILIUMS, NARCISSUS, ROSES, and FRUIT TREES, &c., is now in the Press, and will be ready for sending out in a few days. Should be read by every intending Purchaser before ordering.

Gratis and post-free on application to

DANIELS BROS.,
THE QUEEN'S SEEDSMEN, NORWICH

HARDY ORNAMENTAL TREES IN GREAT VARIETY.

EXTENSIVE COLLECTIONS,

Showing variation in colour, of deepest green and purple, and brightest gold and silver, assuming habits pyramidal, spreading, and weeping; leaves entire, or cut and divided like Ferns, spotted, or variegated—planted in groups to show contrast of form and colour—now in great beauty at THE ARBORETUM, five minutes' walk from Isleworth Station.

CHAS. LEE & SON, Proprietors.

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Beg to call the attention of Purchasers of Bulbs to their
AUTUMN CATALOGUE,
Just Published.
SENT FREE BY POST ON APPLICATION.

LION WALK, COLCHESTER.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

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,, Half Specimens, 5s. to 7s. 6d. each.

NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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FRUIT, FRUIT, FRUIT.

SPECIAL NOTICE.

THE GARDENERS' CHRONICLE

For September 8 will contain a SPECIAL *Telegraphic* REPORT *of the*

GREAT INTERNATIONAL FRUIT AND FLOWER SHOW AT CARLISLE,

ALSO AN

EIGHT-PAGE SUPPLEMENT

DEVOTED TO

HARDY FRUIT CULTURE,

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BEAUTIFULLY COLOURED PLATE,

REPRESENTING A SELECTION OF

"CHOICE PLUMS,"

BY FITCH.

PRICE FIVEPENCE, POST-FREE, FIVEPENCE-HALFPENNY.

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As a very large extra circulation of this Number will be guaranteed, Advertisers desirous of securing space are requested to communicate at once with the Publisher.

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MAY BE ORDERED OF ALL BOOKSELLERS AND NEWS AGENTS.

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THE NEW PLANT and BULB COMPANY
Beg to announce the publication of their
CATALOGUE (No. 36),
Containing a List of Valuable Orchids, at very Low Prices.
Sent free by post on application.

LION WALK, COLCHESTER.

BEAUTIFUL FLOWERS
FOR
WINTER & SPRING
WEBBS'
CHOICE COLLECTIONS
OF
HYACINTHS, CROCUS, TULIPS,
NARCISSUS, &c.

NOW READY,
WEBBS'
AUTUMN CATALOGUE
OF
DUTCH FLOWER ROOTS
&c.,
Which is beautifully Illustrated and contains Origina and Complete Cultural Instructions.
GRATIS AND POST-FREE ON APPLICATION.

E. & W. Webb & Sons.

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE

B. S. WILLIAMS
Begs to announce that his new
BULB CATALOGUE
Is now ready, containing a complete List of
HYACINTHS, TULIPS, CROCUS,
NARCISSUS, LILIES,
And other miscellaneous Bulbous and Tuberous Roots.
ALSO
NEW PLANTS, FRUIT TREES, ROSES,
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Gratis and post-free to all Applicants.

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BEAUTIFUL FLOWERS
FOR
WINTER & SPRING.
Sutton & Sons
ARE NOW RECEIVING A LARGE CONSIGNMENT
OF
HYACINTHS, TULIPS, CROCUS,
NARCISSUS, JONQUILS, &c.,
IN SPLENDID CONDITION,
And are prepared to receive Orders for the same.

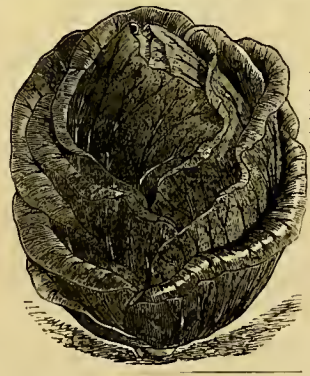
EVERY GROWER of FLOWER ROOTS SHOULD SEND FOR

SUTTON'S
AUTUMN CATALOGUE
OF
SPRING FLOWERING BULBS.

One of the most Practical Works on the Cultivation of
HYACINTHS, TULIPS, CROCUS,
LILIES, NARCISSUS, &c.,
YET PUBLISHED.
PROFUSELY ILLUSTRATED.
Price 6d., post-free, or gratis to Customers.
ROYAL BERKS SEED ESTABLISHMENT,
READING.

SUTTON'S
CHOICE VEGETABLE SEEDS,
FOR PRESENT SOWING.

CABBAGE.



Sutton's Imperial.
The best Cabbage for spring use. If sown the first or second week in July it will produce beautiful Cabbages for early spring use. Heads cone-shaped, very large, firm, and of mild flavour.
9d. per ounce.

ALSO

	Per oz.—s. d.
Enfield Market	0 8
Nonpareil ..	0 6
Early Dwarf York ..	0 6
Red Pickling	1 0

ONION.—New Queen.
A valuable, new, and distinct variety, being the earliest of all Onions. Sown in March it comes to maturity in July, or sown in July it is fit for use the following autumn. It is of beautiful mild flavour, and strongly recommended.
Per packet, 1s. 6d.

The following varieties, sown in July and August, will come to a very large size during the following Spring and Summer:—

	Per oz.—s. d.
NEW GIANT ROCCA (the largest variety)	1 0
LARGE EARLY RED ITALIAN	1 0
LARGE EARLY WHITE ITALIAN	1 0
GIANT LATE RED ITALIAN	1 0
GIANT LATE WHITE ITALIAN	1 0

Vegetable Seeds up to 12 ounces in weight sent by post with a charge of 4d. for the 12 ounces, or 20s. worth free to any Railway Station in England and Wales.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

SATURDAY, AUGUST 25, 1877.

THE ELM TREE.

THERE is no poetry about this truly serviceable timber tree; and all romance is chased away when we read of the churchyard Elm, when living, or of the coffin boards to which it is converted when cut down. Elm poles are used in vineyards to prop up the Grape Vines; hence we read of the Vine being "wedded to his Elm." We know that few trees or poles will remain sound when buried in the earth, as in the case of gate-posts and the like; but the Elm has given innumerable proofs of its resisting decay when buried, as may be seen when graves are opened twenty or more years after the interment. The wood of the Elm is cross-grained, hard, and unkind to work, but this tough character is not without its advantages, and as the Elm trees grow to a great girth, the boards are eagerly sought after as coffin timber; and when they have butt ends of more than 18 inches in diameter, they become exceedingly valuable for the Government dockyards as wheels for cannon.

The Elm has many peculiarities, and one property possessed by its inner bark is unlike that of any tree with which I am acquainted; for if you rub it in cold water it will give out a colourless "ropy slime," very cooling, and not unlike the lather of soap. It has no end of "vertues" in the Pharmacy of the olden time, and there may be a fortune yet in store for the lucky wight that shall duly incorporate this cooling decoction of Elm bark with toilet soap, instead of some nonsensical combinations we have of—such as "honey soap," with perhaps not a particle of honey in it. Be that as it may, the inner bark of the Elm will maintain its character, and cannot be cried down, for it is truly a simple, and has nothing to do with compounds or quackery.

The Elm is an umbrageous tree, and carries a thick fleece of dark green leaves. It takes kindly to all soils and situations, but its chief merit as a useful and, I may add, an ornamental tree, is its prescriptive right to share, along with the Yew tree, a place in most churchyards. The late A. W. Pugin gave the Elm the place of honour in the case where I planted a churchyard for him. There is a great want of congruity where trees and bushes of various kinds are introduced into graveyards, because there is never room for a wood nor even a shrubbery, and the attempt must necessarily be a failure. Let any one imagine a Fir forest with a few Abeles and Lombardy Poplars in the foreground, and flanked with Laburnums, handsome though they be, yet the grandeur of the Fir forest would be gone, for its wealth lays in its dimensions, and in its standing unaided and alone.

In reading up the records of the cathedral church of Manchester, we find that the old churchyard had some trees in it even so late as three or four generations back, and the names of the streets, as Withy Grove, and the like, give colour to the supposition being well-founded. Now, as this churchyard, along with many others, appears to be closed against interments, the happy idea suggested itself to one of our popular Manchester men, to plant the old churchyard with trees and shrubs of various kinds; at all events, to plant the unoccupied spaces, and he did so at his own cost; but

ne sutor ultra crepidam. He had gone beyond his measure, for he should have employed some practical man to prepare the soil first, and then to plant some suitable trees—strong plants, healthy and well grown; but his trees, of some eight or ten sorts, were drawn long and slender, and a clump and some stragglers of Rhododendrons were literally stuck in, and unless better times come both trees and shrubs will disappear—the latter are nearly gone already. Here was the work for the Elm tree, for, being deciduous, it has no leaves to suffer from the smoke for about half the year, which, in the case of the Yew, or, indeed, of any other evergreen tree or shrub, would be the case.

Several letters have appeared in the *Manchester Guardian* on this subject of planting our old churchyard, and all seem to agree about the desirableness of having shady trees instead of cold gray stone; but they differ in their ideas of what constitutes fitness for such a place. Now the grafted kinds of Elm trees known in the nurseries as English Elms grow to a large size, and to sustain such a head of foliage the roots must have a range long and deep. Such Elms as those in Hyde Park must have had a good run. The Elm is a gross feeder, and notoriously a free-growing tree; therefore well fitted to deodorise, and eventually to assimilate the dust and remains of those who have been interred, for assuredly its feeders will find them out.

All trees with resinous sap are unfit for churchyard work, if we except the Yew and the deciduous Cypress (Taxodium distichum), and, therefore, the choice in our case lies between the various trees with watery sap, for we must discard all hope of growing either Yew or Cypress. There is really a notable space in our churchyard unemployed, that could be converted at little cost into a place for trees that would give shade, and harmonise with the venerable pile. The Elm is a long-lived tree, and, once planted, would hold its ground for many years, but the Poplars recommended by some are short-lived and "variable as the shade by the smooth shining Aspen made." This tremulous motion is common to all Poplars, on account of the peculiarity in the footstalk of the leaf, whereas the Elm has the leaves in two rows upon the twigs, like an immense pinnate leaf, scarcely stirred by the wind; it is, moreover, beautifully crimped and stiff, as if got up for holiday business, whereas the Poplar leaf is large, coarse and plain, and, however profitable it may be planted in a swamp or on fat ground, the Elm has all the advantages of ancient usage in its favour. Now, if we reckon upon only six Elms attaining timber size, and ample shade, it will be well to plant twelve trees; but, to make doubly sure and guard against accidents, let us prepare twenty pits, each containing a cubic yard of space, and let these be filled with fresh soil and well-rotted horse-dung in equal parts, so as to give the plants some food to start with. This, indeed, will only be like a "tub to the whale," so that it will be well to remove also the clay, gravel, and sooty surface soil, where it can conveniently be done, as it is utterly impossible to get the large trees wanted here, unless they are proportionately well fed.

Our case here is by no means a singular one, for we see graveyards closed everywhere, and no attempt made to make the sites seemly; but surely something might be done with this "garden enclosed" with a fence of heavy iron, and hewn stone, with gates and bars to keep out intruders.

Of all the wealth left by the generations that have gone before us, surely some crumbs might be spared, if not to build tombs and monuments, at least to dress and keep, and even decently to ornament these ancient places of sepulture. There need be no clashing of creeds in this affair for

> "There in peace the ashes mix
> Of those that once were foes."

In localities where choice shrubs and trees will grow great diversity of plants might be got, but I am writing for an extreme case where a serious blunder has been made in sticking in—for I cannot call it planting—plants all over the old churchyard of Manchester. The place was worthy of better things, and if the plants and trees had a foul atmosphere to contend with, surely that had nothing to do with planting many of them in clay and boulder stones. I never heard of Elm trees failing to grow in good soil when planted in seasonable time, but they need not be tiny plants wanting stakes to prop them, or tree guards to keep cattle, &c., away from them, for I have planted both Elms and Sycamores, when the bole of each was 3 inches in diameter, and both roots and branches had to be cut back, yet after all this mutilating they did well. It is humiliating to see in the very heart of Manchester, with all its wealth and influence, and with all the recent revivals of religious thought, the baldness of the enclosure about the Cathedral; and I am afraid that it may go forth to the world that as this miserable attempt at planting has failed, that nothing further can be done. We read of an Indian maid dressing the grave of her lover slain in battle—

> "That shining from the sweet south-west,
> The sunbeams may rejoice his rest."

It is a great blessing and highly prized to have the hope of Christian burial in consecrated ground, whilst thousands slain in battle have their bones bleached in the sun after defending their country and richly deserving a better fate. What a death roll will that be when the sea shall give up her dead? These examples ought to show us the benefit of a final resting-place in our own churchyards where many a summer sun may shine upon our graves. *Alex. Forsyth.*

New Garden Plants.

Sempervivum (Diopogon) Reginæ-Amaliæ, *Heed. et Sart.**

This is one of the handsomest of all the hardy Houseleeks. It has rosettes and leaves as large and of the same shape as those of S. tectorum, but tinted in the exposed upper half with a rich purple-brown. In flower it is totally different from tectorum, as it belongs to the same subgenus (Diopogon) as hirtum and soboliferum, which is marked by having the parts in sixes or sevens instead of twelves to fourteens, and pale yellow petals never spreading stellately. The only notice that I can find of it in print is the mere mention of the name under S. tectorum in Boissier's *Flora Orientalis.* It is a native of the mountains of Greece, and was named in compliment to the late Queen. It has been for some time in English gardens, but I have never seen it in flower until, on a recent visit to Mr. Barr's, I was pleased to find that he had it in considerable quantity in a full state of development, and was thus enabled to fit it into its proper botanical position, which is by the side of S. Heuffelii, and to draw up the following description.

Rosettes 3—3½ inches in diameter, the new ones crowded by the side of the old ones. Leaves, 100 or more to a rosette, obovate-cuneate, all bright reddish-brown in the upper half, which passes gradually into the green of the lower half, glabrous on the surfaces, densely ciliated on the margins with decurved regular parallel hairs about ⅓ line long, the outer ones 12—15 lines long, ½—⅝ inch broad above the middle, ⅛ inch thick in the middle, the face flat, the back turgid, the naked tip furnished with a horny mucro $\frac{1}{12}$ inch long. Flowering-stem, 4—6 inches long, pale green, clothed with fine spreading hairs, some of which are glandular, stem-leaves ovate-lanceolate, acute, 1—1½ inch long, tinted brown, slightly glandular-pubescent on both surfaces; inflorescence a dense cyme of about 2 inches in diameter, with 3—4 dense flowered scorpioid recurved branches, all the flowers sessile. Calyx campanulate, ⅓ inch long, ¼ inch in diameter, glandular-pilose all over, and with the 6—7 lanceolate segments twice as long as the tube. Petals pale yellow, lingulate, obtuse, 5 lines long, obscurely tricuspidate, glandulose-pilose on both surfaces, greenish on the keel outside. Stamens half as long as the petals; filaments greenish-yellow; anthers sub-globose, orange-yellow. Hypogynous scales nearly square, yellowish, with a space between each equal to its own breadth. Carpels as long as the stamens, pale green, pubescent, each narrowed gradually into a short erect style.

* *Sempervivum (Diopogon) Reginæ-Amaliæ*, Heed. et Sart.—Rosularum maximarum foliis 100 et ultra obovato-cuneatis distincte cuspidatis dimidio superiore rubro-brunneis dimidio inferiori ovoidibus, faciebus glabris, margine breviter regulariter ciliatis mucrone nudo; caulibus glanduloso-puberulis; foliis caulinis ovato-lanceolatis acutis utrinque puberulis; cymis densis ramis scorpioideis recurvatis; floribus inferioribus subsessilibus; calycis campanulati prorsus glanduloso-puberuli segmentis 6—7 lanceolatis; petalis ligulatis ochroleucis utrinque granduloso puberulis obtusis obscure tricuspidatis; genitalibus petalis subduplo brevioribus.

Sempervivum (Eusempervivum) Greenii, *Baker, n. sp.**

This belongs to the tectorum group, and is marked in that group by its dwarf habit and very glaucous leaves, with a distinct bright red-brown tip. It is most like S. calcareum, Jordan (S. californicum, Hort.), reduced in the size of all its parts. My description was drawn up from specimens sent two or three years ago by Mr. Green, of Reigate, and as it is now getting spread widely in English gardens, and I can find no published name to fit it, I give it one, with the reservation that whilst admitting that these marked forms of Sempervivum must have names for garden purposes, yet that a large number of them, and this amongst the rest, are only varieties of tectorum in a broad sense.

Developed rosettes 1½—2 inches in diameter, the new ones crowded by the side of the old ones. Leaves, 50—60 to a rosette, oblong-cuneate, with a distinct mucro, bright red-brown to a depth of ⅙—⅛ inch at the tip, the rest very glaucous, the faces glabrous, the edge ciliated with regular decurved hairs about ⅓ line long, the tip naked. Flowering-stem 4—5 inches long, finely glanduloso-pilose, its lanceolate acute leaves hairy on the surfaces. Inflorescence a cymose corymb 1½—2 inches in diameter, of 3—4 scorpioid branches bearing 5—6 flowers each, the lower ones shortly pedicellate. Calyx ⅙ inch long, densely pilose; segments 11—12, linear, twice as long as the tube. Expanded corolla ½ inch in diameter; petals ¼ inch long, red, densely pilose on the outside. Filaments bright crimson, ⅓ inch long; anthers minute globose; carpels as long as the filaments; ovary narrowed suddenly into a divergent style half as long as itself; hypogynous scales minute greenish broader than long. *J. G. Baker.*

* *Sempervivum (Eusempervivum Greenii*, Baker, *n. sp.*—Rosularum magnitudine mediocri foliis 50—60, oblongo-cuneatis, distincte cuspidatis glaucis apice rubro-brunneis faciebus glabris, margine breviter regulariter ciliatis, mucrone nudo; caulibus glanduloso-pubescentibus; foliis caulinis acutis utrinque pilosis; cymis densis ramis scorpioideis 5—6 floris; floribus inferioribus pedicellatis; calycis segmentis 11—12 linearibus glanduloso-puberulis; petalis linearibus rubris stellatis sepalis duplo longioribus; genitalibus petalis paulo brevioribus.

"THE VARIED REALMS OF FAIR MENTEITH."

Neither the Scotch nor English can now unravel the tangled story of their origin. None can doubt our common parentage, but who can trace his family up to the time of Hengist, or even of Canute? The various new departures of our race—the exodus from Scandinavia and the Norman Conquest—have broken the threads of family history and rendered the longest of our pedigrees comparatively short. A man migrates from his early home and dies, and his sons can only affirm on abstract principles that they ever had a grandfather.

The oldest and "reddest" blood in Britain is that of the Royal family, who are connected, through Jasper Tudor, with the Arthurian house, and with old Cadwallada and Noah, the last-named of whom is said to have landed with his family in a coracle near Snowdonia, during a prevailing flood. No other family in Britain can reach the Flood even by a short cut.

Perhaps the next most ancient family is that of Menteith, whose founders, at the earliest period of Scottish history, wrote their names large in their country's records. Menteith has ceased to be an earldom. The great perish, their titles become extinct or dormant, but happily their places can hardly be obliterated. On the bosom of the Lake of Menteith three small islets are anchored, on which the homestead of twenty departed earls stood for centuries. On Talla, the Hall, the Castle stood, on Inchmahome, the isle of rest, were the burial place and garden, and on a third island was the kennel. All the earls are now reposing on the Isle of Inchmahome, where the best Filberts in Scotland are nourished by her "reddest blood."

The Priory of Inchmahome, which became afterwards an Abbey and then a ruin, was founded by Walter Comyn, of Badenoch, who acquired the

island and the earldom by marriage with the Countess of Menteith, and died in 1258. The Red Murdock had been an earlier earl; a later was Walter Stewart, brother of Alexander, the High Steward of Scotland, who also acquired the title by marriage, and who now lies in the nave of the ruined building with his Countess, both having been embodied in marble and carved from the same block 600 years ago.

"The steel-clad Stewart, Red-cross Knight,
Menteth, his countess, fair and bright,
Here lie in sculptured stone."

The correct spelling of the name here written Menteth is Menteith, the valley of the Teith. When Robert Bruce slept at the Priory before the battle of Bannockburn, passing from his castle of Cardross on the Clyde,

"The varied realms of fair Menteith"

were probably a little wilder than at present. In respect to the woodland garniture, or raiment, in which a country may be clothed, the fashion changes from century to century. Rather more than a hundred years ago Nichol Graham of Gartmore, cut his woods on the slopes above the river here, to prevent them from harbouring Jacobites, or such persons as his widely known neighbour Rob Roy McGregor, whose pursuit of cattle lifting he objected to. The woods of Gartmore have been replanted, and generally speaking the scenery of the Highlands has been improved by the large additions which have been lately made to the natural growth of timber. Great families are usually hedged in by their historical associations almost as manifestly as lesser folk are by their shrubberies, and history and old story form elements of the landscape. The long view up the valley from Inchmahome is bounded by the bare flanks of Ben Lomond sheltering the round topped Fairy Hill, of legendary note. In the centre of the valley is Aberfoyle, and beyond the ridge, on the right, are the Trosachs, Loch Katrine, "Benledi's Ridge," and that familiar land of the *Lady of the Lake*, where

"The stag at eve had drunk his fill,
Where danced the moon on Monan's rill,
And deep his midnight lair had made
In lone Glenartney's Hazel shade."

The garden of the Earls of Menteith was on Inchmahome, and we would gladly describe it, but could find no trace of its existence. The Highland proprietors very properly avoid too much artificial decoration as an affront to Nature. The monks planted about the Priory, with their usual good taste, a number of Chestnuts, which are now of great size and beauty, and the home of a colony of rooks. The French Willow herb fringes the edges of the lake and blossoms gorgeously in its season, and a lovely inner edging of flowers is composed of white and yellow Water Lilies all round its shallow shores.

Two smaller sheets of water in Menteith, lochs Con and Ard, are also richly belted with floating Lilies, and bordered by the Osmunda regalis. Sir Walter Scott sweetly sings, in the *Lady of the Lake*, of two other plants which flourish here—

"Foxglove and Nightshade side by side,
Emblems of punishment and pride."

And springing freely as they do from the thickly strewn dust of this great family, they might seem the types of error and decadence; but history does not sanction that romantic notion.

On the failure of the heirs male of the Stuart line, the heiress of Menteith married a Graham, or Græme, as Sir Walter Scott sometimes writes the name. "Sir John with the bright sword" of the fifteenth century was one of the most illustrious of his house, and from him the Grahams of Gartmore, the eldest representatives of the family, are descended.

The Stuart blood introduced a royal strain, but we doubt if it improved the stock. Every scientific gardener knows the difficulty of eliminating a strain of sap which he may object to, and the evil consequences of getting his Geraniums crossed with the more gorgeous Pelargoniums.

The greatest of the more modern earls was the eighteenth, who claimed the crown that Charles I. soon after lost. He was Earl of Strathern and Menteith by inheritance and Earl of Airth by creation, and being awhile thrice an earl he became, by lapse of time, food for the Filberts, and aided his ancestors in painting the grass of Inchmahome a deeper green. The Earl's eldest son, Lord Kilpont, did not succeed to the family honours. He was serving in the army of the Marquis of Montrose when his own vassal, James Stewart of Ardvoirlich, lured him into the fields and disclosed his design of murdering Montrose, entreating the young lord's aid. It was refused, and Stewart stabbed him to the heart and fled to the camp of the covenanter Argyle.

The next and last earl lived in the Castle of Talla, and amused himself, in quieter times, as best he could. On the occasion of a neighbouring laird visiting the Castle, his lordship jokingly inquired if his visitor had seen the sailing Cherry tree, a little tree in full fruit, which a goose bore on its back, having swallowed the stone which produced it. The laird replied that when Oliver Cromwell was at Airth, a trumpeter on the walls of Stirling Castle was sounding a defiant blast, when a cannon-ball of Cromwell's lodged in his trumpet's mouth. "Was the trumpeter killed?" inquired the earl. "No, my lord," said the laird; "he blew the ball back and killed the artilleryman who had fired it."

In a land of genius and wit the smallest jokes are industriously preserved. This last earl committed the catastrophe of dying childless. He joined his ancestors in Inchmahome in 1694, leaving his estates to the Marquis of Montrose, who thus acquired the parish of Aberfoyle, and that large slice of the Rob Roy country which the Lords of Menteith had swayed for many centuries.

The visitors' book at the inn, on the Lake of Menteith, bears witness to the beauty of the scenery which Sir Walter Scott has elsewhere described. One passing poet has inscribed in that interesting volume his name and several verses. "If you want a nice place to bury your grief," he says, "you can't find a better than the Lake of Menteith." Another declares, "There's nothing else but beauty here!" and the next comer adds, "The only want is money!" How clearly that unconscious satire tolls the modern curfew which daily extinguishes the shining lights of numerous shallow-pursed, ambitious men, whose want of money condemns them to obscurity. *H. Evershed.*

PLANT PORTRAITS.

Acalypha macrophylla, *Hort. Veitch, Flor. Mag.*, t. 275.—A splendid stove plant with cordate ovate, acuminate leaves of a russet brown colour, blotched with paler spots.

Agave Shawii, *Flor. Mag.*, t. 905.—A species to which we shall in this place simply refer. Its history will be taken up in the monograph of the genus now publishing in our columns.

Aloe Chinensis, Baker, *Bot. Mag.*, t. 6301.—A species with tufted habit, lanceolate leaves, toothed at the margin, and tall spikes of pendent orange flowers. It is supposed to be of Chinese origin, and flowered at Kew in the spring of the present year.

Alpine Auricula, Silvia, *Floral Mag.*, t. 266. One of Mr. Douglas' seedling Auriculas. The flowers are large of good form, purplish-brown with a yellow centre.

Anthurium Andreanum, Linden, *Illust. Horticole*, t. 221.—Of this remarkable Aroid, with an orange-red spathe and a yellow spadix, banded with a central broad white stripe, we have spoken of in a former issue.

Boronia elatior, *Florist*, 1877, p. 145. A new greenhouse shrub of unusual merit; the habit is good, the leaves elegantly pinnately cut into linear segments the flowers numerous in long dense clusters along the ends of the branches. The individual flowers are pendulous globose or bell-shaped, of a rosy carmine colour and very fragrant. Native of West Australia, whence it was introduced by Messrs. Veitch.

Calamus asperrimus Blume, *Illust. Hortic.*, t. 273.—A beautiful pinnate-leaved Palm, with linear-lanceolate pinnæ. The leaf-stalks and rachides are densely covered with spines. After a certain time it assumes the climbing habit common to the genus. The illustration is taken from a young specimen, and shows well the elegant habit of the plant.

Dircæa refulgens anomala, *Revue Horticole*, 1877, p. 250.—A handsome Gesneriaceous plant, with soft, velvety leaves, and long, horizontally spreading tubular, two-lipped bright scarlet flowers, spotted at the throat with white spots. In some cases the terminal flower becomes erect and regular, affording an instance of regular peloria, like that of the regular erect Gloxinias.

Echinocactus cylindraceus, t. 905. — See *Gard. Chron.*, 1877, p. 241, vol. vii.

Haplopappus spinulosus, *Bot. Mag.*, t. 6302.—A handsome hardy undershrub or herbaceous perennial, native of the prairies bordering the Rocky Mountains as far south as New Mexico. The leaves are hoary, deeply pinnately cut into linear segments; the flower-heads are an inch or more across, bright golden yellow. The plant was introduced by Messrs. Veitch.

Kentia Lindeni, *Ill. Hort.*, *Hort. Linden*, t. 276—A handsome pinnate leaved Palm of uncertain position. In the young state the pink colour of the unfolding leaves constitutes a great attraction.

Lycaste linguella, Rchb. f., *Bot. Mag.*, t. 6303.—A large green-flowered species, described in our columns, 1871, p. 738. It was imported from Peru by Messrs. Veitch.

Mesembryanthemum Sutherlandi, Hook., *Bot. Mag.*, t. 6299.—A species with oblong-lanceolate recurved leaves, scaberulous at the edge, flowers 2—2½ inches in diameter, lilac with a yellow centre. Native of Natal.

Nepenthes ampullacea var. vittata major, *Illust. Hortic.*, t. 272.—A variety of a well-known species of Nepenthes, having relatively small flask-shaped pitchers, with two fringed wings and a small lid, the pitcher itself elegantly mottled with reddish blotches on a green ground.

Nepenthes Veitchii, *Floral Mag.*, t. 265. A very handsome Pitcher-plant with large bold pitchers spotted with red spots, the mouth surrounded by a deeply plicated red rim with a relatively very small lid; the anterior side of the pitcher is traversed by two deeply toothed wings. It is the plant commonly grown as N. villosa in gardens, but the true N. villosa has yet to be introduced.

Oncidium zebrinum, Rchb. f., *Illust. Hortic.*, t. 274.—A pretty Oncid with very long racemes (6 feet and upwards), of white flowers transversely barred with reddish violet stripes, the lip is yellow. It is a native of Colombia, whence it was introduced by M. Linden.

Rhododendron parvifolium, *Gartenflora*, t. 904.—A low-growing species, with small oblong-acute leaves, rusty beneath. The flowers are ¾ inch long, funnel-shaped, of a lilac-pink colour, and disposed in terminal umbels. Native of the mountains of Baikal.

Rhododendron Gloire de Bellevue, *Revue de l'Horticult. Belge.*—A Ghent seedling, raised by Mr. Vervaene, and suitable for outdoor work. The flowers are large, apparently of good substance, but rather rough in outline; of a rosy lilac colour, the upper petal spotted with blackish spots.

Salvia Schimiperi, Hook., *Bot. Mag.*, t. 6300.—A woolly-leaved Sage of robust habit, with large white or pink flowers. It was introduced from the mountains of Abyssinia, by Mr. Bull, and is well suited for the back rows of the herbaceous border.

The Peach Pear, *Florist*, July, 1877. A Pear whose proper designation is doubtful. It ripens in August and is of an oblong-obtuse form nearly 3 inches in length, rounded at both ends, both eye and stalk set in shallow depressions. The colour of the skin is greenish-yellow freckled with light brown spots. Flesh melting and juicy.

Tulipa pulchella, *Bot. Mag.*, t. 6304.—A dwarf species, with oblong spathulate acute segments of a beautiful pink colour, with a white spot at the base. The plant was exhibited by the Rev. H. Harpur Crewe.

Xerophyta retinervis, *Garten. Flor.*, t. 903.—Already figured in our columns, and in Messrs. Haage & Schmidt's catalogue. The flowers, as here shown, are about 3 inches in diameter, and consist of six lanceolate, violet-coloured segments, spreading widely and supported on slender peduncles.

× Zygophyllum Clayi, *Floral Mag.*, t. 267. A fine hybrid, raised by crossing *Z. crinitum* and *Z. maxillare*, the latter being the seed-bearing plant.

MUSHROOM KETCHUP.

A notice of the Mushroom would hardly be complete unless it contained some reference to ketchup, one of the most popular economic products of the fungus tribe. Ketchup, or catsup, as some prefer to spell it, is by no means exclusively made from A. campestris. Not only is the Horse Mushroom (Agaricus arvensis), to which we shall shortly refer, largely used in its manufacture, but it is stated that almost any species with dark juice is indiscriminately employed. Ketchup made from the Morel (Morchella esculenta) is said to be especially

delicious. Mr. Cooke says there is an extensive manufacture of ketchup conducted at Luddenham, near Market Harborough, but the great difficulty appears to be the prevention of decomposition. Messrs. Perkins received tons of Mushrooms from every part of the kingdom, and they find, even in the same species, an immense difference in the quality and quantity of the produce. The price of Mushrooms varies greatly with the season, ranging from a penny to sixpence a pound. Messrs. Perkins are very careful in their selection, but little discrimination is used by manufacturers on a small scale, who use many doubtful species.

The derivation and meaning of the word "ketchup" are unknown, unless we accept Webster's statement that it is probably of East Indian origin, because it meant in the first place a kind of East Indian pickle. A real or supposed Japanese word, "kit-jap," has been thought to throw some light on it; but, in spite of Swift's enumeration of "catsup" as a foreign condiment, it does not appear to be known out of England except as an English export. If, however, "kit-jap" is an Eastern name for soy sauce, as has been stated, it is not difficult to see that it might have been transferred to our English condiment.

The making of ketchup, like most matters connected with the culinary art, is a work requiring some skill and experience. We offer the following instructions on the point, which we borrow from Mrs. Hussey's beautiful *Illustrations of British Mycology*:—

"All kinds of Agaric of which it is proposed to make use should be sound. Decaying larva-eaten flaps are ignorantly preferred; but if the flavour be stronger, it is of a coarse, rank strength, and the smell soon becomes disagreeable—in fact, there is a tendency to putrescence in such Agarics. Cut off the stems, for they possess no flavour, and afford little juice, but much dirt; if the caps are soiled, peel them, do not cut, but break them small, powder every portion with salt, and set the mass in an earthen colander, placed in a bowl. The precise quantity of salt is not of importance, excess is better than defect, it being only needful in cookery to remember that salt is not to be used when ketchup is. After twenty-four hours press the pulp gently down in the colander, all the liquor that thus runs off is to be preserved, and no more, for if you choose to squeeze the rest of the moisture out, although it may be used for any immediate purpose, it is not worth saving. It is a usual complaint that there is so much feculence to get rid of in ketchup; this is owing to the mass of salted pulp being left too long before it is strained, so that the very flesh of the Agaric is melted down into the liquid, instead of its consisting merely of juices extracted from the solid parts. By this maceration there is a gain in bulk; but it is a deceptive gain as to value; the feculence is flavourless, causing fermentation, and pouring off and rebottling is injurious; it is much better to avoid the ketchup ever containing this sediment. The liquor extracted as above, will be a pure fragrant delicious ketchup. Many people would boil this till the aroma had disappeared, under an erroneous notion of 'making it fit to keep,' but to this end the boiling by no means conduces, and almost all Agarics lose their 'bouquet' by the continued action of heat. But how then shall we keep the ketchup? A great deal better! *Probatum est.* And now to divulge the secret. Before the ketchup season comes, procure a quart of spirits of wine in a glass-stoppered bottle, put into this any spices you prefer, in sufficient quantity to flavour the spirit strongly. After the ketchup has been strained off, let it settle twelve hours, then put it in half-pint bottles, fill them up to the shoulder, add the spiced spirit to fill the neck, and cork the bottles tightly and steadily; they must not afterwards be shaken, because the spirit should be left floating at the top to exclude the air, and prevent the formation of that other incipient fungus which cooks call 'mother.' When to be used shake the bottle thoroughly, and put as much of the contents as you like into the waiting soup or gravy; it should not be boiled up in it. The small quantity of spirit is unappreciable in the bulk of ketchup, not affecting the flavour at all. All who try this plan fairly will acknowledge they never tasted ketchup before."

We must apologise both to Mrs. Hussey and our readers for this lengthy extract; but we believe that many of our lady readers will be glad to have a recipe for ketchup making, which is recommended from experience by so excellent an authority. Anyone who has ever tasted ketchup will acknowledge that—judging from results—there must be "more ways than one" of making it; and if that which we have given is only half as good as Mrs. Hussey's concluding observations would lead us to suppose, none of our readers will regret having tried it. *From Britten's "Popular British Fungi."*

A HOLIDAY IN CARNARVONSHIRE.

The thirty-second annual meeting of the Cambrian Archæological Association was held on Monday, August 6, at Carnarvon Castle. Dr. E. A. Freeman, the President, was, by a prior engagement, detained in Somersetshire; he, therefore, did not appear at Carnarvon, and the Doctor, with his coloured ribbon and neck-worn insignia of a "Knight Commander of

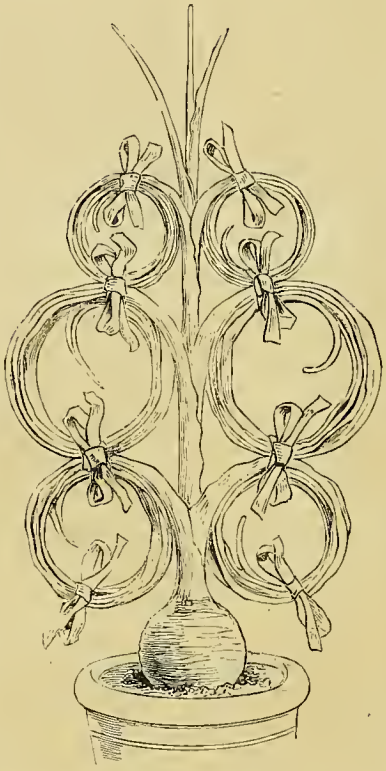


Fig. 47.—Ornithogalum longebracteatum, as grown in Carnarvon.

the Order of the Redeemer" (conferred upon him by the King of the Greeks), was missed by many. The President-Elect, the Right Hon. Lord Clarence Paget, was also obliged to be elsewhere at the time of the meeting; so that two of the chief officers of the Society were unfortunately absent. Under these circumstances

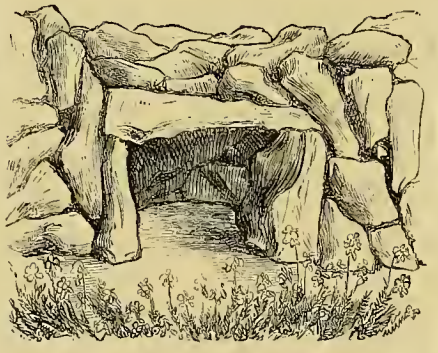


Fig. 48.—A pre-historic cupboard and Erica tetralix.

Mr. C. C. Babington, Professor of Botany at Cambridge, was voted by acclamation into the Presidential chair, Sir Llewelyn Turner being chairman of the committee. Professor Babington delivered an excellent extemporaneous inaugural address, principally descriptive of those pre-historic works of very great antiquity to be found in North Wales. Some of these old structures we shall refer to in greater detail further on in this report. The secretary then read the annual report, which was of a very satisfactory character, and referred in favourable terms to the *Lapidarium Walliæ*, now being published by Professor Westwood, of Oxford. The latter gentleman then moved the adoption of the report.

On Tuesday, August 7, an excursion was planned for Pwllheli and the pre-historic works of Tre'r-Ceiri. The morning was uncommonly fine and bright, but before the train reached Pwllheli the "atmospheric conditions" had quite changed, for the wind now almost blew a hurricane, the rain descended in torrents, and the mountains were hidden to their bases in heavy clouds. Indeed, matters looked so ominous that only five members out of the whole excursion party would venture to proceed by road; of these five three had to buy new Welsh waterproof overcoats at Pwllheli the writer of these lines was obliged to have a yellow one, which gave him (with his tripod) a diabolical appearance. On the rocky roadsides between here and Llanaelhaiarn the rare Welsh Poppy (Meconopsis cambrica) could be distinctly made out. The first stoppage was made near the village of Four-Crosses, to examine and sketch the great Cromlech, with its overturned capstone situated on Cromlech Farm: this structure is approached by a long avenue (16 feet wide) of smaller stones embedded in the ground, and one of the side supporting stones of the Cromlech is no less than 10 feet 2½ inches wide. The farmer when he clears his field of stones has them all thrown inside the supporting stones of the Cromlech. The drawings and measurements were made in a heavy downpour of rain. The party of five then drove on to Llanaelhaiarn Church, where there is nothing of moment to be seen except the ferns and lichens on the old walls. Adjoining the church is a rude, ill-built and disused old school-room, now a species of a dilapidated barn full of dust and spiders. Over the ruinous mantel-piece of this building, and held in its place by rough iron hooks, is a Romano-British stone, 4 feet 6 inches long, with the following inscription: ALIORTVS ELMETIACO HIC IACET. This stone, which was dug out of a deep hole some 2 or 3 yards deep by the churchyard, should be taken better care of. The schoolroom is at the foot of the triad mountain-group, named Yr Eifl, popularly "The Rivals," the highest of the three peaks being 1868 feet above the sea, the least to the east about 1400 feet, and on the summit of this latter is the early pre-historic fortified town known as Tre'r-Ceiri.

When your correspondent had sketched the inscribed stone, and emerged and looked towards the mountains, nothing was to be seen but clouds, mist, and pouring rain, the hill summit with its ruins being a mile and a half from the village. The ascent was very difficult, if not dangerous, as the party of five had no guide, and not knowing the path, went straight up the face of the mountain: the loose trappean rocks proving sharp as knives, and giving way under every step. The groups of Saxifraga stellaris, Erica Tetralix, E. vulgaris, and Vaccinium myrtillus, were always pitfalls, as they merely filled hollows, furnished with the sharpest of stones at bottom and sides. The writer will always have unpleasant remembrances of bruised shins and cut boots in connection with these plants in future. When the summit was reached the rain drove so fiercely in a horizontal direction that it was like being in the swift current of a river, and breathing was almost impossible. Sketching and measuring were almost hopeless; neither of the party of five could see one another, and they only knew of each other's whereabouts by shouts and whistles. Two hasty camera-lucida sketches were made, and it was then determined to pay another visit to Tre'r-Ceiri before the dissolution of the meeting. It is hardly necessary to say that whilst your artist was making his last sketch his four companions (possibly imagining dinner) decamped, and left him in the mist and rain on the hill summit by himself. He descended with his tripod by quite a new path, beginning with a 12 foot rampart, and considerably ripping his yellow waterproof by the way. On driving back to Pwllheli note was made of the magnificent Hydrangeas growing in the open garden-beds of the cottages, the great Fuchsias covering the cottage fronts to the eaves, and Lavatera arborea growing equally well on the rocks and in the gardens; dead sea birds (as divers) were hanging outside many of the cottages, so that the taste of the sea might be dispelled from the flesh before cooking. On driving back to Pwllheli the bad quality of our Welsh horse was also noted, for in place of trotting, the beast capered about in an ornamental fashion, and made very little progress; when moderate chastisement was

applied the caperings became more ornamental, but the pace was not increased, and if still further urged the beast stopped, looked round at the driver, and appeared to remonstrate with him. As we could neither drive nor lead our steed, we consequently lost the train to Carnarvon, and as we saw it steaming out of Pwllheli station, all dreams of dinner and the evening meeting vanished. Not so with our driver, for he said we could still catch the train by the time it reached the next station; he, therefore, hurried us into another waggonette which had a fresh horse and driver, and we started at a furious pace by the road skirting Cardigan Bay for Chwilog. But Chwilog was never reached, for when the new horse came to a hill he pretended he could not get up, and we saw the train steam away in advance as before. Archæologists are in one sense always behind the age. We now determined to return again to Pwllheli, there dine, and return to Carnarvon by the late train. For the third time we therefore drove furiously along the road. If the native Cambrians had ever heard the legend of the "Flying Dutchman" they must have thought they saw the veritable Vanderdecken himself, with yellow hair, weather-torn, brimstone-coloured mackintosh and sextant, with his selected officers in mad search for the missing enchanted ship.

We breathed the horse at Aberech Church, made a few sketches, and took rubbings of monumental slabs; noticed the gravestones of slate, the Primroses and Oxalis growing with Sedum acre and Asplenium Ruta-muraria on the walls in the village streets, and so had not sufficient time for dinner. We were very late and very wet the first day, and were kept on a siding of the railway for three-quarters of an hour, waiting for a number of people who were taking part in a Congregational meeting at Portmadoc. We should have preferred the Carnarvonshire Congregationals being shunted for the Cambrian Archæologians.

On Wednesday, August 8, the carriages started at 9.30, so I previously strolled through the town, and noticed the quantity of Polypodium vulgare on the walls in the streets, and sketched the Carnarvonshire manner of training Ornithogalum longebracteatum (fig. 47). Plants with their leaves so tied up with party-coloured ribbons have a peculiar and Elizabethan appearance. On starting the party soon came within sight of the sea at Carnarvon Bay, and visited several earthworks and strongly fortified places—one of immense size, named Dinas Dinlle, the whole ground now being dotted with Euphrasia, and Erodium, and ornamented with Fairy Rings, Champignons, and Horse Mushrooms. Noticed the abundant crop of Figs on the walls at Llandwrog and elsewhere, and again, the huge Pelargoniums, Fuchsias, and Hydrangeas in the open beds. We stopped for a few moments at Glynllifon Park, to see a great standing-stone or Maenhir, 9 feet high and 4 feet wide, but the learned treasurer would not allow time for a sketch to be made: the cromlech near Tanybedw was passed unvisited; but a stop was made at Clynnog, where there is a largish inn without a licence. Near here in a meadow running down to Carnarvon Bay is the magnificent Clynnog cromlech, the cap-stone, still in *situ*, displaying on its upper surface the "cup-markings," whose meaning no one at present has been able to unravel. The Cromlech stands 6 feet high, and its cap-stone is 9 feet long; the structure faces Carnarvon Bay, and is backed by high mountains, Tre'r-Ceiri being upon the summit of one. Near here is a "Holy" and "Cursing" Well (the two combined), dedicated, like the neighbouring church, to a seventh-century saint named Beuno. In the church may be seen a free fragment of the tomb of St. Beuno. The virtues of the well and the saint are now less believed in than formerly, though an old rustic told us he could well remember the time when the villagers dipped their children in the well, and then placed them to sleep on the saint's tomb for the cure of certain ailments; the washing might possibly have done some good, but the resting on the stone slab must have counteracted any good arising from the removal of dirt. Scrapings from the pillars of the saint's chapel mixed with water were once said to be good for sore eyes, but no doubt this was superstition. There is an extraordinary old money-chest in the vestry, cut out of a solid block of wood, after the manner of an ancient British canoe. At this village there is a somewhat large tree growing direct from the top of a little porch-roof, and it was here we tried the quality of the large brown loaves of Welsh villages. The bread is baked in a large earthen pan over a peat fire, the top of the pan covered with turf. After the bread is turned out, the pan is used as a domestic vessel for washing, &c. At the evening meeting in Carnarvon Castle, Sir Llewelyn Turner gave a history of the building, and on the following day he devoted six or seven hours to a description (on the spot) of the exterior and interior. Some of the members became weary by mid-day, and your artist amongst the number. He strolled into the town to inquire the use and price of a series of life-size cats made out of sheet-tin, and painted to represent blacks, whites, brindles, tabbies, and tortoise-shells. These were hanging on strings, and had an unique and somewhat terrible appearance. These tin cats are made for the use of farmers who hang them with string by the middle to a stake in the centre of a field where they dangle like fishes on a rod, (their legs just touching the ground) to frighten the birds away. These tin feline quadrupeds are painted in a different fashion on the two sides, tabby on one side and black on the other, or white on one side and tortoise shell on the reverse; this, the shopman explained to me is to make the birds think there are two cats prowling round and waiting for birds. There will be a fall in tin cats when "King's Carbolic Dressing" reaches North Wales: at present they are 3*s.* 6*d.* each. I should be glad to cut out and paint any number for 1*s.* 6*d.* each!

In the afternoon the Rev. E. L. Bramwell arranged that a party of five should cross over the Menai Bridge into Anglesey, and examine the ancient and famous remains at Plas Newydd, the modern seat of the Marquis of Anglesey, now tenanted by the Dowager Lady Willowby de Broke. Not till we reached the park gates did we know that owing to the recent serious illness of her ladyship no visitors were allowed on the estate; neither could we prevail on the porteress to take or send any message to the house. At this moment the gods favoured us, for whilst we were still parleying, her ladyship drove up, and instantly and very kindly gave the party permission not only to see the great stones, but the house and garden. The two immense Plas Newydd Cromlechs stand close together in a grassy meadow near the stables; they are probably the finest structures of their sort in Wales, and have a most impressive aspect. The capstone of the larger Cromlech is 14 feet long, 11 feet broad, and from 4 to 5 feet in thickness, supported on six upright stones, each stone being about 5 feet out of the earth. About the grounds are many other single stones (one 10 feet across), but whether these were ever parts of similar structures it is now impossible to say. One of your correspondents asked last week how some of the huge stones of Stonehenge were transported "by barbarians 2000 years ago" from Carnarvonshire to Salisbury Plain; but the answer is simple—the stones never were transported by human hands, they were carried by glaciers; the glacier marks are in many places abundant and strongly defined in North Wales. After the upright stones were got into position a mound of earth was probably heaped up to the level of their highest points, and then the capstones were worked up the sides of the mound by rude levers. Very near the mansion at Plas Newydd

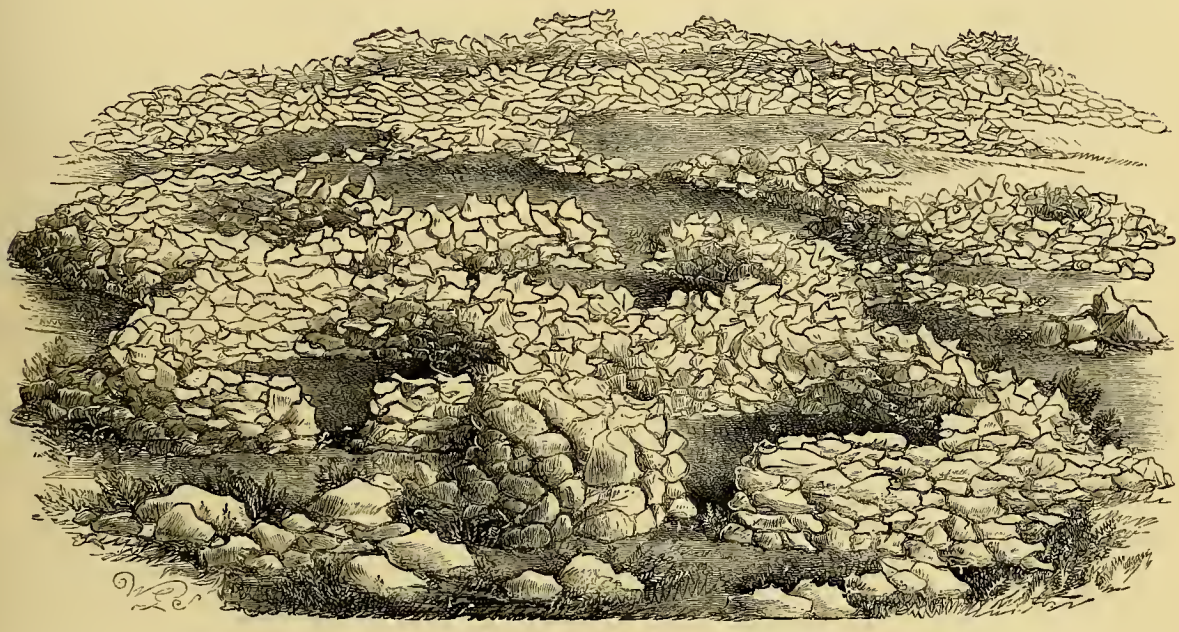


Fig. 49.—Rock-work with a meaning at Tre'r-Ceiri.

is an open Kistvaen (stone grave structure under a tumulus), composed of two end stones, four or five upright side stones, and two large flat cap-stones, the inside (which received the interment) is 7 feet 3 inches long and between 3 and 4 feet wide; the larger of the two cap-stones measures 6 feet 9 inches by 5 feet 10 inches. The whole was at one time entirely covered by an immense mound of loose stones and earth. The mound was opened some time since by Lord Clarence Paget, and it has since been kept open. The foot-stone, 6 feet 10 inches wide, is most curiously drilled with two circular holes—for what purpose it is impossible to say—and all the large stones show traces of being roughly hammered by other stones into rude shapes. The rest of the party could not remain whilst the writer was sketching, so they drove off, and he afterwards walked to Menai Bridge with his three-legged friend in time to catch the 10.10 P.M. train for Carnarvon.

Friday, August 10, was the last day of the meeting, and the one appointed for the renewed visit to Tre'r-Ceiri. It had rained all night, and it poured with rain at the time appointed for starting in the morning. Indeed, the "atmospheric conditions" (which, according to one of your contemporaries, are systematically ignored by the writer of these lines), looked so black that only three Cambrians would venture on the ascent. The yellow waterproof having gone to ribbons, your artist soon got comfortably wet through; this is always refreshing to one who gets "roasted" so much for believing in protoplasm and spores, and insisting on a second position for wireworms and earwigs. On the way to Tre'r-Ceiri, the three men and the tripod turned off at Craig-y-Dinas (a strong post on the Llyfni), to examine and sketch a strong fort with stone walls 5 feet high, and earthworks of the same date as Tre'r-Ceiri itself. In driving through Clynnog the tree was again noticed growing from the porch roof—a Sycamore tree of considerable dimensions. I wondered where the root could be, and determined to sketch it for the *Gardeners' Chronicle* on the way back to Carnarvon. By the time we reached Llanaelhaiarn the weather had cleared, but as our learned and genial (but recalcitrant) treasurer and master was not with us we could not find the proper path, so we once more went "straight up," with more "downs" than "ups," though we now avoided the pitfalls of Erica and Vaccinium. The view of sea and mountain from the top is magnificent, but our special object was to see the pre-historic fortified town of Tre'r-Ceiri—the most perfect in Great Britain. Those most competent to form a right opinion, from correct knowledge and long experience, say the date of the town may safely be placed twenty centuries back, and possibly many centuries further back still; but how far it is impossible to say, for there is no history, manuscript, or date. This town on the mountain-top covers 5 acres; it is enclosed by a wall from 9 to 16 feet thick, and in some places from 12 to 15 feet high; in certain positions the wall forms a parapet 4 feet high, with a flat walk inside on the sharp stones 4 feet wide; the entrances are strongly fortified with long and strong stone ramparts. Of course no cement is used, for our unpleasant forefathers of this uncertain date had few or no manufactures, and probably had not yet learned to chip flints. The remains of the houses, cells, dens, or "cyttiau," are arranged in irregular circular groups; these houses are many in number, and are round or oval in shape with flattened sides; the diameter inside ranges from 8 to 12 feet, and the hut walls are 2 or 3 feet thick. Each hut has an entrance about 2 feet wide, and the pre-historic builders were evidently friendly with each other, for some of the entrances are very close together. The rough and sharp stones are piled on each other with little design, but the surface of the stone with fewest sharp angles is generally placed next to the inside. Roofs there are none; in some instances these may have been formed by large cap-stones, or stones arranged to form a rude dome; but as there are no large stones on Tre'r-Ceiri, the original roofs were probably of tree-branches and skins. These would soon vanish in a hurricane.

I have more than once suggested in the *Gardeners' Chronicle* that certain ancient stone structures might be reproduced with advantage in some of our public gardens or parks for the instruction of the people. In this particular instance some of the huts of Tre'r-Ceiri might easily be reproduced, and they could take the place of some of the meaningless heaps of brick-bats too often seen in public gardens. With the aid of the dimensions I have given, and the accompanying camera lucida sketch made on the mountain top (fig. 49), no difficulty need be experienced. The stones of the original huts are natural pieces of trap rock with sharp edges, lichen covered, and interspersed with plants peculiar to that position and altitude. If the reproduction of a Japanese village is found interesting and instructive, a lake village or a group of pre-historic houses would, at least, be equally so. The two latter would "lend" themselves particularly well to a garden. No doubt the ancient dwellers in the houses here illustrated had their cattle with them on the mountain top; these they probably killed by means of heavy stones discharged from leathern slings. Water is present in one or two places, and as clouds so commonly cover the top, water is generally to be had in the natural clefts of the rock. The enclosure walls were clearly made to protect the people and the cattle from the attacks of enemies and robbers. The life of these men could have been very little or no better than the life of the beasts they associated with, and one can imagine the death-rate must have been somewhat high during inclement weather and the hurricanes and frosts of autumn and winter. During the latter period the people probably descended the hills into the woods and valleys, for the fear of marauders must have been less during the winter months.

Whilst strolling amongst these 5 acres of ancient human dens I noticed in the wall of one (and only one) the curious recess illustrated in fig. 48; the opening is about 16 inches square, and the same in depth. At first I was inclined to look upon it as a fireplace, but the Rev. E. L. Bramwell informs me it was a cupboard; to me it is unique, and it makes one wonder what rude objects could have been kept in such a cupboard, where the householders had so very few things indeed to keep. The constructor was clearly a more contriving man than his near neighbours, for the latter probably kept their "household gods" on the floor, if they had any. The air being clear, we descended the hill by an easier path, in time (as I thought) to secure a sketch of the Sycamore tree on the porch roof at Clynnog; but the horse (like the horse of the first day) threw his legs about in an ornate fashion without making great progress. The sketch was, therefore, never made, and is lost to your readers for the present. As we reached Clynnog, my two companions, observing my preparations for sketching, exclaimed, "Whip up, driver! whip up!!" with such unexpected effect, that I was half a mile on the other side of Clynnog before I could recover from my surprise. *W. G. Smith.*

FULHAM PALACE.

This Palace has from a very early period been the summer residence of the Bishops of London. It is of brick, and appears to have undergone considerable alterations since its original construction. The portions which exhibit marks of antiquity were erected by Bishop Fitzjames, in the reign of Henry VII., whose arms are carved on it and on the gateway. The later additions are by Bishops Compton and Bonner. The palace is surrounded by a moat, and the grounds comprise about 37 acres, on which stand some of the finest and rarest trees in the country. Bishop Compton is supposed to have been the principal planter, the additions to the palace were built by him and Bishop Bonner; Bishop Tait erected the beautiful chapel attached to the palace. The present bishop has added a beautiful walk round part of the grounds, and takes a great interest in the old trees, which are carefully supported in their old age.

The approach from Fulham is one of the finest promenades in the neighbourhood of London, and is given up to the public, by whom it is highly appreciated.

The grounds have long been celebrated for their high keeping, and contain many objects of great interest, a few of which I now proceed to enumerate. The fine old Cork tree now going to decay is said to be the first introduced into the country; Juglans nigra, 21 feet in circumference, with a beautiful stem and fine healthy head; Gleditschia macracantha, the finest in the country; Tulip tree, quite 60 feet high, with a fine clean stem; Ailanthus glandulosa, large and very handsome; Cedar of Lebanon, very fine, but encroached upon by an Evergreen Oak; Judas tree very fine, but going to decay, the stem is about 4 feet in diameter; deciduous Cypress, very symmetrical and handsome; Oriental Planes, very fine; several old Acacias, fine Ashes, stately Elms, Fulham and evergreen Oaks, Catalpas, Chestnuts and Pavias in variety; Acer fraxinifolia, very handsome; Paulownia imperialis; Medlar, very old; Siberian Crab tree, loaded with its beautiful miniature clusters of fruit, together with many other very interesting trees and shrubs.

The moat is hid in a dense thicket of trees which shuts out all surrounding objects, except on the river side, where there is a good view of the Thames. The flower garden is well filled with a choice assortment of the best bedding plants. Several very nice carpet beds, which show taste on the part of the designer, flower-baskets and vases add to the charm of a well-kept lawn. A very interesting walk surrounds the kitchen garden, orchard, and frame-grounds, the houses containing many nice shrubs. I noticed a fine Nettle tree, handsome Bays, and several choice bits of rockery with nice rills of water in them. The orchard is well stocked with fine trees, but unfortunately there is this year no fruit. The frame-ground contains Pine-pits, nice Fernery, plant stove, and several pits and frames. The fruiting Pine-pit is a long lean-to structure. I noticed several nice Queens and a succession-pit full of healthy plants. The plant stove contains nice decorative plants of Dracænas, Caladiums, Achimenes, Begonias, Crotons, Pandanuses, two fine large Ferns, Davallia solida, Polystichum capense, both quite 4 feet through and very healthy. The fernery contains a nice collection of Adiantums, Cheilanthes, Aspleniums, Doodias, Davallias, Hemionitis, Pterises, Lomarias, Lycopodiums, &c., all very healthy. In and about the frames I noticed a well done lot of Chrysanthemums and Liliums, and a fine lot of Camellias and Azaleas. Two years ago Mr. Henderson had all the soil washed from their roots and the plants placed in smaller pots, which has answered very satisfactorily. I think it is preferable to the ordinary way of reducing the balls by chopping of soil and roots. I noticed several plants of the useful Trachelium cœruleum, with its Statice-like flowers; several frames full of choice Pelargonium cuttings—as this is a very damp locality, they are found to winter better when struck early.

The vineries, Peach, stove and greenhouse form a fine range of glass, and well filled. The early vinery is nearly all cut. The second contains a very heavy crop, and is just beginning to colour. Mr. Henderson is a great advocate for evaporating-troughs for liquid manure; by its use and a succession of young rods he gets great quantities of fruit, preferring bunches of about 2 lb. weight, as the bishop gives most of them away to the charitable institutions round London. The large plant-stove is rather over-done with young Vines carrying their first crop of fruit; plants and fruit together are not generally a success, but there are here lots of useful decorative plants, which are largely required for the town residence during the winter season. The plants consist of Begonias, Dracænas, Dendrobiums, Eucharises, Franciscea, Rondeletias, Vincas, Ferns, a few nice Anthuriums, a very large Dracæna Draco, &c.

The greenhouse contains several large Azaleas for cutting from, and a nice lot of the ordinary occupants at this time of year. Close by there is a fine Magnolia alba, which covers a considerable space of wall. In front of this range of glass there is a geometrical flower border in gravel, with fine beds of Cannas, edged scarlet Pelargoniums, Featherfew, and Sedums, good beds of Zea japonica variegata, a beautiful bed of the Happy Thought Pelargonium, &c.

In the kitchen garden there is a nice stock of pyramidal fruit trees; Peaches on walls do not do well, the locality being low and damp. There is a beautiful wall of Figs; but, unfortunately, they are on an east aspect. The gardens are well filled with crops of all sorts, and show little traces of the backward season. I noticed a very fine strain of Rhubarb, which Mr. H. has selected for over twenty years.

The offices are all very useful and commodious. The family when in town are regularly supplied with the produce of the farm and gardens, all of which are under the management of Mr. Henderson, to whom I feel deeply indebted for information about this beautiful and historical residence. *Visitor.*

HARDY AQUATIC PLANTS.

Dear old Gerarde, in his quaint way, thus speaks of the Butomus umbellatus:—"The water Gladiole, or Grassie Rush, is of all others the fairest and most pleasant to behold, and serveth very well for the decking and trimming up of houses, because of the beauties thereof." This praise of one of the most lovely of our hardy aquatic plants by such a close observer of Nature was in no way exaggerated, and applies as well now as it did when penned by that worthy sage; for it is a real gem, and should be in

every pond, pool, or piece of water of sufficient extent to contain it. Now that we have the Wilson raft (See p. 101, Vol. VI. 1876), it is to be hoped that both aquatic and semi-aquatic plants will have the attention devoted to them their merits deserve, as, independent of the great beauty of many of them, they are among the most interesting subjects that can be cultivated. One thing struck me when looking at an illustration representing the above-named raft in use, and that was how greatly it might be improved in appearance if the top were raised and covered with vegetation of some kind, so as to represent a miniature floating island, instead of the flat bare timbers showing in the way they do, with only the plants in pots to hide them. This might be done with some of the coarse grasses, a tuft or two of Carex, and many other things; but no doubt all this has occurred to Mr. Wilson, and his inventive genius will make the thing perfect.

Except the most spreading, such as some of the Water Lilies, whose leaves rest on its surface, there can be no doubt but that many of our best aquatic plants would be more at home potted in good loam and floated about by means of such a contrivance as that recently brought under notice; and as they could be changed and rearranged at pleasure, I know of nothing calculated to add such a charm to a lake or small pond as a group of such things as the Butomus umbellatus, Menyanthes trifoliata, Carex pendula, Iris Pseudacorus, Calla palustris, and such like things.

Although the Butomus is a native plant, to be met with by the sides of streams and sluggish water-courses, it appears but little known or cultivated, which is to be regretted, considering its great beauty and the length of time it lasts in flower, either on the plant or in a cut state. The finest specimen I ever saw was grown in a pot sunk a few inches below the surface of the water, where, from some cause or other, it did much better than others planted near the banks. This increased strength and vigour was probably owing to the richer nature of the soil, and the greater depth it had to grow in, as from the pond being puddled with clay those near the margin had but little else within their reach. It should be borne in mind, when starting in the cultivation of any of the above class of plants, that to be successful they must have something more than water to feed on, as where they are found naturally there is always a deep deposit of mud containing a good deal of rich vegetable matter, in which their roots ramify in all directions.

The Butomus umbellatus admits of ready increase by division, which may be done any time during the spring just after growth commences, as then they quickly start away, and re-establish themselves. The Bog Bean, Menyanthes trifoliata, is likewise a most interesting plant to grow, and succeeds well in wet, boggy places, or near the banks of a pond, where it can have a good depth of loose soil and a few inches of water. Of all hardy aquatics, however, none surpass the queenly beauty of Nymphæa alba, of which no garden pond or lake should be without one or more groups, according to their dimensions. This lovely Lily does best in about 18 inches or 2 feet deep of water, with a few loads of rough turfy loam and vegetable matter, such as the rakings from a wood containing plenty of decomposed leaves, &c., shot in where it is desired to get it established. In this they thrive amazingly, and increase at a rapid rate; but it is always an easy affair to limit them to any particular space by cutting off their leaves or plucking some of them up round the outer margin, and this should be done so as to break them up into irregular-shaped patches, in which way they look far more picturesque than when the groups are in a circular form, as they generally are when left to spread without any control. Like most other plants, the thinner they are kept the finer the foliage becomes, and the better they flower, and independently, therefore, of confining their growth to certain limits, an occasional thinning-out is highly beneficial, especially in old lakes or ponds where there is generally a large accumulation of mud at the bottom which induces them to send up many more offsets.

For the basins of fountains and small shallow artificial sheets of water, such as are usually connected with hardy ferneries, one of the most beautiful and interesting aquatics that can be introduced is Aponogeton distachyon, which, although a native of South Africa, withstands our winters, and soon establishes itself where the conditions are favourable. Where the water is more than a foot or so deep the best way to manage it is to use Seakale pots sunk to about that depth and filled with rough turfy loam and sand in which to grow the plants. This will bring their leaves sufficiently near the surface, and allow the roots to get through below, and lay hold of any deposit that may have accumulated there. In this unlimited run they become very vigorous, and flower with great freedom, much more so than they do when confined to an ordinary pot, with only a handful or two of soil to feed on. It may not be generally known that the old and highly prized Richardia æthiopica, so much used to adorn greenhouses and conservatories is quite hardy, if planted sufficiently deep in water for the crowns of the plants to be about 3 or 4 inches under; but when so managed it is one of the most striking and natural looking things to have for associating with any of those mentioned above. In a pond here we have had them for years, where they produce a capital effect near Osmundas, Gunneras, Calamus, Carex, Bamboos, Athyriums, and such like moisture-loving subjects. *J. S.*

VICTORIA PARK.

This park is now well worth seeing. The trees are in splendid leaf. The second growth here, as in most other places, has been much greater than usual, no doubt as a consequence of the first efforts in leafage being so much checked by the cold weather we had all through the spring. This second growth has also, no doubt, been still further accelerated by the late copious rains which have been sufficient to reach the roots, a somewhat unusual occurrence in this part of the kingdom during the months of July and August. The summer growth on trees that are young and vigorous has been such that in many cases the leaves almost cover the spring foliage, which on trees like the Horse Chestnut and the Planes in exposed situations was much crippled. Evergreens generally get the character of not doing well in the neighbourhood of large towns, especially London, and no doubt this is quite correct so far as most species are concerned, but Hollies are an exception. In this park they have been largely planted in the first instance, and, what is of equal importance, well cared-for subsequently by allowing them the sustenance indispensable to free development which is not possible where overcrowding takes place, a condition under which unfortunately the majority of the trees and shrubs in the London parks have suffered, in the case of those long planted to their irreparable injury, and with those introduced in later years the evil is now working out its slow, but, nevertheless, certain results. The Hollies here afford an unmistakable illustration of what can be done even in a smoke-charged atmosphere, when they are allowed sufficient space to grow in. It would be difficult to find their equals in any public place; almost all varieties appear to succeed. We noticed a specimen of the seldom seen Ilex crassifolia, 12 feet high; and most of the old established varieties are here very much larger than this, dense, closely furnished pyramids, clothed with healthy foliage from top to bottom. The Thorns, of which there is a good assortment, here, as almost invariably where the soil is not too wet, show their ability to thrive and make themselves at home better than most things.

The bedding display is very fine, for notwithstanding the cold weather, which retarded the planting of many things later than usual, the whole of the beds were splendidly furnished by the first week in August. This applies to both flowering and carpet beds. Of the latter Mr. McIntyre has this year designed some of the most pleasing arrangements we have yet seen, much the greater portion of the surface being composed of plants possessing grave subdued hues, with just enough colour interspersed to avoid an over sombre appearance. Those who delight in blazing displays may pronounce some of the beds here too dull, but the artistic eye will instinctively be attracted to, and dwell with pleasure upon them. One in particular, a long narrow scroll about 3 feet in width, has the base or groundwork of Sedum glaucum, edged with a double row of small Echeveria glauca, between which is a line of Sempervivum hirtum (montanum); the centre of the bed is thinly interspersed with small simple figures of colour, composed of different varieties of Alternanthera encircled with Golden Pyrethrum edged with small Echeveria glauca. The circles in this bed have for centres a single plant of Sempervivum arboretum or S. tabulæforme, and some of the smallest patches are edged with Mesembryanthemum cordifolium. Many people who admire this style of bedding are deterred from adopting it, under the impression that it must necessarily entail considerable cost, but the above bed consists of the most simple and inexpensive plants, and is far more elegant than the elaborate combinations often met with, that cost much more in the materials of which they are composed.

As a light green ground colour in carpet bedding nothing equals the free-growing Pennyroyal (Mentha Pulegium gibraltaricum); for a dark green ground the smooth-leaved British Rupture-wort (Herniaria glabra) is superior to the Mint. The free-growing capabilities of these two plants, combined with their dense, close-spreading habit, fit them especially for this style of decorative gardening. These and the two Sedums, S. glaucum and S. acre aureum, are unsurpassable. Alternanthera paronychioides major is the most effective of all the varieties here. The table-shaped Sempervivum, S. tabulæforme, is very extensively used and very effective. The large-leaved plants employed in masses are in excellent condition; in these Mr. McIntyre adopts the right course of using nothing that will not grow and look satisfied with the quarters in which it is located, as also in planting such subjects where they receive sufficient shelter. One large telling bed consisted of Ficus indica, F. elastica, Aralia Sieboldii variegata, Curculigo recurvata, the Blue Gum tree (Eucalyptus globulus), Melianthus major, Amicia Zygomeris, Acacia lophantha, Nerium splendens, Amaranthus Huttoni, Abutilon Boule de Neige, A. Thompsoni, Plumbago capensis, Myrtles, Maize, both variegated and green-leaved; these were surrounded by a double row of Chamæpeuce diacantha, and C. Cassabonæ, next a row of Coleus Verschafeltii, edged with large plants of Echeveria secunda glauca, a very fine bed.

Four small beds at the outer edge of a group of larger ones were very nicely filled as follows:—centre, a large example of Echeveria metallica, very small plants of variegated and green American Agave, Haworthia, two or three small species, Saxifraga longifolia, and others; these were planted on a carpet of Sedum glaucum, edged with Sempervivum tabulæforme. A very effective large bed in a recess, backed up by trees, is composed as follows:—centre, the Wigandia-leaved Tobacco (Nicotiana wigandioides), surrounded by a double row of Dell's Beet, edged with Sempervivum.

Amongst bedding Pelargoniums, nothing equals Vesuvius as a dwarf scarlet, or Lucius where a taller grower is required; Waltham Seedling is the best crimson, and Cleopatra stands unequalled as a pink. An Ageratum, raised by Mr. McIntyre from the old A. americanum, is the most floriferous and effective medium growing variety we have met with.

Ficus elastica, and Abutilon Thompsoni, plant for plant alternately, made a good bed, colour and form alike contrasting effectively. The yellow-leaved Fuchsia, Golden Treasure, makes a nice yellow edging. Canna discolor is still much the best of the bronze-leaved varieties, and C. Annei is unsurpassable as a large-leaved plant for outdoor summer decoration, taking into account its free, healthy growth.

We noticed an immense number of well-grown Chrysanthemums in pots, which, before flowering, are stood under canvass, where they cannot fail to make a good display late in the season, when the sight of a few flowers has a cheering influence. *Z.*

ABOUT POTATOS.

On the morning of July 25, the appearance of the firmament promised a fine day. Toilet and breakfast were therefore works of despatch, and an invigorating walk in the fresh morning air soon brought me to Theale Station, for Reading, by early train, where I found my friend of cheery English face who, with a hearty shake of the hand, bade me take a seat beside him in his trap, soon to arrive at the Messrs. Sutton's seed trial grounds; for, let it be known to all and sundry, we were on Potatos bent.

Now, if I, a Solanumist, do not dwell upon or make comment on the gorgeous array of new and charming annuals, &c., displaying themselves right and left on our drive through the grounds to the seed cleaning-houses, let not my readers indulge for a moment in the supposition that it was for lack of an appreciation for the beautiful. My mission at the above date was concerning the food of the people; we now stand in the midst of, certainly, one of the finest and choicest collection of Potatos in the world.

To the early sections of the esculent we will give

precedence, and notice an extensive oblong plot of Sutton's Improved Ashleaf, a result of many years careful selection, which we may term a superior type of the old Walnut-leaf Kindney, maintaining the dark green glazed foliage of the above famed, though disappearing good old esculent, with a decidedly and more to be preferred evenness of tuber. Lee's Hammersmith kidney follows, being a very good selection, and coming in rather earlier than the old Ashleaf Kidney, of which it is a desirable type. Mona's Pride takes its place now as a broad-leaved selection of Ashleaf; a fine variety, though seldom equal in flavour to its compeers above. Progressing, we especially notice a variety named Alma Kidney, a dwarf and very productive sort. Next comes Veitch's Ashleaf, showing its precocity over that called Rivers' Royal, and, as seen here, scarcely if any difference exists between it, and the old Ashleaf Kidney, a fine parallelogram, of which comes opportunely to confirm our opinion. Rivers' Royal Ashleaf, a lasting favourite, is here very true; a fine variety, for which I formerly stood sponsor. Then follows Myatt's Prolific Ashleaf, showing itself earlier than Rivers'; indeed, we always thought the former to be a selection from the latter, but that is now a "far cry." [We believe they both came originally out of the same sack. Eds.].

Here, notwithstanding our settled resolve, the beautiful insists upon our notice, becomes jealous in face of the useful, by distracting our attention to some varieties of double and single Dianthus. These charms of Flora are not grown one quarter so extensively as they deserve to be? Alas! how extremes meet; for *dos-à-dos* are thirty-three "parcels" of Snowflake Potato, derived from so many sources, sadly afflicted with the "curl." Compensation in Sutton's King of Potatos revives our spirits again. It is an excellent variety, in all the rudeness of health. I suppose this Potato has taken more prizes than any other kind in existence? In a measure this may be owing to its property of producing tubers both round and kidney-shaped; at all events, it is a productive, excellent, and long-keeping sort, which does not "chit out" till late, albeit it is a second early variety.

Gloucester kidney follows: is there any difference between it and Rivers' Royal Ashleaf? Prince of Wales too, a long yellow kidney, I see is also here, and so is Fenn's Bountiful Red kidney. The latter is a rich nutty-flavoured Potato; but let purchasers beware of planting it on any except the richest ground, and, *vice versa* so considered, is Sutton's Magnum Bonum, happily following. This is a new, and it certainly will be a popular and lasting variety, for field culture. It has, too, a gratifying history, which I wish I had leave to present to the readers of the *Gardeners' Chronicle*, and if only for that philanthropic act of loving mankind, and raising a worthy human being from penury to a bountiful state of happiness and plenty; as long as I can grow a Potato I shall encourage this Magnum Bonum monumentally in honour of the worthy firm whose name it bears. My friend and neighbour, Mr. Bellis, astonished us by the amazing produce he grew from 1 lb. of the tubers last year.

Hundredfold Fluke, too, along with the American Roses (early state) are beauties, which lies but skin deep, and on that account are to command as "show varieties."

Surprise, has a dwarf lopping woolly haulm, and as a round Potato is a promising variety. Next we note Beaconsfield kidney as being merely of the type of Lapstone, followed by "Waterloo kidney," a kind which retains itself long in my memory, as long indeed as I can remember anything about Potatos, for as a child I saw it grown in my uncle's garden in Suffolk. He called it then the old Cambridge Kidney; I made it the male parent of Fenn's Onwards, a seedling crossed with the true old Fluke, which produced for me (after years of application in that way), a first satisfactory "flesh" to start upon—the predecessor of my English posterity of second early and late seedlings. Nevertheless, I have always regretted Onwards becoming public property, as it is not a large cropper, but it is quite at home in old fat suburban gardens, where most esculents are apt to grow merely to greenery. Next comes Hayes' Kidney, a dark foliaged variety of Lapstone, the old Cobbler's Lapstone, Carter's Lapstone Fluke, and Thos. Almond's Yorkshire Hero, a graft hybrid between the Lapstone and Lancashire Flounder. I can speak advisedly so, because I hold copies of Mr. Almond's data. The old Lapstone will not produce the crumpled appearance in foliage which is a peculiarity derived from the grafting process. Grafting will indeed spoil the evenness of any type of haulm, but very rarely indeed will it improve the Potato, and never forbid a Lapstone from remaining a Lapstone or otherwise, according to the graft. The process will dwarf or increase the stature of growth, instances of which are found in Yorkshire Hero, the tallest, and in Fenn's graft hybrid Perfection (Lapstone on Onwards), the dwarfest and earliest of the Lapstones. I fear the numerous selections of the family and the two hybrids above have got so mixed together, that a plot of Lapstones is scarcely to be found, but in a very confused state of greenery? But to my taste, nevertheless, the Lapstones are well worth dwelling upon, and always worthy of a place both for eating and showing. Next the old Red Ashleaf and Red Fluke for colour, and Gelf's Exhibition, the exact type of Prince of Wales Potato, which is all that need be said of the trio. Now the old Fluke, true and patchy; a good old sort, and to be regretted, for it is nearly gone. Next comes Jersey Blue, an excellent sort, followed by a lot of tallies pointing out nondescripts—seedlings sent to the Messrs. Suttons' for trial!

Pray do not envy the Messrs. Suttons under this compartment; we could "roar you" on their types of haulm, but none of them for our taste are sufficiently distinct from what we have in galore. Nevertheless, pray accept, for the sake of progress, our picture of a few. Greytree Seedling, having a Victoria type of haulm, and a seedling something like King of Potatos (this took 1st prize for "rounds" at the Messrs. Suttons' last show); Danish Queen, like Dawes' Matchless both in top and tuber; Countess of Tascor, a medium crumpled creeping haulm; and Worksworth Seedling, of a Willard's Seedling style. Now we come to a really good old sort, namely, Fox's Seedling; I remember it well, a Potato of excellent flavour; and so is Martin's Seedling, a sort I formerly grew at the same time. I do not observe the latter here, but it should be. Soden's Early Oxford—this is another good kind; the old Early Shaw, too, is here; this rare variety I also remember as growing in Suffolk side by side with the Cambridge Kidney. The disease had already singled it out. The Dalmahoy, an early Regent: I class this desirable Potato along with Daintrees' Seedling Round, because the one cannot be distinguished from the other except in the boiling, and here the Daintrees will become cooked some 10 minutes sooner than the other. Daintrees' Seedling never made its way as it deserved, and I strongly suspect it is often distributed in commerce as the Dalmahoy. Gryffe Castle Seedling: here we arrive at what I think to be the best of all the Regent class; Drummond's Early Regent, too, takes a position here, as also Rintoul's Early White Don, a very good type of an early Regent. Mr. Rintoul issued also a Striped Don, which I think the best of the two in point of true Regent flavour.

Then we meet with Rector of Woodstock, another standard variety, which requires little recommendation from me. It will recommend itself wherever grown, unless it be on very poor soil indeed. It is a cross between Fenn's Onwards and the Early Red Emperor, to improve the former as a cropper, and it did so, at the same time retaining the superior flesh of Onwards. The old Fortyfold is here true; an excellent sort, but, like many of our fine old varieties. I fear it is becoming sadly deficient in constitution; at any rate it is becoming very scarce and difficult to be got, and that is a sign of it. Some people are blessed with the digestion of ostriches, and like a Potato close of flesh, and here we notice the Stirling White, a Regent likely enough to suit them. Snowball, Walker's, Paterson's, and the good old York Regents, are here extensively in stock, along with the old Scotch Rock, in foliage one of Paterson's Victoria type; and by consequence of this popular variety having failed in Scotland last year, another Potato arose named Champion Rock, having a taller haulm with narrower foliage. As a London cooking favourite, we shall be sure to hear more of the Champion Rock. Paterson's Victoria, a universal favourite, which we mention as being here extensively in stock, of course, requires our strenuous praise, so well are its good properties known and appreciated. Sutton's Redskin Flourball does not require its praises sung, so suitable is it generally considered to be for general culture. Worthington G. Smith, also, has now taken its position in the trial grounds. Messrs. Sutton are the possessors of the only stock of this, as I consider it to be an acquisition for early frame work and early border culture only. It is a cross between the old Ashleaf and Turner's Union Round. We trust to hear of this variety taking high rank for excellence of flavour. It is a good cropper, and will attain size. Model, and Porter's Excelsior, too, as show varieties, are popular, but both of them require a good digestion. Schoolmaster, also, is greatly spoken of, and is grand in growth. For colour, follow Paterson's Marchioness of Lorne, P. Scotch Blue, and the now very scarce old Red Regent.

Walking in another direction, we arrive at a plot of Potatos, being a result from large tubers left at the Messrs. Sutton's after their autumn show—truly a motley lot, which we gaze as pleasantly upon, doubtless, as would the "wylde savage" of a contemporary upon a garden of Roses. A fine piece of Oxfordshire Kidney is adjacent. This is a Potato for which there is arising "great inquiry." Golden Dwarf, a round good cropper for the size of its haulm, may be termed an early forcing sort, and suitable for border work. A kind called Golden Zone, owing to a slight variegation of yellow around the margins of its leaves, induces me to observe that what we want for future introduction is distinctness of both haulm and tuber, as we have so many selections or types of sorts running so nearly alike that it has really become quite a puzzle to distinguish the one from the other—in fact, there is a great surplusage of distinctions with a very little difference.

My friend now orders his trap, and we drive around the trial grounds, where the rich and the rare would fain win upon us, but however arch their smiles we were not to be won over; Potatos was our strength, and once more we arrive at extensive plantings of Magnum Bonum and other varieties already named, but worthy again of mention *en bloc*, as having been planted after the coarsest preparation, upon rough soil merely ploughed, and the sets dibbed in every other furrow, to be horse-hoed, moulded, and left to take their chance—a finer lot of growing Potatos were never seen as a result, and we make a note of it. Thus ends our observations on the most noticeable and approved varieties of Potatos of the day, and yet, let it be observed, all this extent of sorts consists merely of samples taken from the bulk furnished by individual growers as they arrive at the Messrs. Sutton's. These "parcels," or samples, are consecutively numbered for planting in the Berkshire, viz., the Reading trial grounds, to be taken future note of for purity.

The bulks of the "parcels" are then grown in different parts of the country, to be issued in commerce. But should the two test rows in the trial grounds prove mixed or untrue to name, a bad mark is written against the number, and the corresponding defective bulk is not allowed to be distributed. It is wonderful how pure the stocks arrive; we could not distinguish more than three test samples that were defective. Of course their representatives will never find a place in the Messrs. Sutton's stores, nor, consequently, in the grounds of their customers. *Robert Fenn, Cottage Farm, Sulhamstead.*

THE BRITISH ASSOCIATION.

We cull from the local papers the following extracts relating to subjects within our department, and one relating to the Telephone, one of the most wonderful applications of electricity:—

The Telephone.

Mr. Preece described the progress made in the adaptation of electricity to the transmission of sound—from 1837, when Page, an American physicist, discovered that an electro-magnet could be made to emit sounds, to the production, in 1861, by a German named Riess, of the tone telegraph. Riess's telegraph simply transmitted tones, a lady's voice and a deep bass being both rendered alike. The real discoverer of the telephone, Professor Bell, of Boston, commenced to work in 1873. Mr. Bell had devoted nearly the whole of his life to the examination of the vocal organs. His attention had been particularly directed to the movements of membranes under the influence of the voice, and step by step he produced his articulating telephone, a specimen of which Mr. Preece produced and experimented with. The wire was connected with the Post-office, ank some amusing conversations were carried on between Sir William Thomson, Professor Haughton, Professor Adams, and others, at the section end of the wire, and Mr. Preece's assistant at the other. At the request of Professor Adams and a lady who was asked to try the instrument, the assistant sang "Auld Lang Syne," "Rule Britannia," and another melody.

Only the person who had his or her ear to the bell of the telephone could hear the sounds transmitted; but their evidence was that the thing was a complete success. Other experiments were made, including one with Eddison's tone telephone, which is intended to transmit musical sounds audible to a roomful of people. Professor Bell has made experiments in Glasgow, and has succeeded in speaking through what would correspond to 100 miles of Atlantic cable, and through a length of ordinary wire equivalent to 3000 miles.

Experiments have since been made with this instrument between Jersey and Dartmouth, and with complete success—"God Save the Queen" suog at Dartmouth being distinctly audible in Jersey.

"The Materia Medica of Devon." By Edward Smith, F.C.S,

The pharmaceutical productions derived from the fauna of Devon are, the paper stated, of the usual character. The eggs, suet, milk, lard, cod-liver oil, ox-gall, honey, &c., differ little from those of other counties, but milk appeared to have a singular affinity for water, which almost amounted to a function. In the flora there was more material to work upon. Aconitus Napellus is found in patches. Of Papaveraceæ and Linaceæ there were several varieties, as there were also of cruciferous plants, Rhamnaceæ, Rosaceæ, &c. There are three Mints—Mentha Piperita, M. viridis, and M. Pulegium, representing the labiates. The Pulegium is found in swampy places, and was called in Devonshire dialect "organs," or "argans." The origin of this word the author did not know. In a poem in the Devonshire dialect, published in 1867, these lines occurred—

"Jist put her tooties in hot water,
And gi'er a few strang 'argans' arter,
Or else some feather foul."

That is, "Put her feet in hot water, and give her a little strong pennyroyal tea after, or else some feverfew." Among other plants the various Willows flourished abundantly throughout the county.

Plymouth Roses.

Mr. T. R. Archer-Briggs, F.L.S., read a paper on the Roses of the neighbourhood of Plymouth. Mr. Archer-Briggs illustrated his essay by means of a map of the district of which he treated, and specimens of many of the plants referred to. He said that having been made aware quite recently that the British Association was desirous of receiving papers on local subjects, he was induced to prepare one on the Roses of the neighbourhood, as the literature on the subject was scanty, and not one of the authors of any portion of the floras of Devon or Cornwall had given special attention to this genus. Incited thereto by Mr. Baker's monographs on British Roses, appearing in 1864 and 1870, he had endeavoured since to identify the Roses flourishing within a radius of 12 miles of Plymouth with those species and varieties classified by him. The endeavour involved extensive research, both on the Continent and at home, and, among others, M. Déséglise, one of the first authorities on the genus, had rendered him valuable assistance.

The Colorado Beetle.

Mr. McLachlan dealt categorically with the history of the insect, its habits, its migratory movements, and the reason the inhabitants of Europe have to dread its infliction upon them. In Europe attention was not much directed to this formidable farmer's enemy until four or five years ago, when the danger of importation forced people to weigh the disadvantages of a possible scourge and impelled entomologists to study. Laws were passed in consequence of the agitation which then took place, the effect of which was virtually to put in quarantine vessels from America which there was reason to apprehend might bring any of the beetles. In England fear of the insect culminated in the Destructive Insects' Bill, passed by Parliament a week or two since. But unless Potatos be imported in the future in far greater quantities and with less care than heretofore, Mr. McLachlan believes the danger of their coming concealed among tubers to be very small. It is certain that the beetle swarms on the Atlantic seaboard of the United States, so that there is every chance that it has over and over again been conveyed on steamers and other vessels leaving for Europe. It, therefore, seems not improbable that a few should have arrived here promiscuously. The opinion expressed in the paper was that the pest is more likely to be introduced in a general manner than from any special association with Potatos. One means, and a dangerous one, of its introduction was pointed out by Mr. McLachlan to lie in entomologists sending living specimens as study objects to their brethren in England. The insect in all its stages has been so sent frequently, and the chance of escape is not small. The great danger consists, however, in the possibility of the living insects being exported from America as things of commercial value, or by amateurs who know nothing of packing. That the panic of late given rise to has increased our risks a hundredfold, Mr. McLachlan believes there can be no doubt, because in times of panic the evil passions of human nature are aroused, and some people might, in a spirit of mischief, turn the beetle loose. The alarmists had little or no ground for their reports. The insect might be expected of its own accord to find its way. Admitting that importation has taken place, it remains a question of moment whether the creature can propagate to such an extent as to be dangerous. Several prominent entomologists affirm that for it to flourish here is almost impossible, on account of the dampness of our atmosphere. These maintain that although it is used to intense cold, the climate it comes from is very dry, and not subject to those remarkable changes of temperature to which we are accustomed in England. Against this theory Mr. McLachlan advanced the fact that in a few years the insect has shown itself possessed of a constitution extremely elastic, and he expressed the opinion that upon this ground we are not so secure as might be wished. Another argument tending to foster ideas of security has been urged, viz., that although we have introduced into America a great many noxious insects, among which is our common white cabbage butterfly, none have been sent across to us and become acclimatised. As a reason for this, Mr. McLachlan pointed to the immense exportation of plants from the mother country to America, as compared with what she has been the recipient of from the Western Hemisphere. We have, nevertheless, received a considerable number of weeds, he remarked, from America which had become so widespread here that now they must be regarded as integral parts of our flora. One reason for congratulation when contemplating a visit from the Colorado beetle, he thought Englishmen have, which is, that we have more insectivorous birds in proportion to our insects then there are in North America. It is said the rook would devour the larvæ of the beetle should it come here; and it is certainly worthy of note that where the insect most flourishes there are no rooks.—Sir. Willoughby Jones intimated that he had been requested by Lady Hooker to inform the Department that she has received from Sir Joseph Hooker, at present travelling in America, a letter wherein he avers that the beetle in its own proper latitude lives naturally not on the Potato, but on a wild species of Solanum. Sir William expressed a doubt, from his knowledge of the habits of rooks, whether those birds would eat the larvæ of the Colorado beetle.—Mr. Napier, who produced some specimens of the insect, said a mixture of one part of white arsenic to ten parts of soot had been found by friends of his a good thing to destroy the beetle. He believed the country should be provided with county entomologists, such as are appointed in the United States, and pursuant thereto moved "That this section communicate with the committee of recommendations, and request them to ask Her Majesty's Government to consider the matter of county entomologists." This motion not being seconded, Mr. Napier resumed his seat after mentioning the starling, the thrush, and the blackbird as birds which would be probably useful in repelling the incursions of the beetle.—Professor Newton objected to the conclusion of Sir Willoughby Jones that rooks would not destroy the larvæ, and pointed out that starlings would be of no use at all as protectors, inasmuch as they never feed save where they can look at all that is going on round about them.

The Pitchers of the Cephalotus.

Professor Dickson, M.D., drew attention to the general structural characteristics of the pitcher, and detailed its varied forms, external and internal. He described the cells and glands both in the bottom of the pitcher and on its upper surface, and stated that on the upper surface of the pitcher and the lid, and above the surface of the non-pitcher bearing lids, small oval glands are found, each consisting of a central oval formed by two cells, these being surrounded by four others. Exactly similar glands occur, also, upon the inner surface of the pitcher lid, but, from their universal occurrence elsewhere, Dr. Dickson is disposed to doubt their secreting properties. Dr. Dickson also drew attention to the very remarkable hairs found on the outside of the pitcher lid, upon the wing-like appendages on the outer surface of the pitcher, and—but here of a somewhat weaker description—on the petiole and margin around the non-pitcher bearing lids. These appear from the extremity to be within a quarter of the whole length of the base to be solid. The boundary of the cavity, however, consists of a wholly refractive wall, so distinct from the outer and terminal portions of the hair as to give the impression of one hair being enclosed within another.

In the discussion which followed, Mr. Lawson Tait for the most part corroborated the results of the examinations of Dr. Dickson, and added some observations of his own, going to show that the action of the gland in the Cephalotus was as distinctly digestive in character as in the Nepenthes.

Structure and Habitation of Plants.

Mr. Alexander W. Wilson, M.A., read a paper on "Structural Characters in Relation to the Habitation of Plants." These characters treated mainly of succulent leaves which possess a few stomata on the surface for the exhalation of heat, suiting them for dry hot climates. He gave an instance from the works of Livingstone, showing that when the Boers first took possession of the Kalahari Dessert it was covered with a coating of grass, but a succession of long droughts had proved too much for the grass, and it had been superseded by Mesembryanthemums, plants better equipped to withstand the aridity of the climate by means of their thick leaves, and the peculiarity of their seed vessels. He further illustrated this by means of the common Houseleek, which grows readily on the roofs of thatched cottages by means of the succulent quality of its leaves. He explained the water glands in plants, the perfume in plants, and the growth of Ferns in reference to climatic effect, and traced the aromatic leaf glands to the principle shewn by Tyndall's experiments that these perfumes prevented an excessive radiation of heat during the night. In the discussion which followed it was pointed out that there were plants, such as the Wallflower, the roots of which took to the soil as a sort of attachment only, whilst the hairs with which the plant was liberally covered absorbed the moisture in the air so rapidly and so freely that they were frequently used as indicating the moisture and dryness of the atmosphere. Various opinions are expressed upon the growth of Ferns, and the condition under which the best Ferns, both English and foreign, were produced, it being argued on one side that the best Ferns grew in moist places, especially over rivers, whilst it was stated that in the Mediterranean they grew luxuriantly upon rocks, absorbing such heat that it was uncomfortable for the hand to be retained on the rocks for any length of time.

The Flora and Fauna of Pre-historic Times.

Professor Rolleston, M.D., F.R.S., remarked that Beech mast was a very preservable thing, and that Buckwheat was no other than Beech-wheat. Great men did not ordinarily make great mistakes, and the mistake made by Julius Cæsar that everything was to be found in England that was to be found in Gaul, with this one exception, was not a great mistake, because the Beech was not found in anything like the profusion in England at that time that pre-historic deposits showed that it was found in Denmark. It was interesting to know that the bottom of the word beech was to be found in boc or bock in every Saxon tongue, and, consequently, he must not omit to mention that we call the meat of the pig which was fed on the Beech we call beacon. The Beech, it was true, did not enter into the works of Nature's poet Chaucer, but he also omitted the Willow and the Birch. The omission was supplied by Spenser. He (Professor Rolleston), came to the conclusion that the Beech was present in England in pre-historic times, and did form a part, though not a large part, of the landscape. There could not be a doubt that the Wych Elm was indigenous, and was used for coffins, and that the Birch was used for tools. Ash was found also in English peat, although it was not found in Scotch. There was a good deal of difference between the description of animal life in England and Scotland, and so there was in vegetable life. The Spruce Fir was not found in England at all. There must have been some destruction of continuity which hindered that tree from ever establishing itself in England, which it never did excepting by the help of man, when it spread with ease. There was some doubt whether or not the Lime tree was indigenous, but he was inclined to the opinion that it was, for reasons he adduced, an important prehistoric tree. He would now pass on by a natural transition to the hive. He could not find out when the hive was introduced, and he had no recollection of it in any but comparatively recent writers. The speaker proceeded to talk of bees and honey, and spoke of the enormous difference the Sugar-cane had made in modern days. He would leave that highly interesting class of insects and proceed to speak of a class of mollusca, for which he had a great affection. What enormous changes had been witnessed in the mollusca of this country since prehistoric times. Some persons would have it that the large road snail was an importation, but he believed it to be a regular, real, old-established British snail. The water snail Dreissena, which was exceedingly like the mussel, had only been comparatively recently found in this country, and it was a mistake to suppose it had been found in prehistoric times, the probability being that it was found in a deposit containing a pipe of the time of Elizabeth, and a coin of the time of Victoria. The fact was, that a great many cargoes of wood came from Russia; this wood was floated down rivers, and with it these mussel-like snails, which came in profusion from Russia. Passing on to the consideration of birds, Professor Rolleston remarked that cranes were very familiar to the eyes of neolithic man, but now these striking and beautiful objects were so rare that one had to visit a zoological garden to see them. With regard to the rabbit, he believed it had only lately established itself in Eng-

land. In many tumuli the rabbit had done a wonderful amount of mischief. He had several times found at the mouth of burrows pieces of flint they had ruthlessly destroyed. If rabbits had such a hold on the country in former times, every one of these things would have been destroyed; and consequently, Chaucer, who died about 477 years ago, mentioned it as being in parks. He inclined to the belief that the Romans, who brought over the Chestnut, the sheep, the fallow-deer, the Roman Elm, also brought the rabbit. The rabbit never travelled 100 yards from its hole if it could help it, but—he was afraid he was trenching on the Malthusian question—an animal like the rabbit would overrun the whole country if it were not for the antipathy to its spreading entertained by the rival animals. What explained the comparative paucity of the rabbit in former times was the great abundance of the yellow and white martin. England was one of the most profusely wooded countries, acre for acre, to be found in the world. The martin now was a very rare animal. The rabbit was very common now in some of the Ægean Isles. The ancient Greeks referred to the hare; in those days the martin was employed as a cat. Our cat was not employed until a short time before the Christian Era as a mouse killer. He had heard many people speak of the common Norway rat as belonging to prehistoric times. There was a gentleman in Plymouth who did send him a quantity of black rats, and he desired to give his acknowledgments, not knowing his name. There had been some speculations as to whether the presence of rats might not be connected with prehistoric superstitions. In one prehistoric mass of burnt deposit he himself found the upper and lower jaws of the common water rat. He wondered how they got there, but after making a careful examination of the whole mass he found a polecat's tooth. That animal had made this place its home, and fed its young on the rats. But for that discovery he might have been betrayed into making a rash speculation.

Natural History.

The Cuckoo.—From my bedroom window on the evening of August 4, I was surprised to see a fine young cuckoo come and alight upon the rails of my little garden, about 20 feet from where I was sitting. Believing that all the cuckoos had left England for some time past, I was casting in my mind, "Could it be a cuckoo?" when all doubt was at once removed by a little Haisne (hedge-sparrow) coming to feed it, and the sight was not a little strange of so small a bird feeding one I don't know how many times its own size. In so doing the foster mother had to stretch herself to the utmost of leg and frame to be anything like on a level with this giant offspring. Never having seen a cuckoo so close at hand before, I was careful to notice it well, and it gave me ample opportunity, having kept its position more than half an hour. The whole frame of the bird was covered with feathers of a rich glossy brown, crossed from side to side with bars of a much deeper colour. The head had a mixture of brown and white feathers, the brown greatly predominating. The bill I thought small for so large a bird, and the movement of the jaw opening and shutting, suggested to me that the bird was uttering some sound; and so it was, as I understood from one whose hearing was better than my own. I had always been taught and always believed that the cuckoo—the real mother—took no further care of its offspring than to deposit the egg in the nest of some small bird where there was hardly room for expansion to the full size; but I have been led to think this idea incorrect. In June last I saw an old cuckoo alight on a stump in a hedge not 25 yards from where I was sitting, and where I now am. It seemed to be noticing something low down in the hedge, and all at once plumped down to the bottom, for there was a shard there (a gap), and my friend remained there just about two seconds; then away it flew—some one was coming. In about a fortnight afterwards I saw the young cuckoo flying from stump to stump. There was not time in those two seconds I have described for the old one to have dropped the egg; nor, if there had been, for the young bird to be hatched and fledged before I saw it flying from stump to stump (a fortnight). Can any one give a word to enlighten? *Thomas Reed, Flaxley, Gloucestershire.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—It is now time to give such treatment to stove plants generally that require a rest for some time during the latter months of the year, as will induce slower growth with maturation and solidifying of the wood. This should be brought about by keeping the atmosphere somewhat drier, yet not such an absence of moisture as to cause that dry, arid condition of the air to which plants are sometimes subjected, but which is always more or less injurious in its consequence. More air should also be given during the middle of the day; but here again the excessive quantity frequently admitted must be avoided, as it has a similar effect in drying up the atmosphere of the house too much, and through which, where practised, it generally follows that red-spider, thrips, and other insect pests that revel in a dry atmosphere on plants, reduced to a languid state by the treatment above referred to, are even more plentiful through the autumn than in the earlier parts of the season. Less shading should also be used, so as to inure such plants, particularly flowering subjects, to the direct influence of the sun. Considerably less water ought to be given to the roots, the restriction here advised being more or less according to the nature of the different plants under treatment. Evergreen subjects should never by any means be allowed to flag for want of moisture at the root, where this occurs injury more or less is the result; if carried so far as to prostrate the energies of the plants seriously, it induces a complete stagnation of the roots and results in a stunted condition of the top growth. Deciduous things of a free-rooting character will bear to have water withheld until the leaves flag considerably, then apply a moderate quantity, such as will freshen them up, yet not so much as will moisten the soil to the extent necessary for the promotion of free growth such as required early in the season; giving no more until the plants again flag, when repeat the application as before. This gradually stops any further considerable extension of shoot and leaf growth. The temperature during the day whilst this ripening process is going on may be somewhat reduced, keeping it comparatively lower during the night, but not so as to arrest growth by chilling it. The treatment that stove plants are often subjected to with a view to stop growth and ripen them up at this season of the year is not only as ill calculated to effect the desired object as it well can be, but it inflicts serious injury. It is no uncommon occurrence to see plants of this description removed to houses where the temperature is much lower, or in other cases for the heat in the stove to be so far reduced as to stagnate growth completely in place of effecting the ripening process, in which case instead of the leaves and wood becoming firm and solidified, with the buds plump and ripe, the whole energies of the plants are at once reduced to a state of forced inaction, from which, if they survive the winter, they come out so enfeebled that when cut back and again started, the growth they make is of the weakest possible description. Light, warmth, a drier state of the roots, with a reduction of atmospheric moisture, are collective essential conditions in preparing plants for rest. Such individual plants of Bougainvillea, Allamanda, Clerodendron fragrans, Rondeletia, Dipladenia, Gardenia, Hibiscus rosa sinensis, Ixora, Scutellaria Mociniania, with Dichorisandra mosaica, Aphelandra cristata, and Luculia gratissima, which it is desired to keep on flowering as late in the season as possible, should either be moved to a separate compartment, or if such is not available, put at the warmest end of the stove, where they will receive less air, with more moisture to and about them than the plants that are being ripened off. It will be necessary to yet use the syringe to such subjects as the above, to keep down the yellow thrips and red spider. Caladiums that were started early into growth, and that now show signs of going to rest, should be gradually dried off, but still kept where they will have sufficient warmth. Gloxinias and Achimenes that have done flowering ought not to be thrust away in out-of-the-way corners whilst their leaves have any vitality in them, or left in cold houses; they should occupy a place in the full sunlight, where they will receive enough heat to effect the maturity of both tops and bulbs. For this end they must not be suffered to get too dry at the roots, as if the tops are killed down, instead of being gradually ripened off, the tubers suffer proportionately. Plants of the above that have been grown for late flowering should have sufficient heat and moisture to prolong their bloom as late as can be. Tydæas, for a like purpose, if well attended to, will keep on flowering far into the autumn. The different varieties of highly coloured Dracænas, now so much used for the decoration of conservatories during the summer months, must not be left in such places too long, should the nights come cold and chilly. A very common practice with large specimens of these when so employed, and they have got at all bare of leaves near the base, is to cut them up for propagation when moved from their summer quarters; when this is contemplated, they should not be allowed to stay in a cool house until halt the vitality is chilled out of them, or they will strike indifferently. If the roots of the plants are in a healthy condition when headed down, every bit of the old hard stem will strike cut into pieces about an inch long, inserted in sand in pots or pans, sufficiently drained and placed in a brisk heat; having no leaves to evaporate moisture, they do not require covering with a bell or propagating glass, but will root and form shoots fully exposed to the atmosphere of the house; the tops of the plants with leaves attached will need confining under a propagating glass. Every encouragement should now be given to Bouvardias for winter flowering; to induce a bushy growth, stop the shoots of all that are wanted to bloom later on, leaving entire those for flowering early; if requred to come in soon they should be removed to the stove, or other structure, where they will receive a brisk heat of 70° or 75° during the night, with a corresponding rise for the day, accompanied by plenty of light, and sufficient moisture to keep them on flowering freely. *T. Baines.*

Orchids.—In treating of imported Cattleyas and Lælias (for one class runs so nearly into the other, as in some cases to make it hard to determine them) the remarks made in reference to them will also in like manner apply to such things as Schomburgkias, many of the Epidendrums, Arpophyllums, Brassavolas, &c.; those that generally have stout, firm, and long bulbs, terminating with from one to three leaves on the top of the stems. In some instances, however, the bulbs, which are small, and carry only a single leaf, are produced so close to those of previous years' growths that the plants assume a very neat and compact evergreen appearance. When any of these of the latter class are obtained immediately after importation, the leaves are almost invariably absent, the smaller bulb sections appearing in this respect to be less able to bear a lengthened period of close packing, and an absence of moisture, than many of those of the long bulb species. In removing them from the stems and trunks of trees on which they have in most cases been growing at home, the damage and injury done to the roots is such that the plants in many instances are considerably weakened before they are packed for the sea voyage, and then with the absence of light and moisture, or other sudden changes to which they may be subjected, a great number arrive in what is described as "poor condition"—a phrase conveying a deal of meaning, whilst many others have quite succumbed to the treatment they have received. All the dwarf-growing species are the better for being fastened on blocks, on account of the small quantity of roots they will have, with just a small piece of moss laid under the plant. Do not cut the plants with the idea of increasing the number of them, as it often happens that in so doing many of the pieces die off altogether, whilst those that do live have less of vital power, so that instead of bringing a gain, such an operation in many cases results in a positive loss. When they have started freely on the blocks, and some of the back eyes are showing signs of growing and rooting, the knife may then be used, partially severing the rhizome at the first, then after a week or two cutting right through. It is, however, a bad practice to use the knife at all, and should only be resorted to where the increase of stock is a matter of first importance, and the exigencies of trade demand it. Hang the blocks, with the plants fastened to them, in a convenient place in the Cattleya-house. Syringe them regularly twice a day, keeping them at first a little closer than is to be recommended for established plants, and at the same time giving them a little more shade. It is rather trying at times to carry out precise instructions, more especially when only one or two houses are devoted to the culture of these plants; and since so much has to be left to the control and management of those who have charge of them, and at the same time the conveniences and opportunities are of a very limited order, such suggestions must be carried out so far as the means at command will permit. Lælia albida, autumnalis, and furfuracea, Cattleya citrina, &c., should be hung in the Odontoglossum-house, these requiring less heat than the majority of the others. As soon as the breaks and roots have pushed freely away, more air must be given, and the shading not allowed to remain on so long. Under this treatment the plants will often in one season assume such a healthy and vigorous appearance that they will appear

to be more satisfactory than many that have been in the collection for several years. The white scale, to which they are all more or less subject, must be got rid of by careful and regular spooging, using a little soft soap in the water, and a few drops of turpentine mixed in with it. The species having bulbs a foot or more in length cannot be managed so well on blocks or in baskets, on account of the difficulty of moving them about, and also of fixing them on the sides of the houses, or suspending them from the roof. These should be fixed in pots, crocked nearly up to the rim, and only a small quantity of peat and moss used; when, however, the roots have started away, a little more must be added. These at first will be benefited with an occasional syringing. As soon, however, as the breaks have pushed up, and the leaves so bursted that the water would lodge in them, it must be discontinued, otherwise many of the new shoots will be liable to rot off, often causing the loss of the entire plant. If the Cattleyas, &c., are received late in the autumn or during the winter months, it is advisable to give those that are to remain in the Cattleya-house a start for a few weeks in the East India-house, whilst those which will belong properly speaking to the Odontoglossum-house should be hung for awhile in the house devoted to the Cattleyas, the object, of course, being to give them a little extra encouragement when first pushing into growth. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

This is now the busy season for propagating a stock of all the bedding plants for next year's display in the flower garden, and I believe it is desirable to take notes from time to time of those kinds that are best suited for the place and the arrangements required, and any sorts that do not come up to the standard after a fair trial may be discarded, and improved kinds encouraged. There are so many fine things now that only the most effective should be used; but in some places with limited means and large requirements, time is necessary before a sufficient stock of improved varieties of the usual bedding plants can be got up. We commence with the variegated and Ivy-leaved Pelargonium, as they take longer time to root, and finish with the Zonals, all of which are propagated in the full sun without glass. More delicate-growing things root better in a higher temperature, and require the protection of glass frames or pits; such plants as Alternantheras, Coleus, Iresines, Heliotropes, &c., succeed best with a little bottom-heat. In taking off cuttings, some care is required, so that the beauty of the beds is not materially interfered with. Attend to climbers and all strong-growing plants in exposed places, as they are apt to get broken over by the wind if not looked after in time. Weeds are always very troublesome at this season of the year; therefore, keep the hoe going at every available opportunity. Garden walks, too, generally become full of weeds after showery weather. It is hopeless work to hand-pick, and breaking up the walk is not desirable after this time. A dressing of salt is by far the easiest mode of keeping them under; and, considering the labour that it saves, the cost is but trifling. Grass lawns still require frequent mowing and sweeping to keep them in good order. *Thos. Blair, Shrubland Park, August* 21.

FRUIT HOUSES.

Melons.—The weather of the past fortnight has been unfavourable to Melons in all stages, particularly where the fruit is approaching maturity. Look well to the top and bottom heat until we have a change to brighter days and a drier atmosphere, otherwise deficiency of flavour will follow, and canker will show itself at the base of the stems. The best remedy in each case is a dry, warm atmosphere, with free ventilation, a liberal use of quicklime about the parts affected, and careful watering, which should be performed early in the day. Plants in pits and frames heated with fermenting materials only will well repay a little extra attention to the linings and covering up at night. Keep the young growths well thinned out, to allow the air to circulate freely amongst the leaves; ventilate early, and counteract the effects of dull weather by shutting up with as little moisture as may be consistent with the health of the plants. Push on late plants which have not set their fruit; if in pots, with a brisk bottom-heat, the syringe may be used freely until the blossoms show signs of opening, when treatment recommended for early Melons may be followed. *W. Coleman, Eastnor.*

Vines.—Look over ripe Grapes for decaying berries, and stop all laterals sufficiently close to admit of a free circulation of air between the foliage and the glass. If the mild, showery, sunless weather continues, a little warmth from the hot water pipes, with plenty of air during the day, will be of service. Shut it off before night, and maintain a minimum temperature of 56° to 60°. Winter Grapes—this year later than usual—will also require fire heat to hasten the maturation of the fruit and wood by the middle or end of September, and so improve the keeping qualities of the fruit when removed to the Grape-room. If lifting, or partial lifting and relaying the roots of Vines from which the fruit has been cut is contemplated, no time should be lost in getting the work over, as Vines lifted before the leaves fall form new rootlets at once; and if they have the advantage of an undisturbed inside border, be it ever so narrow, a crop of fruit next season may be relied on. We are now cutting a full crop of Hambros, 2 lb. to 4 lb. per bunch, from Vines so treated in October last. Readers of the *Gardeners' Chronicle* being thoroughly conversant with the mode of procedure, repetition is here unnecessary. Secure good drainage and use turfy loam, clay, or garden refuse, burnt with wood, in the proportion of six to one, with a sprinkling of crushed bones or old lime rubbish. If manure is used it should be laid on the surface as a mulching, to be washed in by autumn rains. Gradually shorten back the laterals where Muscats are ripening, but keep plenty of foliage all over the house to protect the delicate berries from being injured by the sun, as Grapes, if allowed time, always colour and finish best under a good canopy of foliage. Lay in a good supply of turf for future use. Take it off thin and stack in narrow ridges with a covering of thatch or boards for throwing off the wet. *W. Coleman.*

Figs.—Cease to syringe the trees or otherwise use it about the house whilst the fruit is ripening, and to improve its character it should be exposed to the influence of sunshine and air as much as possible; and whenever circumstances demand it, apply sufficient fire-heat to keep the air in the house warm and dry, and in constant circulation by means of giving a little air at the apex of the house. This kind of treatment will greatly tend to help forward maturation in the shoots, and make success more reliable the subsequent year; also let the terminal shoots over the whole surface of the tree be allowed to rise in near proximity to the glass, so that they may become well hardened. This matter is very important in the case of trees which are to be subjected to early forcing operations. When trees are forced in pots, and these are already placed outdoors, see that no lack of attention is required; those trees should have a plentiful supply of weak manure-water on every occasion when watering is necessary. A good second crop of Figs in houses which have been assisted by artificial means is at all times a certainty at this season, and now that such a scarcity of other seasonable kinds of fruit exist it will be invaluable. Continue the treatment as before advised to those trees where the fruit is swelling. Keep the red-spider in check, where it abounds, by frequent syringings, and supply copious waterings at the roots of trees under such conditions. *G. T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

Such seasons as the present and others of a similar character that have preceded it, show how little dependence there is to be placed in obtaining crops of the choicer kinds of wall-fruit unless better means of protection than we now have can be devised to screen them from the inclemency of such weather as prevailed during April and May. From all quarters the same reports come of the almost utter failure of the crops, and in many instances giving deplorable accounts of the condition of the trees, thus showing how inefficient are the appliances in use in most gardens. The only crop of Peaches and Nectarines I have seen on open walls this year is at Sudbourne Hall, the seat of Sir Richard Wallace, where there is a wide glass coping from which I was informed nets had been suspended, and the two combined appear all that is requisite, for the situation is a bleak and exposed one; but possibly the frosts were less severe there owing to the near proximity of the place to the German Ocean. If those who have their walls protected in a similar manner would state what the effect has been during the past season, much good might be derived from it, as the trial has been a severe one, and such, it is to be hoped, as will not occur again for many years. Serious as the total loss of fruit is, the injured state of the trees is much more so, as it takes a long time to get them round again, or to replace such as are already established. That much replanting will have to be done this autumn is only too apparent, and no time should be lost in laying in a sufficient stock of soil for the purpose, so as to be fully prepared when the season arrives for getting them in. There is nothing better than good turfy loam, used without any addition whatever, as then it always remains in a clean healthy condition for the roots to feed on, which would not be the case were any vegetable matter, such as leaf-soil or anything of that kind, incorporated with it. By getting it carted and chopped up thus early, the grassy and more fibry parts will have time to decompose, and, beyond this, it cannot well be too fresh, especially when portions of the old border have to be mixed in with it. The genial growing weather we have lately had has caused a rapid swelling of the young wood, much more so than is usual at this season, which will necessitate a close watch being kept to see that the ligatures of fresh-budded trees do not become too tight and cut into the bark, or become buried in the same, as when that is the case, their removal becomes a difficult matter without doing irreparable injury. Grafts, too, from the fast growth they are making, and consequent large amount of leaf surface exposed to the winds, which usually prevail with great force soon after this season, will run much risk of being blown out unless securely tied to stout sticks made fast to the branches on which the scions have been inserted, or stuck in the ground in the case of those worked low, as is usually done on maiden stocks of such things as Apples and Pears. All fruit-bearing trees of these should now have the young wood stopped close back, except the leading shoots, and such as may be required for furnishing vacant spaces, and these should at once be trained to their proper positions, as they are more pliable at this season than at any other time. The present year has been anything but favourable for the early maturing of Grapes on open walls, and yet with attention and a fine autumn, good fruit may yet be obtained, which, owing to the great scarcity of all other kinds, will be found more than usually acceptable. If the same care in thinning the bunches and training and stopping the Vines were bestowed on these as is generally afforded to those under glass, they would not only ripen much earlier, but the fruit would be of far better quality than it is possible for it to become when crowded together in the way it usually is when left to itself, as may readily be seen at any time when a bunch happens to set imperfectly. Mildew generally makes its appearance about this time, but is easily destroyed by applying dry flowers of sulphur early in the morning, while the leaves are damp from dew, or it may be syringed on, by mixing it in water and keeping it well stirred during the operation, to prevent it settling at the bottom of the vessel. It is better, however, when used in this way, to get it in the liquid form, in which state it may be got from any chemist, under the name of pentasulphide of calcium, a wineglassful of which is sufficient for four gallons of water. *J. Sheppard.*

NO FRUIT.

Scene—*Somewhere in Kent. Present,* Pomona, *taking a somewhat fruitless survey of a Plum orchard. To her enter* Puer, *reading the* Gardeners' Chronicle.

Puer. I say, you know such a sell is too bad!
Pomona. Can't help it, my dear lad.
Puer. What! you a goddess, and can't "square" the seasons?
Pomona. There may be other reasons.
Puer. Walker! A nice look-out! No Apricots!
Pomona. Last season you had lots.
Puer. Can't live on last year's fruit. Then, scarce a Cherry!
Pomona. Spring winds are nipping, very.
Puer. Oh, blow the winds! A paucity of Peaches!
Pomona. The prospect patience teaches.
Puer. Gammon! Then Nectarines are non-existent!
Pomona. Boreas was *so* persistent.
Puer. Old Boreas is a bore, and you're—a muff!
Pomona. Currants were *quantum suff.*
Puer. I say, no "shop." Latin in the Vacation!
Pomona. Excuse me a quotation!
Puer. It all comes beastly hard upon us fellows.
Pomona. A fine crop of Morellos——
Puer. Insult to injury. Worse than Crabs or Sloes.
Pomona. Goosegog's—you had heaps of those.
Puer. But hang it, we're to have no Apples. Fancy!
Pomona. Apples are always "chancey."
Puer. Look here, Pomona, no more larks *next* year.
Pomona. I'll do my best, no fear.
Puer. You and Vertumnus ought to square the orchard.
Pomona. If Phœbus will not scorch hard—
Puer. Even with Plums and Pears we'd be content.
Pomona. Well, you see Parliament—
Puer. Oh, one expects short-commons from the Tories.
Pomona. *O tempora! O mores!*
Puer. An autumn without fruit 's a rummy season.
Pomona. Ills haunt a good Plum season.
Puer. The deuce they do! What do you mean by "ills?"
Pomona. Stomachic pains and pills!
Puer. Just you send Plums next year; I'll risk the rest—
Pomona. Well, well, I'll do my best.
[*Exit* Puer, *munching an unripe windfall.*
—*Punch.*

The Service Tree.—A tree, says a homely French proverb, earns its living, and so the Walnut, the Apple, or Service-berry is allowed to overshadow the Wheat and the Barley undisturbed. The Walnut gives a most valuable crop, besides supplying the grower with oil, whilst the Apple is sold for cyder; and of the fruit of the Service-berry is made an excellent drink, something like cyder, for his own use. It is called here (in Anjou) the *sorbier,* or *cormier,* and its wood makes excellent walking-sticks. The rich foliage of these trees, drooping low over the waving corn, has a beautiful effect, and I have seen some Wheat-fields planted with them as thickly as an orchard. "*A Year in Western France,*" *by M. Betham-Edwards.*

THE

Gardeners' Chronicle.

SATURDAY, AUGUST 25, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	Aug. 28	Flower and Fruit Show at the Agricultural Hall.
WEDNESDAY,	Aug. 29	Isle of Thanet Floral and Horticultural Society's Show.
THURSDAY,	Aug. 30	Royal Horticultural Society of Ireland: Autumn Show.
FRIDAY,	Aug. 31	Bishop Auckland Flower Show. Sandy and District Horticultural Society's Show.

IF difficulty and failure furnish at once stimuli and opportunities to those who know how to use them, then have the CULTIVATORS OF FRUIT now a fine opportunity of distinguishing themselves. Never, perhaps, has the failure of fruits in the open air been more general, or so complete. A crop of any kind of superior fruit is about as rare as a white swallow, and, in our ignorance of the causes that have produced or preserved such crops, we call them accidental escapes from the cruelly destructive range of the spring frosts. No doubt, however, a good deal might be learned by considering all the facts of those fortunate escapes. Truth is easier learned in units than in masses; it is more manageable, and also more clear, when looked at in single factors. Two facts seem to account for the general failure of the fruit crop of 1877—a mild winter and a severe spring. The first prepared the trees for failure; the second completed the work that may be said to have been in progress all the winter. For whatever theories may be adopted concerning the circulation of the sap, no one will deny that its abnormal activity out of season is a source at once of weakness and of danger to all plants, specially so to deciduous fruit trees and their produce. Unnatural heat is thus as real a source of danger as unseasonable cold. Unfortunately, both are largely beyond the control of cultivators, though not wholly so. Unseasonable growths may be checked by cultural expedients, such as a skilful choice of soils to suit localities, thorough drainage, root-pruning, frequent transplanting, &c.; and spring severities may be somewhat softened by permanent shelters or temporary protection. The science of root-culture may almost be said to be yet in its infancy. When it is better understood, cultivators will be the better able to control or modify climatal force and influence. Top culture can but affect chiefly the forms of growth, not its times and issues. The difference is immense; for, if by any means, and to any considerable extent, cultivators can control seasons of growth and of flowering, they could almost command crops of fruit. Already cultivators can produce fruit or wood buds at pleasure by advancing a long step and opening or keeping them closed at will; their power over crops would be almost absolute. Some measures of such power may yet be attained by cultivators through means of root culture.

More and better use might also be made of shelter as a means of saving our fruit crops from destruction. Shelter has a many-sided influence over vegetation. As popularly understood, it means keeping out a measure of cold. But shelter and shade are often inseparably linked together, and shade mostly shuts out a considerable amount of heat. It is through the skilful use of shelter or protective expedients in this double sense that safety for fruit crops may be found. For comparatively few crops perish through extreme cold. It is the frost and the sun between them, heat and cold rapidly alternating, and the extreme difference between the two that wreck the fruit crops in the open air. tModify the energy of the one by shelter and that of the other by shade—and just to the extent that we are able to do either or both without violating the laws of vegetable vitality, we provide the most favourable conditions for an annual crop of fruit; and, besides, the two conditions of failure, a mild, growing winter and a severe spring with late frosts, do not always go or run in couples: going or coming alone they are the more easily met and mastered. "Try again" always has, and ever will be, the cultivator's brave words to failure. Success may crown fresh efforts put forth with more skill and over larger areas; clearer notions of the causes of failure, and of the exceptional successes, that are always formed every year, may also yet enable us to avoid the former and command the latter.

Notwithstanding recent failures—for this is the second bad year in succession—the times are propitious for a great extension and improvement in fruit cultivation. Public taste may be said to have got into a fruit groove; consumption is daily increasing and prices rising. Home supplies are totally inadequate to meet the demand. About six millions are paid annually for foreign fruits; almost two millions of which are expended on Apples, Pears, and other hardy fruits, a large proportion of which might be grown at home. The nation is not only the poorer for the loss of this capital, but the loss of wage to the labouring classes is probably at least threefold the amount paid for the foreign fruit. This estimate is probably far under the truth: it is found that for every acre withdrawn from agricultural production and devoted to horticulture, the money expended in wages is multiplied by ten or more. Assuming, for mere lucidity of statement, that the cost of labour per acre on farms is ten pounds per acre, that in gardens is at least twenty pounds—it may, indeed, often rise to three times that amount. On this ground alone, the extension of fruit culture becomes a matter of great national importance. It multiplies manifold the amount of capital. Labour is but capital in an active form, invested in the land. The value of the produce is also so much enhanced, that the capital invested in fruit-growing pays better than other kind of earth culture.

Neither is there any lack of land to be devoted to fruit growing: thousands of square acres of poor meadow land, that hardly pay for mowing, and on which the poor beasts doomed to roam over them lose rather than gain flesh; poor plantations, so neglected as hardly to grow a sapling, large enough to cover "fur," or hide a feather; commons, brown with barrenness, or gay with golden furze or pink heather by the mile; railway embankments, long and wide, sunny or shady, affording every choice and selection of soil. Many of these only await the summons of energy, capital, and skill, to be crowned with beauty and clothed with plenty; and each one, with cottage, house, or garden, without waiting for these heroic measures of fruit culture which convert miles on miles of our wastes into fruit gardens, and profitable investments, would begin at home and fill up their own little waste places. An immense impetus would be given to fruit culture, and our home supplies would be doubled.

Strict clauses are inserted in the Agricultural Holdings Acts to compel tenants to make good dilapidations in buildings, &c. It would be well to have equally binding on the occupiers or owners of cottage property to make good dilapidation, in house and garden. The nation suffers enormous loss of health and wealth through sheer dilapidation. A few years since we had occasion to visit Devonshire to see the orchards, but we could hardly see through the ragged fences, moss-grown, dying and dead trees. Those that the wind had uprooted—an enormous crop—riven and rent years ago, were left where they had been wrecked to live and die, rot or grow, as they might. Cottages, cottagers, and gardens, seemed all alike dilapidated, and it seemed as if everything were beautiful but man and his works. A similar state of dilapidation among fruit trees prevails in not a few gardens. Old, dead, and dying trees are allowed to encumber the ground where young, thrifty, and more fruitful trees might grow. Inferior sorts also usurp the place that might be filled with far superior varieties. The root-power and energy already existing might easily be diverted to better uses by budding and grafting existing trees with the finer modern sorts. Having utilised to the utmost existing orchards and gardens, it will be necessary to look out for suitable places for the planting of more trees. These abound in all directions. There is hardly a cottage or outbuilding where room could not be found for one or more fruit trees—a farmhouse and premises where a dozen could not be planted. Walls, fences, low roofs, waste nooks and corners, might all be utilised and filled with fruit trees; and when these are all filled there still remains on most farms hills of useless slop and thousands of pollards of little beauty, and no use even for the fire, that could be cleared off and the spaces planted with Apple, Pear, Cherry, and Plum trees. Fruit trees might also be planted in hedgerows, injuring the fences less, and lighting up the landscape more than any other kind of tree. The fruit gathered from such trees would, therefore, be all profit. Again, what so beautiful, what more profitable, than fences of fruit trees or bushes between the fields of arable land. A fence of strained wire, covered with horizontal or fan-shaped trees, or with vertical, oblique, or diamond cordons, would form a fence at once strong, beautiful, and profitable. This last is a new element in fences, and it is worthy of the serious consideration of farmers in the present hard times. In good fruit seasons it might often happen that the fences would pay the rent of the field. Fruit fences would take far less space than the present fences, which are at once among the most costly and inefficient features of agriculture, ancient or modern. But there are many directions in which fruit culture might be profitably extended; opportunities, in fact, abound. What are most needed are the will to do it, and the knowledge of how to grow fruit with pleasure and profit.

One argument, often urged against the extension of fruit culture in the manner indicated, is the loss that would arise from predatory bipeds, feathered or featherless. Granted a certain amount of loss must be written off. But the Cherry orchards and Nut plantations of Kent are not considered unprofitable, although, we fear, the morality of Kentish starlings and Kentish schoolboys is not higher than that of their fellows in other counties; and while a certain amount of loss is inevitable, to allow such loss to deter the judicious cultivator is to credit him with less common sense and self-interest than we believe him to possess.

THE illustration on the opposite page (fig. 50) requires but a few words from us, so well does it tell its own tale. The plant is a magnificent example of the gorgeous DENDROBIUM WARDIANUM, and did belong, if it does not now, to J. G. HEPBURN, Esq., Sidcup Place, Kent, with whom it flowered last spring.

—— Resuming our CARLISLE notes, in connection with the approaching INTERNATIONAL FLOWER SHOW, we mention next the Stanwix Nurseries, of Messrs. CLARK, BROS., & Co., established by them some eight or nine years ago, and successfully conducted with spirit and ability. A straight avenue, bordered on each side with a well arranged selection of trees and shrubs, leads to a handsome block of hot-house buildings, in which a large collection of specimen and decorative plants is grown for sale. The grounds are well stocked with ornamental and forest trees, and

the firm have recently found it necessary to acquire more ground, in which to grow trees to meet the demands of their trade. Near here are Beulah Gardens, the premises of Messrs. Thomas Armstrong & Sons, the raisers of the Garibaldi (Vicomtesse Héricart de Thury) Strawberry, who do a large florist and market garden business at home, and also send largely to the Newcastle and other markets. At Botcherby, on the Warwick Road, is the establishment of Messrs. Joseph Hamilton & Son. Here the cultivation of the newer varieties of Cucumbers for seed is carried on on a large scale; also the forcing of fruits and flowers for market. The senior partner was the author of the Hamiltonian system of Pine-growing, which caused so much discussion years ago, and examples of it may be seen on the premises, though here, as elsewhere, Pine-growing for market is being abandoned as an unremunerative speculation. Close by are the famous Strawberry gardens belonging to another branch of the same family—Messrs. Thomas Hamilton & Sons. This is a favourite resort of the lads and lasses of "Merrie Carlisle" in the fruit season, and nice tasteful arbours, covered with Honeysuckles, Roses, Clematises, and Ivies, are provided for their accomodation. Grapes for market are also grown, and a choice selection of ornamental trees and shrubs. Some discussion has recently taken place about the proper formation of town squares, and the due proportion and disposition of lawn, trees, and walks. An example executed by Messrs. Little & Ballantyne on the Duke of Devonshire's property in Chatsworth Square, in which, so far as planting goes, the present and the future, have been successfully studied, will be worth a visit to those interested in such matters, as it was only finished during the past spring. Portland Square will also attract the visitor's eye. Should the stranger, tired for the nonce of flower shows and the crowd, inquire in Carlisle, "Where is the best place to go to for an outing?" nine times out of ten the answer would be, "To Wetheral and Corby Castle," 4 miles from Carlisle. And as north-eastern trains run frequently in the course of the day to the spot, the opportunity can be easily obtained. Here rock and tree, and flowing water combine to make one of the loveliest scenes imaginable, and the visitor can roam at will in woodland walks, visit curious caves, and, guide-book in hand, muse on the glories of the past, until the scream of the steam-engine rushing across the beautiful viaduct which spans the Eden at this point, wakes him to a sense of the present.

Fig. 50.—Dendrobium wardianum, as grown in the gardens of J. G. Hepburn, Esq.

By the kindness of the liberal-hearted proprietor, Philip Henry Howard, Esq., the grounds are freely opened to visitors. About 13 miles further on the same line in the direction of Newcastle is Gilsland Spa, celebrated for its mineral waters, fine scenery, and historical repute, and consecrated also by the genius of Sir Walter Scott in his novel of *Guy Mannering*. Here also Sir Walter met his future wife, and the stone is shown where he is said to have popped the question. It is called the "popping stone." It is said to have a contagious influence, so, impulsive people, beware. In the neighbourhood are the fine ruins of Lanercost Priory, said to have been founded in 1116. Close in the neighbourhood is Naworth Castle, so intimately associated with Border history. It is the baronial residence of the Earls of Carlisle, and is open to visitors, who may spend many hours admiring its natural beauties, or examining the old furniture, pictures, and curiosities contained in the Castle. Eden Hall, the seat of Sir Richard C. Musgrave, Bart., is about 18 miles from Carlisle, and can be reached by the Midland Railway to Langwathby, which is about a mile from the Hall. The scenery on this part of the line is very beautiful, as the River Eden can be seen at almost every turn—here struggling between abrupt, rugged, sandstone rocks, there lying placid like a lake, reflecting the massive, undulating sea of foliage which towers above its bed. The Hall is situated in one of the fine level holms which at intervals skirt the Eden, and is a fine old building, of a square style of architecture. The grounds are extensive, and in keeping with the Hall. Two splendid specimens of Cedar of Lebanon will be noticed on the lawn, and form a striking feature in the place. The flower-garden is well-filled, bold and striking effects having been carefully studied, but, of course, the beds are suffering, like most other outdoor subjects, from the excessive rains. The park is well stocked with deer and highland cattle, and is extensive, undulating, and well-wooded. The gardens are close to the Hall, but are entirely hidden by a fine old avenue of Limes. The principal plant houses are on the outside, facing the park, and are filled with some fine specimen plants and countless decorative plants, which are here required in large quantities. Stove, Orchid-house, and greenhouse accommodation are largely provided, and Grapes, Peaches, Melons, Cucumbers, &c., are growing in abundance. Sir Richard and Lady Musgrave take great interest in the gardens and have lately made many improvements. It will be seen that Lady Musgrave is presenting a beautiful cup at Carlisle for the best dinner-table decoration, and as her ladyship is to be one of the judges in this class, it is to be hoped there will be a good competition, as the cup will be a splendid trophy for the winner to carry away.

—— A correspondent, writing from Brussels, informs us that about 9 P.M. on Tuesday, the 14th inst., a severe Hailstorm passed over the Ledeburg, or east side, of Ghent, smashing glass in all directions. Plants of Ficus elastica have not a perfect leaf left on them, all being cut through with the hailstones, which were as large as pigeons' eggs. The Azaleas standing outside had large branches broken off them, and Mangels in the fields look as though they had had a harrow run over them. The loss from breakage falls very heavy upon many of the smaller nurserymen.

—— The *Denver* (Colorado) *Tribune* of August 2 contains some particulars respecting "the Hayden Exploring, Botanical, and Surveying Party," which had arrived in that town. The party consists of Sir Joseph Hooker, President of the Royal Society and Director of the Botanical Gardens at Kew; Lieutenant-General Strachey, R.E., and Mrs. Strachey; Professor Asa Gray, of Harvard University, the leading botanist of the United States, and Mrs. Gray; Professor Hayden, a geologist who is charged by the United States' Government with the Geological Survey of the Territories; Mr. James Stevenson, Professor Hayden's principal assistant; and Dr. Lamborn, Vice-President of the Denver and Rio Grande Railway. The English members of the party were invited by Professor Hayden to accompany him on his official survey of the Rocky Mountain district and other parts of the United States territories, the object of the botanists being to make botanical investigations, especially upon the character and distribution of the forest trees. The *Denver Tribune* reminds its readers that Sir Joseph, then Dr. Hooker, was the botanist of Sir James Clark Ross' celebrated Antarctic expedition. He afterwards explored India, especiallythe Himalayas; has made scientific explorations in Palestine, Morocco, &c., and for his services to science, and especially for his work in India, was recently made a Knight Commander of the Star of India. Lieutenant-General Strachey, who served thirty years in India, principally in the administration of the public works, is now a leading member of the Council of India. He made a full survey of the province of Kumaon in the Himalaya Mountains, and being much devoted to geographical and meteorological researches, is naturally very much interested in the great Rocky Mountain region. Professor Gray is now making a second visit to the Rocky Mountains, in which, as a botanist, he takes great interest. He wishes to visit Gray's Peak, named after him, and also the adjacent Torrey's Peak, which was named after his late associate, Professor Torrey. Mr. J. Steyenson has been associated with Professor Hayden for the past twenty-four years in his researches and examinations from our southern boundary to New Mexico. Dr. Lamborn is an accomplished engineer, mineralogist, and metallurgist. Southern Colorado has already been explored, the mountains above George Town, Berthoud's Pass, &c., are now to be visited, and then the party will move on to Utah, Nevada, and California, for a rapid reconnaissance.

—— We hear from Mr. Croucher, gr. to Sir Patrick Murray, at Ochtertyre, Crieff, that the rainfall there between 11 A.M. on Saturday last and 9 A.M. on Tuesday, was 2.75 inches; and that owing to such excessive wet, the small fruits have all decayed on the bushes.

—— Our Carlisle correspondent, writing on the 21st inst., remarks that it had rained there unceasingly for three days and nights, doing great damage to the corn crops and Potatos.

—— We are informed that the secretary of the Gardeners' Royal Benevolent Institution will, by direction of the committee, visit Carlisle on the occasion of the forthcoming show, with a view of extending the usefulness of the Society. Why should not some special means be taken on such an occasion to augment the funds of the Institution?

—— The great beauty and high decorative value of Anemone japonica and its varieties, when in full bloom, are qualities so often enforced, that it seems but vain repetition to again allude to them. And yet they are plants that will grow almost anywhere, that the wonder is they are not more frequently met with in road-side gardens both in town and country. In old-fashioned gardens they flourish, and lend a lustre to the summer glory of the flowers therein; but in modern gardens one looks for them almost in vain. As we write, a handful of flowers of A. japonica, intermedia, and alba are before us; the former is valuable because of its depth of rosy-purple, the latter for their soft colouring and splendid size. What enormous heads of bloom well established plants will throw, and consequently what a value they possess for cutting from! The bunch of flowers just referred to have been in water for nearly a week, and kept in a rather close sitting room, and yet there is no sign of decay or shadow of turning. The plants want to be put out into a rich free loam, and there let alone as far as disturbing their roots is concerned. A good mulching with manure during the summer works wonders; its effects are seen in the heightened colour and increased dimensions of the beautiful blossoms.

—— The Agricultural Returns which have been issued for Great Britain and for Ireland show the acreage under Wheat in the United Kingdom this year to be 3,311,859 acres, which is more than in 1876 by 196,202 acres, but less than in 1875 by 189,617 acres. The acreage under Barley is 2,643,511 acres, being less by 110,412 acres than in 1876, and less by 100,093 acres than in 1875. The acreage under Oats is 4,225,877 acres, or less by 59,719 acres than in 1876, but more by 60,001 than in 1875. The acreage under Potatos this year is 1,383,993 acres, or less by 1811 acres than in 1876, and less by 39,246 acres than in 1875.

—— Some time since we alluded to the success which had attended the efforts of Mr. James Allen, of Shepton Mallet, an enthusiastic amateur florist, to obtain seed from the shy Cheiranthus Marshallii, a beautiful hardy perennial that is believed to have resulted from a cross between Cheiranthus alpinus and Erysimum Peroffskianum, a belief that is entirely borne out by the appearance of the progeny raised from Mr. Allen's seed. The majority have a perennial habit, as is evidenced by the side growth formed at the base, but some could not be distinguished from plants of the Erysimum. With many the blooms are larger than is found in the Cheiranthus, and whilst some have flowers of a deep orange colour, others have flowers that could not be distinguished from those of the seed parent, Ch. alpinus. One particular feature marked these seedling plants, viz:—they possessed a very prolonged habit of flowering, and if cut from, would continue to throw out other trusses of bloom.

—— A leaf of a species of Spiranthes lately received at Kew from Trinidad, infested with a Parasitic Fungus, has just been forwarded to us. We naturally turned to Uredo confluens var. orchidis, but on examination we find the parasite is quite different, and does not belong to the same genus. It is, in fact, a species of Trichobasis, and is peculiarly interesting as occurring on a plant so lately imported. As the species is at least undescribed, though it is believed that it has before occurred on Orchids in cultivation, we take the present opportunity of characterising it. As the specimen was obligingly sent to us by Mr. R. Irwin Lynch, we have no hesitation in recording it with his name attached:—*Trichobasis Lynchii*, B., macalis parvis pallidis; soris sparsis raro confluentibus; pseudosporis flavis obovatis pulcherrime echinulatis, stipite brevi. *M. J. B.*

—— A meeting of the inhabitants of Kew and Richmond was held on Tuesday at the Kew Institute for the purpose of recommending that the Gardens be opened at an earlier hour, and that the present unsightly wall, which has just been raised 3 feet, be removed. The Rev. C. P. Nott, vicar of Kew, occupied the chair. Mr. White proposed the following resolution:—"That the Royal Gardens at Kew having been dedicated to public use and enjoyment in the year 1840, and from that time maintained at the public expense, it is the opinion of this meeting that the same facilities for their free enjoyment should be afforded as at Hampton Court Gardens, Battersea Park, and other places, and that the present restricted hours of admission on week-days—viz., one o'clock till sunset—are arbitrary, unnecessary, and quite out of harmony with the spirit of the age, and this meeting hereby pledges itself to use all constitutional means to procure the opening of the Gardens at ten o'clock in the morning, without in any way interfering with the existing regulations regarding the houses." The motion was carried with acclamation. Mr. Cross next proposed—"That in the opinion of this meeting the present brick wall bounding Kew Gardens in the Richmond Road, which has been recently made more unsightly by being unnecessarily raised, should be removed, and a form of enclosure adopted similar to that in use at the public parks and elsewhere, thereby giving increased light and air, and adding very much to the improvement of so important a highway." Mr. Layton seconded, Dr. Sellé supported, and the motion was carried. Mr. Denton proposed and Mr. Stock seconded—"That a permanent Committee be appointed to give effect to the foregoing resolutions, with instructions to take such steps during the next Session of Parliament as they may be advised." The resolution was carried unanimously. Dr. Atkinson proposed and Mr. Fletcher seconded—"That a copy of these resolutions be forwarded to all the metropolitan Members of Parliament, the members of the Home Counties, and the various boroughs in the same counties." Mr. Peter Watson proposed—"That a fund be raised, to be entitled the 'Kew Gardens Public Rights Defence Association Fund,' and that an account be opened with the Richmond Branch of the London and County Bank, in the names of the treasurer and two members of the Committee." A committee was then appointed and the meeting broke up.

—— In a lengthy article on the Instinct of Plants, in the *Transactions of the Natural History Society of Modena*, Mr. Riccardi comes to the conclusion that plants exhibit a kind of instinct in their various phenomena of movement. That is to say, the

periodic movements of Desmodium gyrans, the dropping and folding together of the leaves of Mimosa pudica, when touched or shaken, the fertilisation of Vallisneria, and other similar phenomena, illustrate instinctive action.

—— Among hardy spring flowering shrubs or trees Cercis japonica is deserving of a prominent place. It is much handsomer than the better known C. siliquastrum, being of more symmetrical habit; and the flowers are larger and usually more abundant. The flowers appear in early spring before the leaves are put forth; and after the beauty of the flowers is past the handsome foliage succeeds them. For the sake of the very distinct foliage alone this, as well as the other species, C. canadensis and C. siliquastrum, merits attention. This small tree is exceedingly hardy, having borne, without injury, 45° of frost, as we learn from Regel's *Gartenflora*.

—— Mr. Parker, of Tooting, informed us the other day that he had recently seen Habrothamnus elegans flowering in a remarkable manner at the St. Arnold's Vale Nursery, Clifton. It seems that a strong shoot had got through the roof, and stood outside uninjured all through the winter, to flower at the present time with the greatest profusion.

—— The great Summer Show of the Royal Horticultural Society in 1878 will be held in the Gardens at South Kensington on Tuesday, May 28, and will remain open until the evening of Friday, May 31. Schedules are now ready, and may be had on application to the Secretary. Arrangements are also being made for the provincial show next year.

—— The *Frauendorfer Gartenschutz*, several numbers of which are before us, is intended as a practical handbook for amateur gardeners. The work is published by Arenz, of Munich, in parts, is illustrated with coarse wood-cuts, and treats of such subjects as the following:—Manure, tools, pots, propagation, improvement, watering, window plants, list of plants and bulbs worth cultivating—descriptions of them and mode of growing, list and mode of culture of vegetables, recipes for preserving fruit, &c.

—— In a recent number of the *Bulletin Mensuel de la Société d'Acclimatisation* appears a very interesting and exhaustive article on the Culture of Sumac in Sicily. Sumac is a name known in commerce for the broken leaves and twigs of two or more species of Rhus—Rhus Coriaria and R. Cotinus. The former species only is referred to in the paper in question, and the article opens with a short description of it. In the second division of the article the region most suitable for Sumac cultivation is stated further on the choice of a site for a plantation, and the preparation of the land is considered as well as the minute details attendant on proper cultivation. A good deal of valuable information is given about the different qualities of Sumac. With regard to the colour, relative value, &c. The differences of the product, as obtained from different regions, is also considered. The statistics of the cost of Sumac cultivation in Palermo and Messina will be of value to many, inasmuch as information of this kind is not easily accessible. Altogether the paper is a valuable one.

—— Campanula pyramidalis and the variety alba are strikingly ornamental at Kew, both in the conservatory and temperate-house. They are mostly grown in 24-sized pots, and have from six to eleven stems each. Lonicera sempervirens var. minor is one of the best of the climbers in the conservatory, and is now flowering profusely. It has orange flowers in terminal clusters. Fuchsias appear as if intended to be seen from beneath, and nothing can be more beautiful than a plant of F. Venus de Medici here growing on the roof. Some Lantanas in this house are very richly coloured, but possess an unfortunate smell when bruised. Didiscus coeruleus is a very pretty annual both in flower and foliage, and may be included in the most choice selection.

—— According to a recent report from Chittagong, it seems that there is great danger of the Wood-oil or Gurjun oil trees (Dipterocarpus turbinatus) becoming in course of time exterminated. These Gurjun oil forests are described as occupying "the outer hills from one end of the Hill Tracts to the other, and this distribution is so marked, that this class of forest hardly ever appears beyond the first watershed running from the north to the south." The chief tree here is the wood-oil tree, which grows to an immense size. The oil is obtained by incisions made in the trunk 2 or 3 feet from the ground, and these trees are charred periodically by fire, so as to induce the oil to flow more freely. Besides the oil, the timber is very valuable for planking and boat building.

—— The Teak Trees in some parts of India are reported to have been considerably Injured of late by the appearance of a Grub. It is said to enter the young trees at about 4 feet from the ground, usually, but not always, at a knot. It eats round the trunk between the bark and wood, "then into the pith, and up and down the pith for not more than a foot in each direction." It has, however, been found upon examination that most of the trees fill up the part eaten away between bark and wood by fresh layers of sapwood. Trees thus attacked are liable to fall down, and if so, a new shoot comes from the stock. Many, however, grow on; but where the insect is still at work, a swelling takes place, which appears to be due to an effort on the part of the tree to fill the passage of the insect between bark and wood up again. This damage has been more particularly apparent in the Chittagong district; nevertheless, the conservator reports that at present it does not appear to prevent good Teak being grown in the locality.

—— In a recent number we drew attention to the discovery, by Dr. Beccari, of the botanical origin of the cane so well known in commerce as the "Rajah" Cane. We are now enabled, through the kindness of Mr. Louis A. Bernays, Secretary to the Queensland Acclimatisation Society, to add the scientific nomenclature to one or two other commercial canes mentioned in an article on "Walking Sticks" in our issue of February 3 last. Mr. Bernays says that "Midgen" is the native vernacular for Areca monostachya; and that the canes coming from Cardwell, and called "Cardwell," are the produce of a tropical growth of Calamus australis. The stick known in trade in this country as "Loya" is probably identical with the "Lawyer" of Queensland, which is believed to be also the produce of Calamus australis, but from the cooler country about Brisbane, and less robustly developed.

—— A very interesting account of the Medical Gardens at Bodicote, near Banbury, was recently published in the *Pharmaceutical Journal*. Henbane, Rhubarb, and Poppy are the principal crops grown over an area of between 60 and 70 acres in this little village. Mr. Usher has some splendid plants of Rheum officinale, now about five or six years old, and this species he intends planting largely, in which we think he is fully justified, seeing that a single plant dug up when we visited Bodicote a few days since gave a root weighing, when trimmed, somewhat over 31 lb.

—— In a recent number of the *Illustration Horticole* M. André remarks on the appearance presented by Orchids at Home. Accustomed to see them in our stoves, and at such a distance from the eye as to be readily examined, and their proportions estimated, M. André not unnaturally expected to find them in similar masses in a wild state. This, however, he tells us, is quite exceptional. In most cases the plants occur isolated, and amid the luxuriant and gigantic vegetation of the tropical and semi-tropical forests, their flowers appear small and even dull in colour. They are concealed amid a mass of gigantic or strangely formed foliage; they grow in the forks of branches as thick as casks, covered with a vegetation of other parasites. They are often high up on a rock, or a tall tree trunk. Each forms only a small item in the general effect. The Bromeliaceæ, on the other hand, impress their own special characteristics on the localities in which they grow.

—— The Leaves of the common Elm, Ulmus campestris, are, as every one knows, arranged in two rows (distichous), and, owing to a slight twist in the petioles, are in the same horizontal plane, the edges, supposing the shoot to be held erect before the observer, looking upwards and downwards. The young twigs, moreover, are flexuose, or zig-zag in direction, and the leaves are oblique, or lop-sided at the base, the larger lobe, as it were, fitting into the recess formed by the receding stem. In a shoot of Elm before us this state of things is altered; the twig is perfectly straight, the leaves are in two rows, the petioles are not twisted, and the blades are therefore not in the same horizontal plane, their surfaces look upwards and downwards, and they are equal, not oblique, at the base. This is a very pretty case, showing how, by very trifling changes, an adaptation to circumstances may be brought about.

—— Dr. Breitenlohner has communicated to the Imperial Academy of Sciences in Vienna the results of some investigations into the dependence of the Temperature of Trees on external influences, carried out in conjunction with Dr. J. Boehm. The following summary we borrow from the *Botanische Zeitung*. The temperature of the interior of a tree during the continuance of transpiration is the combined expression of the warmth of the air and soil. The warmth of the air is conducted transversely, and the warmth of the soil longitudinally. The longitudinal conveyance of heat is effected by the rising sap, as governed by evaporation. A lowering of the temperature of the soil during active transpiration causes a fall of the temperature of the interior of the tree. The influence of the temperature of the ascending sap decreases in the trunk from below upwards, and from the centre to the circumference. The extent of this influence depends upon the amount of solar heat conveyed horizontally, and is in exact proportion to the diminution in the size of the trunk, and the contiguity to its periphery. The lower part of the trunk remains under the full influence of the warmth of the soil as regulated by the rising sap. The upper limit of this influence loses itself in the ramifications of the tree. When there is no evaporation, and consequently no rising of the sap, the temperature of the tree is wholly dependent upon the temperature of the atmosphere. A simultaneous cooling of the underground and above-ground parts of a tree perfectly equalises, according to height, the sums of the two opposed forces.

—— In the *Berliner Monatsschrift des Vereines zur Beförderung des Gartenbaues* for July, in a report of a visit to one of the suburbs, mention is made of one establishment where Melons are cultivated on a considerable scale. In this particular establishment there were thirty-six twelve-light frames devoted to Melon culture. Each sash was about 40 inches wide, and sheltered two plants; and the average number of fruit in each frame was from eighty to ninety. Hot dung is the heating material employed.

—— Regel's *Gartenflora* for June contains a coloured figure of Xerophyta retinervis, a plant closely allied to the arborescent Vellozias, which give a peculiar character to the landscape in some parts of Brazil. It is a native of South Africa, and differs from a true Vellozia in having an unbranched stem, and few free stamens. The stout stem grows 4 or 5 feet high, bearing at its summit a tuft of linear leaves, something like a Cordyline, but clusters of leaves are frequently below the top. The lower part of the stem is densely clothed with the old brown leaf bases, which eventually split up into fibre. Protected by this fibre, the plant is constantly pushing out new roots at the top, which grow downwards until they reach the earth, like those of some Tree-ferns. From among the upper leaves appear the large solitary drooping purple-red flowers, which are nearly 3 inches long. This plant is a native of the mountains of South-Eastern Africa, at an elevation of 7000 to 8000 feet, and would, therefore, be nearly or quite hardy in the south-western parts of the United Kingdom.

—— It is pretty generally known that there is usually a greater degree of Vigour in the Herbage of Meadows and pastures immediately after a Crop of Fungi, and this is specially striking in the so-called fairy rings. But this increased luxuriance is of short duration, perhaps only one season, and is succeeded by a less vigorous condition than that which existed before the invasion of fungi. The spawn of the fungi spreads from a centre, each successive crop of the fruiting state of the fungus being on new ground, and farther and farther from the centre in a more or less complete ring. Fungi are stated to be richer in nitrogen than any other class of plants, and this appears to be returned to the

soil in a state available as food for other plants. How and from what source fungi obtain the large proportion of nitrogen they contain is still problematical. Some two or three years ago, Dr. J. H. Gilbert contributed some particulars of the appearance of fairy-rings on the grass and experimental grass-plots at Rothamsted. The way in which these organisms feed, as well as saprophytes (plants which are destitute of green leaves, and which draw their nourishment from decaying organic matter) and root-parasites, is still obscure, and offers a good subject for investigation by those who have the time and means to conduct a long series of experiments. Quite recently M. Bouché communicated to the Berlin Horticultural Society some observations on the growth of Lathræa clandestina, a species closely allied to our native L. squamaria, and its influence on the development of the grasses and other plants forming the turf in which it was growing. This species of Lathræa is a native of Western Europe, and is commonly parasitical on the roots of Oak trees. A specimen of it was obtained and planted out in a meadow, which is often submerged, where it grew and bore perfect seeds. These were scattered about in various parts of the botanic garden, and sprang up, the young plants attaching themselves to the most diverse nurse-plants, such as Gentiana lutea, Willows, &c. The remarkable thing is, says Bouché, that everywhere in the meadows where it occurred the other plants with which it was associated were much more luxuriant than elsewhere in the same field. Dactylis glomerata, Poa pratensis, Ranunculus acris, and Rumex Acetosa were double and treble the height that they were in other parts. Bouché thinks this may be explained by the fact that Lathræa clandestina draws a great deal of moisture from a considerable depth in the soil, and parts with it abundantly where it is available for the use of other plants; and he recommends that experiments should be made by sowing it in meadows, with a view to obtaining a permanent increase in the crops. We have very great doubts whether permanently beneficial results would follow, and should hesitate about introducing a plant of this nature on a scale that would render its extirpation difficult, if it turned out in the long run to be injurious instead of beneficial. It is not stated how many years the Lathræa has been growing in the meadow, but it is stated that the crop of herbage in places where it occurs is three times as heavy as in other parts. In reply to a question, Mr. Bouche said that it preys indiscriminately on all plants, and that he had a specimen in a pot for nearly four years without any nurse-plant; but in the absence of a nurse-plant it gradually dwindles away and dies. It was incidentally mentioned that there was once found in the Berlin botanic garden a root-stock of Lathræa squamaria which was about a yard deep in the ground, and itself about a yard in diameter, and bearing hundreds of branchlets. It is supposed that its great depth was owing to a seed having fallen into a mole's hole. In connection with the above Mr. Bouché detailed his mode of procedure in cultivating this and some other parasites. As much compost, of a suitable nature, as is necessary to fill the pot in which the nurse plant is to be put, is taken and a small pinch of seed mixed up with it. In the course of time the seeds germinate at different heights, some of them quite at the bottom of the pot, some do not germinate for several years. Thus seeds of Orobanche lupuli, brought by Professor Koch, from the Caucasus, lay dormant for four years.

—— The genus Rhamnus includes some shrubs with bold foliage, as R. alpinus, for instance, though, generally speaking, they are not very ornamental. R. sibiricus, however, is now very handsome in the pleasure grounds at Kew, being covered with dull red berries.

—— When at Chiswick the other day Mr. Barron called our attention to a valuable new fertiliser which he has been trying there for some time, and of the merits of which he speaks in the highest terms of praise. This is the Elixir or Buffalo Horn Manure, introduced by Messrs. Taylor & Co., of Clapham, whose stock has passed into the hands of Mr. John Wills. It is exceeding light, and owing to its richness in nitrogen is quick and certain in its invigorating effect on all kinds of plants. Whether it is better than other horn shavings is we think doubtful.

ENTOMOLOGY.

The Cattleya Bug.—The injuries committed by insects upon vegetables may be classed under two separate heads—1st, those in which solid portions of the plant are removed, and 2d, those in which the sap or other fluid elements are withdrawn from it. In the first case, the insect must be provided with jaws for biting the leaves, twigs, or solid wood, and in the second, the mischief must be produced by an instrument for suction; and this dichotomous classification leads us, in fact, to the primary division of

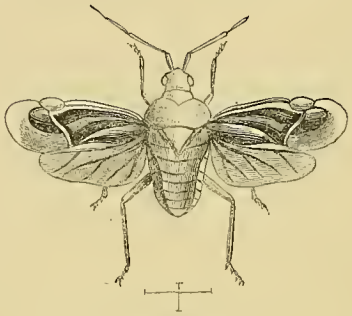


Fig. 51.—Capsus cattleya.

insects in general into two great groups—the Mandibulata, or insects provided with jaws for biting, and the Haustellata, or those which have the parts of the mouth transformed into a sucking apparatus. At the present time we are in a scare lest one of the biting species of insects, the Colorado beetle, should invade our shores and bite our Potato stems and young foliage; while the same plant was, a good many years ago, supposed to be in a fair way of extermination by the sucking powers of aphis vastator, and, in fact, the researches of Mr. Worthington Smith on the

Fig. 52.—Leaf injured by capsus cattleya.

late lamented Mr. Alfred Smee's collection of microscopical preparations, made during the prevalence of the Potato murrain, have shown that, although the primary cause of the disease was a fungus, the insect had really something to do in disseminating the mischief, by introducing with its sucker into healthy leaves the germs of the fungus which it had imbibed with its sucker in the sap of diseased plants which it had previously attacked.

Horticulturists have not to be told that sucking insects, by their numbers, have power to destroy a plant, or even a tree. We all remember how completely the Red Currant crop was destroyed a few years ago by an aphis, and the unchecked action of these insects on a tree, by sucking and killing the young shoots and buds, for instance, if a Rose tree, it often brings it into such a state of disease, as to cause its death.

The figures accompanying these remarks represent a leaf of Cattleya Aclandiæ, recently imported into this country by Dr. Alexander Wallace, of Colchester, from Bahia. It is covered with small discoloured blotches, caused by the punctures of a small cimicideous insect, which was found alive sucking it. This action was so extensive as to prevent the flow of the sap in the leaf vessels. The insect itself is not a native of this country, and was doubtless brought with the plant from Bahia, as we possess several nearly allied species from Brazil. It is an elegant little creature, of a bright orange colour, and very glossy, with the antennæ, eyes, and tibiæ black; the scutellum and upper surface of the abdomen dusky, the latter with an orange margin; the fore-wings (hemelytra) of polished steel blue, with the fore margin orange, and the apical membrane hyaline at the tip, and blackish at the inner angle; the hind wings are blackish, with black veins. It is one-sixth of an inch (two lines) in length, and five lines in the expansion of the fore wings. I believe it has not hitherto been described, and thus suggest for it the name of Capsus cattleya. It is nearly related to several pretty British species, such as C. danicus, &c., one of which is very fond of sucking ripe Raspberries, to which it in such cases imparts the peculiar disgusting flavour of the tribe to which it belongs. *J. O. Westwood.*

Home Correspondence.

Potatos Flowering.—The present season has been remarkable for the production of the greatest display of Potato bloom I have ever seen. It has been generally remarked, but none have attempted an explanation; neither can I, further than that I suppose the season has generally favoured the production of pollen. Of course the Potato in all seasons produces a certain amount of bloom, some kinds very profusely, others sparsely, whilst others rarely produce a flower, and never fertilise one naturally. I have found this year that the free-flowering kinds have not only bloomed abundantly, but have produced an enormous crop of seed Apples, and I could now gather up these literally by bushels. I have counted the produce of one bunch of bloom, as many as twenty seed pods—enough to produce nearly 1000 seeds. The sparse blooming kinds have blossomed very abundantly, and have fruited more or less, just as the pollen was abundant or otherwise, whilst the very rare bloomers have set a few flowers that have been artificially fertilised with foreign pollen, thus giving a chance to produce crosses such as seldom offers. I attribute to falling or otherwise of the blooms at an early stage entirely to the absence or presence of pollen, as I found all those that were artificially fertilised to set at once, whilst all the others in which there were no pollen dropped almost as soon as expanded. The early forms of the American Rose very rarely flower, and I greatly doubt whether until this year it has been possible to secure crosses upon any of them. Mr. Fenn endeavoured a few years since to obtain crosses with Extra Early Vermont, Snowflake, and Vermont Beauty, but failed for want of flowers or of pollen, and was enabled only to cross with Late Rose and the Willard. This season I have been able to secure seed Apples on the Extra Early Vermont by the application of pollen from Early Market and Hampshire Hero—a new first early white kidney, and I shall be much surprised if out of these I am not able eventually to produce an entirely new strain of early Potatos. A white Early Rose having the quality of our best white kinds would soon put the old Ashleaf out of cultivation [?]. Another cross of an Anglo-American kind has been obtained by fertilising flowers of Success with pollen of Woodstock Kidney—one of Mr. Fenn's finest new main crop varieties. Success is a new American sort, a robust Snowflake, and carries bloom freely; but as it is devoid of pollen, every bloom but the pair so fertilised has fallen. Such a cross as this should produce a remarkably fine strain of white kidneys suitable for market and main crop, and I have little doubt but that some such result will follow. In coloured kidneys I found size and very good shape in Superior—a new red American kidney, certificated at the International Potato Show last year. This has a fairly robust haulm, and flowers freely, although, like all other American kinds, it carries seed apples only on artificially fertilised flowers. This variety was crossed with Mr. Fenn's Bountiful, the most prolific, handsome, and best eating of all red kidneys, and it is but reasonable to suppose that the progeny of such a cross will be of a very promising kind. Another coloured cross, with entirely different sorts, has been obtained, the beautiful round Lye's Favourite being the seed parent, and the pollen

parent the fertile Blanchard. Both of these are very handsome show kinds, one being blotched with carmine and the other with purple, and may produce a very pretty strain. Porter's Excelsior has for the past two years proved to be the very handsomest white round Potato, but unfortunately its quality is far from being all that could be desired. In the hope of improving it, I have crossed it with Fenn's Early Market, and now regret that, while yet there was a possibility, I did not also use upon it pollen from Rector of Woodstock, as I regard this as one of the very best eating Potatos in cultivation. There is as much difference in flavour and in eating quality in the Potato as in the Apple, and those only can realise that who have a large number of kinds at hand for consumption. One other cross made at the last moment as likely to produce something good in coloured rounds is between Radstock Beauty, a new flattish white round, much flaked and blotched with red, and the new Scotch Grampian, a robust red of the Emperor type, that produces very handsome tubers. Some readers will smile perhaps, to hear that I have been intercrossing the Potato, Tomato, and the Solanum Pseudo-capsicum, of the results of which it is yet too early to write. An eminent nurseryman recently remarked that he hoped we should have no more new sorts of Potatos; perhaps he would not have appreciated such a remark had it been applied to Roses or Pelargoniums, for there is just as much good reason to continue to raise new kinds of one as the other; in truth, to stand still in these matters means stagnation to trade in horticulture. We must be moving in small things as in great ones. No one can tell what good kinds may grow out of these Potato crosses, nor what benefits to society may result. *A. D.*

The "Elixir," or Buffalo Horn Manure.—I observe an advertisement in the *Gardeners' Chronicle* for August 18, declaring the above to be "the very best manure in present use." And as this opinion is backed up by Mr. A. F. Barron, and other well-known gardeners, I would like to give it a trial. But before ordering a supply, I beg to ask Mr. Barron, or any of those whose names are appended to the testimonials in its favour, if they ever tried horn shavings from the combmakers, usually sold at about £10 per ton? If so, will they kindly state the difference between "the Elixir" and cattle-horn shavings. I have for years used the latter, and have at all times found it an excellent manure for Vine and fruit tree borders, orchard-house, trees, Pines, Strawberries, Vines in pots, &c. *J. McIndoe, Hutton Hall, Guisborough.* [We find that the analyses state that Buffalo horn is a trifle richer in nitrogen than most other horns or hoofs. Eds.]

Amaryllis reticulata.—I think this plant is too much neglected. It is a most handsome plant, both in flower and foliage, the white stripe down the middle of the green leaf making it very striking. It is a much easier plant to bloom than many persons suppose, if it is only treated right. It is too often over-potted, and the bulbs too deeply inserted into the pot. It should be kept quite above the mould; it should be potted in good peat, well-mixed with one-third of rough sand, and the pot well-drained, and then be placed in heat. When the bulbs are large enough to bloom, withhold the water for two or three weeks, and keep the plants in a cold house; then place them in heat, and they will soon show their flower-stem, which is very beautiful. I treat all this most beautiful family in the same way, and generally have two or three plants in bloom all through the year, and find them most convenient in 6-inch pots for drawing-room decoration. The best and freest flowers are Aulica splendens, vittata, Johnsoni hybrida, Prince of Orange, and reticulata. *William Smythe, The Gardens, Basing Park, Alton, Hants.*

Potatos Self-sown.—Having read the remarks on self-sown Potato seed in your last issue, I do not consider it unusual in such a mild climate as the South of Ireland, and particularly in dry peaty soils, for such to grow, as it were, spontaneously. When employed at Thomastown Castle, in the South of Ireland, I have frequently observed in the forcing ground in the gardens, where peat was used for blanching vegetables, and in other places where it was used as a protecting material on the roots of plants from the effects of frost, many kinds of tender plants grow naturally, amongst which were Potatos, Tobacco, Ice-plant, &c. The seeds must have come from places near at hand, where such things were grown and were preserved by the peat till the time of germination came. I consider sandy peat soil, when dry, has the property of resisting the effects of frost on roots and seeds of plants, and, therefore, it is a good material for protecting them, as it retains a high temperature compared with other soils. I put some Rose plants in stock in the month of January in peat, merely covering the roots temporarily to protect them till planted. I was much surprised to find, on taking them out three weeks afterwards, that they had made many new roots, although there was no appearance of growth on the buds or the heads, and the weather was not mild. I have paid much attention to the raising of Potatos from seed, not so much for the purpose of obtaining new varieties as to prove if new kinds would resist the blight. The only difference I found was that the new kinds were generally of a more vigorous growth, and resisted the disease longer. Some of the new kinds were grown from French, and some from American seed. *John J. Geoghyan, Liverpool.*

Carya tomentosa.—The branch and fruit sent herewith are from Carya tomentosa; this and the C. amara, and also the Black Walnut, are fruiting here very freely this year. They are making magnificent trees. It is a matter of wonder they are not more frequently planted. *G., Bath, August 21.*

Crawford's Early Peach.—This variety "which is not so highly esteemed generally," has withstood the effects of this inclement season better than any other variety which we cultivate, which comprise the following kinds:—Royal George, Early York, Rivers' Early York, Belle Bunce, Stirling Castle, Dagmar, Early Beatrice, and Early Silver, and this is a fact worth recording. *George Thomas Miles, Wycombe Abbey.*

Severe Thunderstorms in East Anglia.—The week ending August 18 was distinguished by the number and violence of its thunderstorms, and the heaviness and amount of its rains. During the whole period the electrical state of the atmosphere has been unsettled, and that over almost the whole country. Suffolk was visited by two or more very severe thunderstorms, that on Wednesday spending its chief force seemingly in the neighbourhood of Hadleigh and Newmarket, and the Thursday storm choosing the town and immediate neighbourhood of Bury St. Edmunds for its centre. The latter storm lasted from 4 to 6 P.M., almost without intermission, and reached its climax a few minutes before 6. About that time two trees, a Poplar and an Ash, were struck at the two opposite sides of the town, and a cottage in the town itself. In the latter the lightning seemed to have come down the chimney and carried away the wooden mantelshelf and a few of the bricks, making its exit by the open door, and also breaking some squares in the window. An old person who sat by the fire at the time felt the lightning singe his hair, but was otherwise unhurt. The Poplar tree was struck on one side, and part of it splintered off in the usual way with trees struck with lightning. The Ash was struck about ten feet from the ground, the tree rent considerably in both directions, and, being hollow at the spot where struck, and containing starlings' nests and refuse, was set fire to by the lightning, and continued to burn fiercely from 6 o'clock to 10.30, or more than four hours, when the head and upper part of the trunk fell with a great crash. The tree was a very large one, and being close to the town it attracted a great many people. It burned with a fierce red light, every now and again giving out jets of flame almost like fireworks, and as if the lightning had left some gaseous matter in the tree. Over a small area having Bury for its centre, a severe hailstorm fell, lasting less than ten minutes. The rain was the heaviest I ever remember. Walks, terraces, flower-beds, borders, grass, lay all flooded, a depth of from 4 to 6 inches. Another curious incident happened in these gardens. In a house occupied partly with a collection of bulbous Begonias there was a broken square of glass. The lightning entered through, seized and cut off a large branch of one of the plants, an inch or so above the ground, leaving a clear horizontal scar, as if a sharp piece of hot iron had been suddenly drawn through the limb, which was nearly half of the entire plant. These severe storms, rains, and the close, disturbed state of the atmosphere are telling fearfully on the Potatos, which are going very fast indeed. They are also very injurious to the grain crop, and make harvest operations drag slow. To-day, however (August 21), the air is cooler and clearer, and a brisk west wind blows, and corn is being stacked in all directions. *D. T. Fish.*

Mimulus cupreus and maculosus are things that have done very well this year with plenty of moisture; they have made rampant growth and flowered, and still are flowering very freely. A pinch of seed should be sown in April in a box or pan, and when big enough they should be pricked out in the beds they are to occupy without any more ado. This is all the work necessary for them. They are very beautiful and interesting when coming into flower, so varied are the colours and forms of the flowers. They are perfectly hardy if protected with a layer of leaf mould or ashes. *K.*

Beech Mast.—The Beech trees in the plantations here are this year bearing prodigious crops of mast, so much so as to look quite brown with them at a distance. In general, the Beech only bears good crops of mast at intervals, but I have never before seen them so loaded as this year. The wood pigeons and wild ducks will not want for food this autumn and winter, for they feed ravenously on them in the woods here when the mast is plentiful. The Spanish Chestnut has flowered much later than usual this summer, and there is not much chance in the Midland Counties of any fruit ripening. It is only in the very warmest summers and autumns that the fruit here gets to any size and ripeness. The Walnuts in this district are a very thin crop, and there are very few to be had for pickling purposes. *William Tillery.*

Lobelia, St Martin's Blue.—Notwithstanding the very heavy rains we have had this season, this Lobelia has remained compact in habit and true to its colours; not a flower or leaf among the thousands of plants I saw at St. Martin's on July 30 had sported in the least. The rich blue of its flowers and fine dark bronze foliage stamp it the first Lobelia of the day, and I think Mr. Ross has good reason to be proud of the way his seedling has stood the trial of such a season. *J. Marshall, Montrose.*

Cucumbers eaten by a Cat.—In reference to this subject, another correspondent says he knows of an exactly similar experience with a dog. The dog, however, was not suspected; but he was at length caught in the act of eating the Cucumbers with as much apparent relish as meat. [Eds.].

Sedum glaucum.—To lovers of raised edges of carpet beds I find this one of the most elegant and most useful of plants. If planted before laying on the Echeveria glauca, it gives a fine finish to the beds, and is easily kept in order. It is easy to increase, and will stand any amount of hot dry weather. I have two large beds treated in that way. *William Smythe, The Gardens, Basing Park, Alton, Hants.*

The Premier Strawberry.—I can fully endorse all "A. D." said respecting this variety in the *Gardeners' Chronicle* of June 30. It is a first-class variety. The crop on our heavy soil has been good. Fruit large, well-coloured, but the flavour not so good as last year. The heavy rains at the time the fruit was ripening, no doubt, was the principal cause. Vicomtesse Héricart de Thury has done well with us. Fruit large (for the kind), and the crop very heavy. I have picked 1 lb. of large, well-ripened fruit at one time from a plant two years old. I consider that the two kinds mentioned are not to be beaten for early work. *J. Weaving, The Gardens, Byletts, Pembridge, Herefordshire.*

The Weather in Yorkshire.—In addition to the disastrous failure of the fruit crop in the north of Yorkshire, we are now witnessing a complete failure in the flower garden. The late cold spring caused the planting out to be very late, and then the north-east winds stung many of the tender plants past recovery, excepting in very sheltered places. The Pelargoniums here have not done well; the tricolors are certainly wrongly named this season, and the dripping weather for the last five weeks has destroyed all the bloom on them, and no fine weather can make up the loss now, as the nights will be too long and too damp. The Coniferous plants are the only plants that seem proud of the weather; those certainly do look well. The few Apricots we have can never ripen; in good seasons, if they do not ripen before or about the 25th of this month, they are of little worth. Apples are very late and small, and not likely to be more than half the usual size. The rain we have had this season is nearly 7 inches in excess of last year, and is likely to be very disastrous to the corn crops in this part of Yorkshire. On August 8 we had a severe hailstorm, which completely riddled the Lettuces, Turnips, French Beans, in fact, all soft leaves, and laid much of the cereal crops. On August 14 we had another thunderstorm, and 1 inch and twenty-seven hundredths of rain fell in one hour and twenty minutes. The next day brought another severe storm, but in this we did not suffer so much as our neighbours; but the half-hour's rain left us just half an inch. It has rained on sixteen days of this month; to-day we have had a regular downpour, and I fear at 9 o'clock to-morrow morning I shall have to add a large figure to the amount already down. I may add that the Potatos have become badly diseased in the last week. If we have no change very shortly it will be very serious both for the corn and Potato crop. *William Culverwell, Thorpe Perrow.*

Potatos.—The Potatos now in use here, the Dalmahoy, are very good, but, I am sorry to say, the disease is spreading rapidly throughout the neighbourhood. This has been the wettest season I ever remember. One of the oldest inhabitants I know says there has not been such a season since 1840. Very few of the Potatos flowered, and the few blooms that came dropped prematurely. The Regent varieties do very well here. I have this year planted about half an acre of Patterson's Victoria (imported seed), they are at present looking well and apparently

free from disease, although one-third of the tubers refused to germinate when planted. *W. A. Emery, Kilkea Castle, Magenry.*

—— Notwithstanding the use of "Salus" and other remedies that have been suggested from time to time, nothing appears to arrest the spread of the Potato disease, which during the past week or so has shown itself in the most virulent form. Crops that looked flourishing and well, and were apparently without a speck during the early part of the month, are now leafless, and smell most offensively, but as yet I do not find that it has affected the tubers to any serious extent. That it will do so is only too certain, and it is quite lamentable to look on the gardens and fields round about, and think of the loss the labouring classes and the country at large will sustain from the havoc the disease has already wrought, for, should the tubers remain sound, the check received must lessen the bulk at least one-half, as all the late kinds were in full growth, and will not now swell any larger. If we are to stamp out this disease, it must be done by growing early varieties that can be lifted and harvested by the end of July or middle of August, as it is generally about that time the dread spot first makes its appearance. There would be a double advantage in doing this, as the ground would be set at liberty for other crops which would pay far better than allowing Potatos to stand till the autumn, and run the risk of losing the greater proportion. Fortunately we have among the early sorts several of first-rate quality, and that are very productive and good keepers, and why people should persist in growing others year after year with the same unsatisfactory result is incomprehensible. Most of the American kinds are very precocious and great croppers, and it is to be hoped that they may prove useful for crossing with some of ours to impart these good qualities, and infuse fresh strength and vigour, as no doubt they will, if those selected to breed with them are judiciously chosen. It is evident, from the experience of the past thirty years, that this is the only way to fight the disease, as it would leave nothing for the fungus to exist on unless, unknown to us at present, it lives on the foliage of other plants, and begins to propagate itself at the season we see it. The Potato must have had a wonderful constitution, considering what it has had to go through with disease and bad treatment, or it would have been worn out from sheer exhaustion long ago, for generally when the crops are lifted they are huddled together in large masses, where they sweat and get warm, and continue to sprout, till they are robbed of much of their vitality. This should not be allowed to take place, and may easily be prevented by storing them in shallow hampers in any cool place where air can be freely admitted, so as to keep the temperature as low as can be done during the winter without getting them frozen. Stored in this way the tubers lose none of their weight or energies, but start slowly and strong at the proper season, and afford double the produce they do after having expended themselves in premature sprouting. By paying more attention to the storing and growing only such kinds as can be lifted early, I am strongly of opinion that the disease may ultimately be stamped out, or so far held in check as to do but little damage; and I would, therefore, urge on all who have anything to do with cultivating the noble tuber, to give this matter the attention it deserves. The best thing that can be done now is to at once set about securing those that are sound, and to utilise such as are not by boiling them and pounding them up while hot, with plenty of coarse salt strewed amongst them as the operation proceeds. Managed in this way, and shut up close from the air, they keep fresh and sweet for a long time, and form an excellent diet for pigs, to mix with bran or meal, on which they soon fatten. Any that are intended for seed should be left on the ground for a few days, till their skins set sufficiently for them to be handled without being damaged, when they should be laid thin in any open, light, airy shed till the autumn, to be then transferred to safer quarters. Many think that if Potatos are lifted before they are ripe they will not keep, but this is quite a mistaken idea; for if treated as above they do so equally well with any that are fully mature. This I have proved again and again, and I always make a point of digging the whole that are required for seed directly the disease makes its appearance, and by so doing it is very rare that it affects any of the tubers, which if left for a few days after the leaves and haulm are stricken would become tainted and soon rot. *J. S.*

The Potato Disease.—What might be regarded as almost a phenomenon in relation to the Potato disease, was noticed here on the morning of last Wednesday week. Previously the Potato had looked well, and had maintained a fairly vigorous foliage, but on looking over the tops that morning, whilst yet moist with the heavy dew and white mist that prevailed, I found that all the leaves and stems were covered with the fatal spot, literally reeking with decay, and when the hot sun came out the haulm was charred as though it had been burned. It was as though a destroying agent had passed over and dealt forth disease and death in a few hours. To many persons who have been profound believers in the electrical theory this sudden attack of the disease will be looked upon as proof positive that electricity was the cause, especially as the atmosphere was during the previous evening heavily charged with it, lightning being constantly present in the clouds. I rather attribute it to the prevalence of the soft, thick, white mist and heavy dew, perhaps the first of such visitation we have had all the summer. The late heavy rains best served to wash the fertile spores of the Peronospora from off the leaves, but this heavy dew just served to germinate them and promote their rapid expansion, hence the millions of spots observable that morning. I too greatly fear that we shall soon hear sad accounts of the state of the Potato crop, and unless the dreaded beetle soon appears it will not find a green leaf to feed upon. *A. Dean, Bedfont.*

Rating a Vinery.—Will you kindly favour me with a little information, regarding the rating of Vineries. I put up a large one last season which cost £373 for the building alone, which sum I stated to the assessor. I also stated that it would be unproductive for three years. I may mention that the produce is to be sold, but in the face of that, my statement, the assessor has sent me a paper assessing me for £30 per annum; which will amount to a considerable sum as proprietor and tenant; I also pay a feu yearly for the ground connected with it amounting to £8 3*s.* 4*d.* As I think they have overstretched the mark, perhaps you will be able to assist me with some information, as the same law holds good in Scotland as in England. *W. Harley, George Street, Perth.* [It is impossible for us to say at what exact sum Mr. Harley's vinery should be assessed; but when appealing to the Court he might urge the following arguments. 1. The vinery was built for a special purpose, and, therefore, the temperature required for Grapes, and even the plan of the house, render it useless for other purposes. 2. From the nature of the produce intended to be cultivated, no return will be made for three years. 3. In the face of this last fact, it is obviously not the intention of the Act that the vinery should be rated as a "productive concern" at present. 4. In accordance with the intention of the Act, the sum at which the vinery should be rated is the amount of what it is worth now to any one desiring to grow Grapes; not what it may be worth in three years' time, nor what it would fetch if turned to other uses. 5. It is now nothing more than a "warehouse" for the roots and branches of the Vine, and on the principle of decided cases should be rated as such, and not as a productive vinery, which it may be in the future. No cases are to be found deciding the question of the rating of glasshouses. Market gardens as a rule are the highest rated of any land because they are so profitable, and because their situation in proximity to a town makes them specially valuable. (*Brown on Rating.*) Eds]

The Influence of the Bud on the Stock.—In connection with this subject I have a record of twenty instances which came under my notice last spring, in which the buds of Acer Negundo variegatum, affected the stocks on which they were growing, below as well as above the point of insertion. In each case there were several shoots disposed on all sides of the stem, with all their leaves variegated somewhat in the way of the variety propagated, and many of these leaves I could not have distinguished from the others. I dare say these instances would have been lost to science had I not at that particular time been considering the subject of the flow of the sap, whereby I was prompted to instruct the men before they commenced to dishud, to leave untouched any variegated shoots that they might find. The proportion of affected to the apparently unaffected stocks was 20 to 1000. Four years ago I had twenty-seven common Ash stocks budded with Fraxinus americana aucubæfolia (so named from the way in which the leaves are variegated) at heights varying from 2 to 4 feet from the ground. Nearly all united readily and looked well until the following spring, when the majority of the buds separated and fell from the pieces of bark that were inserted with them; only three pushed into growth. At present they are all growing together as they did then, but two-thirds of the number are more or less completely inoculated with the colouring matter of the variety propagated, below as well as above where they were budded, and on all parts of the plants. One interesting feature in these instances of inoculation is that the variegation of the leaves of the stock and variety propagated is the same or similar; but, although such is the case with the Ash, I cannot see that the specific character of the leaves of F. americana have been transferred to the leaves of the stock, F. excelsior. From the instances above given, and others of equal importance recently and at other times observed by me, I have reason to believe that instances in which the bud and scion influence the stock are of more frequent occurrence than is generally believed, and are to be found if carefully looked for. But it is evident that no great physical change in the stock, such as specific alteration of the leaves, as an effect of the scion or bud need be looked for; and I doubt if it can reasonably be claimed that the stock exerts a greater influence on the scion than the scion does on the stock. It is true, as was lately mentioned in your paper, that Pears when grafted on the Quince are unnaturally gritty—a clear case of the transmission of the properties of the gritty-fruited Quince—but I don't recollect having seen or heard of a Quince-like leaf on a Pear tree. On the other hand, I have had considerable to do with the grafting and budding of portions of variegated plants on to green and more or less closely related stocks, and, although I have seldom seen their colour-peculiarity affect the stock, I have also less frequently seen the variegation disappear as a consequence of such union. *George Syme, Elvaston Nurseries, Borrowash.*

Orchid Sales.—The complaints made have done good service. I see in the last catalogue a query set against "doubtfuls," and the names of the vendors. In future where these are not given the buyer will know that he must look to himself. But it is necessary to protest against another practice. A short time since a quantity of Odontoglossum Alexandræ were sold in pots that showed fine old bulbs with young growths that appeared to be from those bulbs. Myself, Mr. Marriott, and others, bought, believing the plants to be as they appeared, estimating their value, as usual, by the size of the pretended parent bulb. An accident raised suspicion, and on examination of the plants, all of them were found to have been thus made up. I wrote to Mr. Stevens, calling it what it then seemed to he. With his usual anxiety for fair dealing in his rooms, he at once sent me the name of the vendor, of whom I have asked for an explanation. The answer in substance is that it is the "custom" with nurserymen so to deal with plants in pots. He says: "The custom of making up plants has been practised for very many years. I did not originate it, and when I have bought plants at Stevens's, and when my Orchid growers have told me afterwards, as they often have, when repotting the plants, that instead of being a single plant they were several little pieces, sometimes mere scraps put together, and sometimes small plants with large, I should have felt myself wrong to have reproached men occupying honourable positions that they had played a trick upon me and upon the public. . . . . I and my Orchid growers in the most innocent way have only fallen into the general custom. . . . . From the many plants I have bought from time to time it never entered into my mind that such a thing could be a deception." This is an ample explanation, and I accept it willingly. "Custom" is a sufficient excuse for the individual who acts upon it. But as a buyer and on behalf of buyers, I must protest against such a custom. It cannot be too soon abandoned, for now that it is known to exist buyers will be shy. *Edward W. Cox, Moat Mount, Mill Hill, N.W., Aug.* 18. [Mr. Stevens informs us that the "custom" objected to by Mr. Serjeant Cox was quite unknown to him, and that he does not believe it to be generally adopted by the trade. Small plants of about equal size and value are sometimes grouped together to form a mass for show or other purposes, but never, to his knowledge, with the intention to deceive buyers. Eds]

Foreign Correspondence.

Colorado Beetle in Canada.—Persistent picking by all the Potato growers in this neighbourhood has lessened the virulence of this pest to perhaps one-tenth of the damage sustained at the commencement of the present season, and this without poisoning our ground; and we beg leave hereby, for the benefit of any unfortunate cultivators of the delicious vegetable aforesaid, who may be visited by these creatures, to enter our solemn protest against the use of Paris green, or any other mineral poison, to destroy not only the offending insects but also the enemies now occupied in the destruction of the eggs, and bugs and beetles themselves. Not many miles from this place horses and cattle have been poisoned by eating the sprinkled haulm, and in the eastern provinces even the poor little sparrows, that have cost so much to import from England have been sacrificed to this mode of destroying the enemies they would have dealt with in the ordinary course of nature.

We have our usual assortment of grasshoppers of all sizes, from tiny ones of a quarter of an inch long to large ones of 2 inches dimension; but the number seems to decrease every year. A considerable proportion of them have wings, and whenever approached take to flight, displaying their dark green wings edged with a dullish yellow, and making a snapping noise with every motion.

Our prospect of Grapes and Plums is good, but for Apples only middling. *John Morren, Elm Farm, Minesing, near Barrill, Ontario.*

Ornamental Trees in Forecourt Gardens: What to Avoid.—Looking across the road at a neighbour's garden a few days ago, we saw the jobbing gardeners endeavouring to improve on Nature, and achieving that amount of success which usually falls to his lot—a piece of burlesque gardening. A line of six fine specimen Arbor-vitæs were flanked at each end with a single scarlet Thorn on a standard stem. These Thorns had made a free growth this season, and were a little ragged in appearance, and some of the branches overhung the pathways to the houses. One jobbing gardener thought he would imitate the form of the Arbor-vitæs in the matter of pruning the Thorns, and by means of a pair of shears, he clipped the heads short all round to give them a kind of globular appearance. With a few fell strokes he destroyed the natural character of the growth of the trees, and with that, in a great measure, the chances of blossom for next year. They are now most unsightly-looking objects, and the arboreal line of beauty is completely destroyed. Such then is one aspect of ornamental gardening from the stand-point of the jobbing gardener. Such a style of pruning should be avoided by Villa gardeners.

A few years ago, when coniferous trees were all the rage, it was the gardening fashion of the day to plant coniferous trees almost everywhere, and especially in forecourt gardens. Cedrus deodara, Araucaria imbricata, the Spruce Fir, and sometimes Cedar of Lebanon were prime favourites. In a great many cases the frost so destroyed the Araucarias that they had to be removed; but as a general rule the others did pretty well, and the Deodars grew with amazing freedom. But little thought was given at the time as to future space for the trees when the time of vigorous growth set in; and the consequence is that many of them have outgrown the space alloted them; and where there is space they have so spread their growths as to darken the rooms of the house, summer and winter alike.

The difficulty lies in pruning such trees; for if they be cut in much, the natural beauty and symmetry of growth is lost. Unless the breadth of the base of the plant corresponds to its height, a Cedrus deodara is not nearly so handsome and imposing in appearance as it otherwise would be. We know several gardeners who were once very proud of their Cedars till they overgrew the confined space allotted them, and now they regard them much in the character of a white elephant, and could wish themselves quit of them.

The courage that will boldly face some judicious thinning out is also sadly needed. When many forecourt gardens were originally planted, the great aim was to give them as finished an appearance as possible, and plants were put in thickly to secure this. But as they began to increase in size, and impede each other's growth, necessity arose for some thinning out, so that certain trees intended to become permanent objects should have ample space in which to make their growth and develope their natural beauty. But human nature appears to be in the main eminently conservative in these matters; but it is at a serious cost, of which a number of illustrations can be afforded in the suburbs of London and other places. The result is, the almost entire destruction of the symmetry of all the trees, owing to their having so grown one within the other. This idea was forcibly impressed on our minds by what we saw in the way of villa planting on the banks of the Windermere Lake a few days since. Coniferous plants had been largely used in laying-out grounds when residences were first built; they were planted as close together as ninepins, and now that size had been obtained without thinning, all that was presented to the eye was a higgledy-piggledy mass of varying forms and hues, without a spice of artistic execution to lend a lustre to the natural beauty of the individual specimens. The individuality of every example had been sacrificed to secure—a copse or jungle, for it was but little better.

If only some more intelligent oversight were given to the planting of fore-court gardens, the results would be much more satisfactory then they are generally. A few trees and shrubs, judiciously chosen and arranged should form the enduring features of the garden. They should be healthy, well-developed specimens, in order to lay the foundations of arboreal excellence. They should be planted properly too, an advantage which is too often denied to them. Then if it be necessary to furnish a garden speedily, let some quick-growing shrubs, &c., be mixed with them, but to be removed as occasion arose for freer breathing and growing quarters for the permanent examples. And while trees are growing into size, the spaces between them can be utilised during a good portion of the year for planting tall growing flowering plants, as Hollyhocks, Dahlias, Pampas-grass, Ricinus, Chrysanthemums, Sunflowers, Delphiniums, Phloxes, and many other things that will readily suggest themselves to the planter.

Apiary.

Ligurian, or Italian Bees.—I have heard so much about these interesting foreigners, and also read very much about them, written by those who, of all men, should certainly be the best judges, because they simply record their experience; and in these things, without doubt, practical knowledge is the most valuable. To explain my meaning, I have seen them described thus:—"These bees are larger, more beautiful and hardy, more prolific, and more industrious than the common bees; they swarm earlier and more frequently, are less inclined to sting, more disposed to rob, and more courageous and active in self-defence." If I had read no more than this short sentence, it is enough to make me desire to know more about this novelty. However, this is not all, for Mr. Brackett, an American apiarian, states:—"My experience thus far satisfies me that the Italian bee has not been over-rated. The queens are larger and more prolific; the workers, when bred in comb of their own building, are larger, and their honey sacs larger. They are less sensitive to cold, and are more industrious."

Langstroth declares:—"If I may judge from the working of my colonies, the Italians will fully sustain their European reputation. They have gathered more than twice as much honey as the swarms of the common bee. This honey has been chiefly gathered within the last few weeks, during which time the swarms of common bees have increased in weight, but very little. The season here has been eminently unfavourable for the new swarms—one of the worst I ever knew—and the prospect now is that I shall have to feed all of them, except the Italians." In a trade circular I see it stated, "Their beauty of colouring and graceful forms render them an object of interest to every person of taste. My colonies are daily watched and admired by many visitors. So far as my experience has gone, I find every statement in regard to their superiority sustained; they will no doubt prove a valuable acquisition to localities of high altitude."

My experience of these active and pretty bees was at first a rather doleful one. A young queen was presented to me, by a gentleman whom I had befriended on many occasions; it came a long journey by rail on a cold autumn day, together with about twenty Ligurian bees; I lost no time in transferring it to a strong healthy stock deprived for some time of their own queen. Apparently they took to their new sovereign with much joy, and seem pleased of their new queen; but judge of my disappointment to find her dead, laid by her sorrowful subjects, I suspect, near the entrance of the hive. I was wise enough, however, to preserve the black queen, for this fortunately saved my stock.

The following season I succeeded in procuring another queen, and succeeded also in transferring her to a stock. At the time, I rejoiced in owning nineteen strong vigorous stocks, fourteen of these were at home, the others were kept by a cottager in the country. Spring came, when I naturally expected my Ligurians would be active and prosperous; however, they were contrary to all my expectations, dispirited and indisposed for work. After waiting another month to observe the young bees, I was surprised to find none. The hive being an ordinary skep, I could not examine it to find a reason for this; however, they gradually, but surely, declined in numbers daily, until, about July, I do not believe a hundred remained alive. To make matters worse, several of the adjoining hives began to have the same dispirited look. At length, when it was too late, the dreadful truth dawned upon me, that it must be the foul brood. To make a long story short, I lost the whole of my apiary, for I was reluctantly compelled to destroy both the hives and bees. Upon making inquiries, I learned the queen was sent from a diseased apiary, if not from a diseased stock.

My bee-keeping had taught me one good lesson, which I should be rejoiced if I could teach every labourer in the kingdom, i.e., "bee-keeping is money-making;" so that I was not happy without the cheery hum of these industrious labourers in my little garden; and when I again got together a small apiary I also obtained a stock of Alp bees. My experience with these I am now about to lay before our readers.

1st. The most important point connected with them is, are they able to gather more honey than our common black bees? If not, why make any change? I think I can make it plain; at least, not a doubt rests upon my mind that they do glean far heavier stores than the black species. I was struck, when observing the Italian bees side by side with the black bees at the London Exhibition of 1872. When it was raining rather heavily on one occasion, the Ligurians were working as briskly as possible, whilst not a solitary black bee made its appearance. Not satisfied with this single day's observation, I went again on two other occasions, on damp, cloudy days. Very few of the black bees were working; on the other side, my newly-made friends were quite brisk, as if inclined to make the beautiful poem by Dr. Watts fallacious, for they improved the dark, dismal days, or hours equally well, as the shining "hours." After careful watching since this time, I have fully proved this willingness to work; they seem, if I may be allowed to use the expression which seems scarcely applicable to bees to be fidgetty and and full of energy, always on the move; even on the alighting-board they are continually moving about. Doubtless, there are black bees quite as energetic as the pure ligurian stocks, for I observe much difference in this respect. Now, if this is a faithful representation, they must naturally gather considerably more honey during the season than their darker-coloured sisters. You observe two tradesmen in the same line of business. One is a pushing, go-a-head man, ever scheming how to extend his connection, somewhat like the late wonderful London draper; the other is a quiet, though industrious man. You may go to his shop, if you like, and he will gratefully and courteously serve you well; but he puts forth no effort to attract fresh customers. Which at the year's end will have turned over the most money, and done the most business? What is true of the one case may also be made the rule in the other. Then, say I, if you can, procure the business-like alp-bees, and secure the largest possible yield of honey during the season. But stay; I wish to take you a step in advance of this, and state why I believe they are able to make the most of every hour.

Very careful experiments and observations have been made both in England and America, as to their collecting capabilities. Thus they are found capable of collecting from the red Clover blossoms, may be not the same quantity as can be gleaned from the white or Dutch Clover (Trifolium repens)—still if they frequent this Clover at all, it ought to be a feather in their cap, for the corolla is considerably longer in the red Clover, and the black bees generally pass it over for the booming humble bees. When the honey harvest is beginning to be less in quantity, they are noticed to be notorious robbers; woe be to the confectioners in the immediate neighbourhood of the apiary: if they do not keep their doors and windows closed, they suffer much from their depredations. I discovered this in a most unpleasant manner, when I first commenced to keep them. It was a close, hot, sultry afternoon—one of those dull days generally followed by a thunderstorm—when a grocer, a little distance away, came running for me to proceed to his shop to hive a swarm of bees. I was dubious about its being a genuine swarm; but judge my astonishment to find many thousands of my fine ligurians buzzing lustily about his shop. We opened the doors wide as possible, and I endeavoured to drive them out; though I was sorry, we killed nearly as many as would fill a small cottage skep. Again, one of these yellow insects found its way through a small round hole in the village druggist's window, where was exhibited for show a cake of very refined wax, probably 4 lb. in weight. I may just explain, refined wax, although a very saleable article from its pure appearance, is not quite pure bees' wax, for it contains about a sixth of its weight of olive oil; thus

it is slighly softer. Well, the bee carried a minute particle away on its thighs to the hive, and then brought several companions on his next journey to the window. In a few days they carried the prize completely away, without leaving an ounce, thinking, perhaps, it was the best policy, for we all know dead men tell no tales. However, to make my story short, when the chemist wanted his wax for some tidy housemaid to polish the old oak chairs, &c., it could not be found; of course he declared he put it there to exhibit the fact that his excellent stock was first-class—in fact, the best in the trade. It was some time before he discovered the real delinquents—not until a small jar of Narbonne honey had also well nigh disappeared, to be treasured up in the cells of the same hive of Ligurians. If they are unable to glean a sufficient harvest from one source, they, from their incessant activity, are not long in discovering the needful supply. Thus a strong stock of Alp bees are much more valuable as honey collectors than the black bees. I hope in other ways to prove their superiority upon returning to the subject in another article. *R.*

Reports of Societies.

Royal Horticultural: *Aug.* 21.—J. Colebrooke, Esq., in the chair. Mr. Andrew Murray announced the awards made by the committees, and made a few running comments on various subjects exhibited. The Santung Cabbage, brought up from the Society's garden at Chiswick, was specially noticed as a plant which had been first introduced from China by Mr. Fortune, but which did not grow well in this country. Mr. Barron had, however, succeeded in persuading it to make a good growth this season. Like the ordinary Cabbage of China, the Santung had no heart, but it was considered a great delicacy by the Chinese, and the best way of cooking it was to boil the leaves, strain them, and serve up with butter on toast. With reference to the varieties of Abies Engelmanni shown by Mr. Anthony Waterer and Messrs. Barron & Son, Mr. Murray stated that he believed they were all the same, but it was a difficult question to solve, and it was intended to submit portions of each to Professor McNab, of Dublin, for examination as the position of the resin channels, a characteristic in Conifers which he had made a special study of.

Floral Committee.—George F. Wilson in the chair. First-class certificates were awarded to day to Messrs. Veitch & Sons for Begonia Queen of the Whites, a broad, smooth, and pure white flower, thrown well up above the foliage, a welcome addition to the list of these attractive plants, and for Oncidium prætexum, a free flowering new species, in which the sepals and petals are brown marked with yellow, and the labellum yellow margined with brown. To Mr. John Fraser, Lea Bridge, for Ixora formosa, a garden hybrid with nice trusses of Indian yellow coloured blossoms. To Mr. B. S. Williams for Phaius Dodgsoni, a fine new East Indian addition to the genus, with terminal spikes of pure white flowers, the upper surfaces of the lips of which are of a pale cinnamon-red shade of colour. To Mr. Green, gr. to Sir George Macleay, Pendell Court, Bletchingley, for × Streptocarpus Greenii, var. delicata, white faintly shaded with blue, a pale-coloured variety of × S. Greenii, which is a hybrid between S. Saundersii and S. Rexi. To Messrs. Kelway & Son, Langport, for the following new varieties of Gladioli—Cymbeline, a fine, broad, and smooth rosy-pink flower with a white throat; Prince George, rich, deep vermilion-red, with dark crimson centre; the Odalisque, a very smooth white flower, marked with rosy-purple in a peculiar manner at the base of the petals; Charles Noble, scarlet, with a shaded white centre; and Baroness Burdett Coutts, a very pretty and distinct flower, pure white, and beautifully shot with purple on the lower petals. To Mr. Anthony Waterer, Knap Hill, Woking, for Abies Menziesii Parryana, a beautiful blue Spruce from Colorado, the identity of which has been under discussion in our columns. And to Messrs. E. & J. Perkins, of Leamington, for Begonia Empress of India, a magnificent new form, with large and very fine flowers of a deep blood red colour. Several fine new things were brought up from Chiswick, and the following were selected for awards of the 1st class:—Double Zonal Pelargonium Littre, deep rosy pink, deeper in colour than Madame Thibaut, but no improvement in other respects on that grand variety; double Zonal Pelargonium Lafayette, rosy carmine, and a fine bold trusser—both of these were raised by M. Lemoine, of Nancy; Abutilon Lemoinei, a free-growing and free-flowering plant, the blossoms of which are of fine size, and yellow in colour, a decorative plant well worth looking after; and Torrenia Fournieri, not so neat a grower as the better known T. asiatica, but more pronounced in colour, and with a very distinct yellow blotch on the lower segment of the flower. A Second Class Certificate was awarded to Mr. Green for Cœlogyne corrugata, a small white-flowered species, with a yellow-blotched lip. To I. Anderson-Henry, Esq., a Botanical Commendation was voted for a species of Primula from the Sikkim Himalayas, in which the leaves are small and sharply serrated, and the powdered flowers of an ultramarine blue shade of colour. In addition to the subjects before mentioned, Messrs. James Veitch & Sons showed a nice group of flowering plants, principally Orchids, and received a vote of thanks. Mr. B. S. Williams was also similarly treated with regard to a very fine specimen of Ixora Williamsii, in flower for the third time this season. Mr. Tong, gr. to J. S. Law, Esq., South Lodge, Southgate, sent a batch of dwarf, neat-habited, and free-flowering Begonias, of the type now becoming popular for bedding-out. Messrs. Kelway & Son received a vote of thanks for a handsome display of Gladioli. Mr. Cannell, of Swanley, sent two dozen bunches of cut blooms of the beautiful double pink Zonal Pelargonium Madame Thibaut, and also flowering plants of a good blue bedding Lobelia, named Brighton, grown under various conditions; and Mr. Parker, of Tooting, exhibited some cut flower sprays of the double pink-flowered variety of Rubus fruticosus, a plant but little known, but one of the most beautiful subjects in existence for planting against a pillar, and one that will thrive well where a pillar Rose would scarcely grow. Messrs. Barron & Son, Elvaston Nurseries, also showed a green and glaucous form of Abies Engelmanni, which is believed to be the same as the one shown by Mr. Waterer under the name of A. Menziesii Parryana.

The subject of the forthcoming provincial show at Preston was discussed by the committee, and the following resolutions were passed, and ordered to be sent up to the Council:—Proposed by Mr. J. Fraser, and seconded by Mr. J. Wills—"1. That this committee fear the interests of the Royal Horticultural Society and of horticulture generally will suffer unless a schedule of the proposed provincial show be issued as soon as possible." Proposed by Mr. T. Baines, and seconded by Mr. G. Baker—"2. That this committee wish to urge upon the Council the extreme importance of issuing this schedule at once, as any further delay will unquestionably be detrimental to the display, the want of this information being exceedingly embarrassing to intending exhibitors, as it prevents their preparing their exhibits so as to have them in good order for the occasion.—Signed on behalf of the committee, *George F. Wilson*, Chairman.

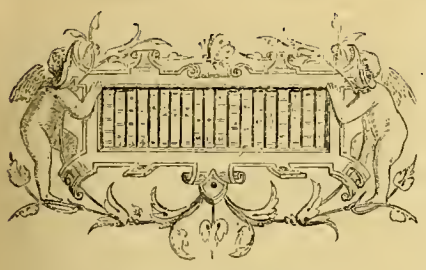
Fruit Committee.—H. Webb, Esq., in the chair. To Mr. Tillery, Welbeck, a Cultural Commendation was awarded for a fine dish of Victoria Nectarines, the fruits being of fine size and unexceptionable quality. Mr. Morse, gr. to W. P. Baker, Esq., Bromwell House, Burlington, Bristol, showed a white seedling Grape, the result of a cross between Black Hamburgh and the Muscat of Alexandria, but the committee did not think favourably of it as shown. Messrs. Kelway & Son showed examples of two Cucumbers under the names of Lord Beaconsfield and Prince of Wales, the former being a good form of Telegraph, and the latter too much like Daniel's Duke of Edinburgh to secure an award. A scarlet fleshed seedling Melon came from Mr. Tong, gr. to J. S. Law, Esq.; and a green-fleshed fruit named Incomparable came from Mr. Burnett, gr., The Deepdene, but both proved to be in poor condition. Are Melons generally doing bad this year? They are abad lot that are sent here generally. Under the name of the Stone Apple, a large, solid, and evidently very good variety, though not yet ripe, was shown by Mr. Louis Killick, Langley, Maidstone; and specimens of the Santung Cabbage, distinct, but a curiosity, and something like what one would expect from a cross between the Cabbage, Turnip, and Cos Lettuce. Madeleine Royal and Royal Muscadine Grapes also came from Chiswick.

West Wycombe Horticultural.—The sixth annual show of this Society was held in West Wycombe Park, lent for the purpose by Lady Dashwood, the patroness of the Society. The show was first established in 1871 for the encouragement of cottage gardening in this extensive parish, and, from a small beginning, has annually increased in usefulness and importance. Lady Dashwood has taken great interest in the Society from the commencement, both by an annual subscription, and by throwing open her beautiful park on the occasion of the annual show. The business of the show is conducted by a committee consisting of twenty-four working men, a certain number being chosen to represent each district of the parish at the annual meeting in April, subscriptions for members being 1*s.* each annually, entitling the subscriber to exhibit, and to a free ticket for himself, wife, and the members of his family under fifteen years of age. There were upwards of 600 entries for the present show, 206 being for Potatos, and nearly 2000 persons passed the gates during the day. The amount annually distributed in prizes is upwards of £20. The formation of the Society has been the means of energising the latent horticultural element which existed in an almost dormant state in the parish, as, since its establishment, a rapid course of advancement has been manifest, both with regard to the number of exhibitors and the quality of their productions, and as a show of this class it will now bear a favourable comparison with any of the kind in existence. To induce an interest in the proper cultivation of cottage gardens and allotments liberal prizes are offered, and the competition in this way is such as justifies much commendation. Another class, which also deserves every meed of praise, is that for the encouragement and cultivation of taste among the children in the way of nosegays of wild flowers; by reason of the surrounding district being somewhat fertile in this respect, some very beautiful bouquets are produced which help to render the show very attractive. Vegetables, which are the most important feature at a show of this description, were all that could be desired, embracing splendid dishes of Potatos, Onions, Carrots, Turnips, French Beans, and Scarlet Runners. Fruit, although somewhat sparsely shown, comprised excellent Apples, Gooseberries, Currants, and Raspberries. *Observer.*

Shepton-Mallet Horticultural: *Aug.* 14.—Although the flower-shows of our provincial towns have much in common and possess sameness of features almost wearisome to those whose duties take them to many in the course of the year, yet there are here and there found features that command attention and interest even for the professional *habitué*, whilst locally they are viewed with the most intense excitement and approbation. Shepton-Mallet has one feature peculiarly its own, for the annual flower-show is specially the fête day of the town and surrounding country, and from all parts the residential population flock in by thousands to visit the fête, of which, if the flower show is but one element of attraction, it is certainly the element around which all other minor attractions centre. Formerly one of the most popular shows of the West, it for various reasons suddenly collapsed, to be again last year revived, and this year to be continued with renewed vigour. Held on Tuesday the 14th inst., in a small but nicely timbered field adjoining the town, and in weather of the most delightful kind, the show was found to possess many features in advance over those of last year, a result that naturally afforded its plucky revivers many reasons for congratulation. But the phrase "plucky Sheptoners" is a well-understood one in the district, for where is there found the other provincial town that on the occasion of its flower-show promotes a town decoration. The Committee raises a large sum of money for its disbursement, which is expended in the erection at each entrance of the four principal streets that intersect Shepton of an evergreen Gothic arch; plants at intervals all through these streets Venetian masts, from which small flags are pendent, and also are hung from mast to mast festoons of evergreens; also between each mast are set into the sides of the streets tall heads of Spruce Fir, that look for the time as fresh as though growing on roots of Nature's provision. Many of the shop windows, and those of private houses, have their own special floral displays. A fair is held just outside the town; a town band is also engaged, and the Flower Show Committee put the climax on the local pluck by engaging from London, at a large cost, the splendid band of the Coldstream Guards, in order that the myriads of visitors may have added to the solid diet of the show the sweets of the choicest of instrumental music. To those in search of a little novelty, the Shepton flower show presents attractions well worthy of their attention. The show itself is held in a series of marquees, most of them wisely devoid of sides, in which are placed the respective open, amateur, and cottager classes, most of the exhibits being of good quality, the cottagers' especially presenting a most meritorious display. The open classes were made up of stove and greenhouse plants, Ferns, foliage plants, Fuchsias, Begonias, &c., of the ordinary type, the two best collections being the stove and greenhouse plants, and Fuchsias staged by Mr. Mould, of Pewsey, who is rapidly becoming a valuable supporter to the west country shows. Mr. Mould's Fuchsias, although not up to the Trowbridge mark, are yet fine, well-grown examples of this delightful decorative plant. Perhaps to visitors generally the cut flowers were most attractive. In the class for twenty-four Dahlias, Mr. J. Keynes, of Salisbury, was placed 1st with a collection of even and remarkably neat flowers, the most noticeable being Harriet Tetterel, deep violet-magenta; James Cocker, deep purplish crimson; Dauntless, bright orange red; John Macpherson, rosy purple; and John Neville Keynes, bright straw yellow. A very plucky amateur, in the person of Mr. J. Dobree, of Wellington, Somerset, was placed 2d to Mr. Keynes with a collection of blooms, such as is now too seldom seen out of a nurseryman's ground. In the class for twelve fancies, Mr. Keynes was again 1st, and Mr.

Dobree 2d. Roses were well shown by Messrs. Corp, of Oxford, and Keynes, Mr. Corp being put 1st with twenty-four threes, in which were capital examples of those favoured new Roses, Marguerite Brassac and Mons. E. V. Teas, also Louis Van Houtte, Marie Rady, Devienne Launy, and Marie Finger; Mr. J. Keynes was 2d, having in his boxes good blooms of the ever-fresh Alfred Colomb, Docteur Andry, Reynolds Hole, and François Michelon. In the class for twelve single blooms, Mr. Keynes was 1st and Mr. Corp 2d. Very good Asters, Hollyhocks, Gladioli, &c., were shown, but the Messrs. Kelway, in staging one of their fine collections of thirty-six spikes, naturally surpassed locally-grown Gladioli, although not staged for competition. The front row consisted of seedling flowers not before exhibited, several of great size and beauty, and of these the following were awarded Certificates of Merit:—Petrarch, a very even, compact spike; flowers large in colour, rich pink, flaked with bright carmine. Lord Shaftesbury, white ground, flushed rose, and flaked at the edge of the petals with deep purplish rose, a very taking flower. Hobart Pacha, a fine spike, the flowers in colour rich, rosy carmine. Shirley Hibberd, white ground, flushed with rose, and flaked with deep rosy carmine, a grand show variety. Richard Dean, a superb spike, the flowers in colour bright rosy vermilion; a very effective kind and Galopin, clear paper-white ground, rosy purple tip, the upper petals flaked with purple. The Messrs. Kelway also exhibited cut blooms and leaves of Hyacinthus candican, cut from a large batch of seedling plants, showing it to be a very fine border plant. It was worthy of notice that in the class for Begonias, small well-flowered plants, shown by Mr. James Allen, of Shepton, were awarded the 1st prize in preference to large-foliage varieties.

Amongst the cottagers' productions, the Potatos in the West of England invariably prove worthy of special attention. Thus in the class for half a peck of Rounds, a very handsome kind named Radstock Beauty was placed 1st, and a very nice dish of Climax 2d. In Kidneys, Ashleaf was 1st, and Lady Paget, a locally-named Lapstone, sometimes spelt "Padgett," was put 2d. Other curious names are found in Crack Waggons and Hard Cash, both white Kidneys. Scammell's Glory, Red Emperor, Red Breadfruit, and Bountiful were remarkably clean and handsome.



Notices of Books.

Popular British Fungi: *Illustrated.* By James Britten, F.L.S. *Bazaar* Office.

This work contains popular "descriptions and histories of the principal fungi, both edible and poisonous, of our country," and is, as its name indicates, a gossiping book on Mushrooms and Toadstools, the quotations ranging from Pickwick to Berkeley. As far as our examination has gone, the more scientific portion of the work is singularly correct; this, indeed, was to be expected, from the experience Mr. Britten has had as a writer and the opportunities he has had for exact work in his position in the Department of Botany at the British Museum. The work under review, therefore, contrasts favourably with some other popular works and essays on fungi, and should take a foremost place amongst popular handbooks. A very valuable part of Mr. Britten's work is its chapters on the folklore, popular beliefs, and superstitions regarding fungi. Its recipes for cooking, &c., gathered from all reliable sources, make the book one of the most complete of its class. It is illustrated with a series of woodcuts, not well drawn, and mostly copied from Mr. Worthington Smith's drawings in the British Museum; had these illustrative reproductions been as accurate as the letterpress, the work would have been far more valuable. We observe, too, that (with one or two exceptions) no sections are given with these cuts; this must be looked upon as an oversight, for even in the field is it often almost impossible to name fungi without cutting them longitudinally to display the attachment of the gills to the stem. A few of the cuts are copied from Dr. Cooke's *Plain and Easy Account of British Fungi.* These are not satisfactory, and the copy of Boletus edulis, on p. 61, though sufficiently like the original lithograph, is quite unlike Nature. Boletus edulis is one of the most substantial, bulky, and thick-stemmed of all Boleti, and not a comparatively thin-stemmed plant like the illustration, in which, too, the characteristic meshings of the stem are omitted, or not properly shown.

Under Agaricus personatus Mr. Britten questions Dr. Badham's accuracy in explaining the popular name of this fungus—viz., "Blewit"—as being derived from "Blue-hat;" but when our author remembers that the same fungus is known in the Midland Counties as the "Blue-bonnet," we think he will acknowledge that Dr. Badham was probably right in his surmise. Besides, Mr. Britten himself says, on p. 31, that "caps" is a common name in the eastern counties for all kinds of fungi. The blue colour on the stem of this fungus is of very little specific value, as it is often absent, and a large number of species found under Cortinarius constantly have the upper part of the stem blue in colour. In a future edition it may be as well to add, under Agaricus muscarius and its use in medicine, that there is a homœopathic preparation of this plant made for the cure of corns, and sold in chemists' shops in London. Several paragraphs in Mr. Britten's book have certainly taken us by surprise, such as the statement that the intensely acrid and dangerous Lactarius piperatus is "a favourite food of hares and rabbits." As far as our experience goes, no animals (as a rule) except snails, take acrid fungi as food, for whilst Mushrooms and mild fungi are eagerly devoured by rabbits, squirrels, and birds, the acrid species are generally found intact. The twin brother of L. piperatus (and the next species in the hand-books) is L. vellereus, and Berkeley tells us that "dogs suffer dreadfully" if they only bite this plant. The acrid milk is the same in both, and it seems at first sight a little strange (if true) that the favourite food of the hare should be such a deadly poison to the dog. Again, Russula lepida is said to change "in cooking to a bright green," and in this instance the change of colour "is an evidence of the good character of the fungi under treatment."

We look upon R. lepida as a somewhat rare fungus, and we have not tested its edible qualities; but the next time we meet with it we will not fail to test its value for the table, and observe the change of colour (if any) at the same time. Under Chantarelle Mr. Britten says most writers state the odour of the fungus to resemble Apricots, though our author has "not been able to detect the resemblance." The explanation of this is, there are two distinct varieties of the Chantarelle, one with an insipid odour and almost useless for the table, the other powerfully perfumed with an odour of Apricots, which it retains even after cooking, and so makes a most delicious dish. Speaking of the Giant Morel, Morchella crassipes, Mr. Britten says it has at present "only been found in the South of Devonshire, but is likely enough to turn up elsewhere." This species has of late years been repeatedly exhibited at the meetings of the Royal Horticultural Society and by the Woolhope Club from localities all over the country. It has also been found in Kew Gardens, and always grew in the late Mr. Smee's garden at Hackbridge. Mr. Smee has illustrated it in his *My Garden.* We have observed a few unimportant misprints, which can easily be set right in a future edition; but the book, taken as a whole, abounds with reliable information and gossip about fungi that must have cost the author much time and great pains to place together in the readable form in which he has presented it to the public.

Flora of Mauritius and the Seychelles, &c. By J. G. Baker, F.L.S. (Reeve & Co.)

This forms one of the series of *Colonial Floras* originally projected by the late Sir W. Hooker, and elaborated at Kew. Of these floras those of Hong Kong, New Zealand, the West Indies and the Mauritius, are now completed. Six volumes of the *Flora Australiensis,* a monument to the zeal of Baron Mueller, and to the clear sagacity and unwearied industry of Mr. Bentham, are also completed—the seventh and last volume, we believe, being almost ready for issue. Two volumes of the *Flora of Tropical Africa* have been published, and a third is nearly ready on the same plan as the *Colonial Floras,* and one volume of the *Flora of British India* has been elaborated, and a second is in a fair way towards completion. We have always thought it an unfortunate circumstance that these works were not drawn up, at least so far as the diagnostic characters are concerned, in the Latin tongue as used by botanists all over the world. By far the great majority of English readers who would seek information from them would have no difficulty in interpreting the dead language, which is, moreover, on all hands admittedly to be more convenient for precise and concise scientific descriptions than our own. On the other hand, foreign botanists would not experience the difficulty they do in pursuing their investigations. We believe the *Colonial Floras* have not attained that scientific repute on the Continent which their merits justify, solely for the reasons mentioned. It may be said that the floras in question are intended specially for English readers; but, in any case, we suspect a very large proportion, if not an absolute majority, of those who require to use these volumes are foreigners, and to most of those Englishmen who require to use the books, the Latin would be no hindrance. However, it is too late in the day to alter this now. Next to the invaluable *Genera Plantarum,* this series of books is the most useful that has emanated from Kew, or from what we may designate as the Kew School of Botanists, and proud may well be the authorities of that establishment at the work already done. Those only who have had a share in similar undertakings can properly estimate the time and labour involved in the preparation of these volumes, so that while we impatiently await the completion of the genera, and earnestly desire the more rapid progress of the floras of British India and of the Cape, we can but admire the evidences of skill and industry of which the already published volumes furnish such remarkable examples. May we add here an additional reason why we and others would rejoice to see the completion of the *Colonial Floras*? The colonies, no doubt, have their requirements, and it is right that they should be met, both from the point of view of pure science and economic botany. But we at home have our requirements too, and among these is the preparation of a new *Hortus Kewensis.* An authoritative catalogue of all cultivated plants with synonyms and references is becoming every day a more urgent want. In no place could such a catalogue be drawn up so well, or with such facility, as at Kew, and while we earnestly desire the completion of the *Colonial Floras,* we do but echo the feeling of all horticulturists in urging the speedy publication of a new *Hortus Kewensis.*

Mr. Baker's latest contribution to botany embraces the botanical census of Mauritius, the Seychelles, and Rodriguez. It is almost a pity that Bourbon was also not included, but probably the materials were not at hand in sufficient abundance. Moreover, our French friends might more appropriately undertake this task for their own colony. In an introductory chapter Mr. Baker gives a brief sketch of the physical geography of Mauritius, a tropical island about the size of the county of Surrey, but with mountains rising nearly to 3000 feet. So much is the island cultivated, that its original Flora is very materially abolished, and the ground, where not cultivated, occupied by foreign intruders, whose presence does not give a stamp of individuality to the island-flora, seeing that they are for the most part tropical plants of very wide diffusion between tropical limits. The existing Flora is, therefore, a singularly mixed one, and owing to this admixture, and to the abolition of the aboriginal flora, speculations as to the history of the flora in the past and its relationship to the flora of Africa, Madagascar, India, &c., are rendered but little trustworthy or altogether vain. The Seychelles have hitherto been far less known; they have a more distinctly tropical character, and yield several Pandani and Palms, which are now no strangers to our gardens; amongst them the so-called Thief Palm, Phœnicophorium, more appropriately called Stevensonia grandifolia, and Verschaffeltia splendida. Rodriguez, which was visited by Dr. Bailey Balfour, has been robbed of most of its botanical treasures by unsympathetic goats; but no less than thirty-six wild plants out of some 200 collected by Dr. Balfour are peculiar to the island, and among them three representatives of new genera. Of the total number of species known to be endemic, viz. 304, 22 per cent. are of Mascarene type, 6 per cent. African, 8 Asian, 14 common to Asia and Africa, and 21 common to the Old and New Worlds. The nine largest orders are Ferns, which comprise 168 species, Orchids, 79; grasses, 69; Cyperaceæ, 62; Rubiaceæ, 67; Euphor-

biaceæ, 45; Compositæ, 43; Leguminosæ, 41; and Myrtaceæ, 20. The total number of wild plants mentioned being 1058, belonging to 110 natural orders and 440 genera, so that the proportion of species to a genus in this flora is between two and three, and of species to an order between nine and ten. Of the manner in which the flora has been drawn up nothing but practical experience in the future can give an absolute test, but Mr. Baker's great experience, his name and repute, are ample guarantees that this volume will take equal rank with those of the series that have been already published. In the elaboration of the Orchids, Mr. Baker has had the assistance of Mr. S. Le Marchant Moore, and for that of the Palms and Pandani of Dr. Bailey Balfour, who made a special study of these difficult plants in Rodriguez.

Publications Received. — Popular British Fungi, by James Britten, F.L.S.—The Apple: Its History, Varieties, and Cultivation, by D. T. Fish.—Practical Dairy Farming, by G. Seaward Wilcombe.—Seaside Watering Places.—Fancy Mice: their Varieties, Management, and Breeding, by An Old Fancier—and Stock and Share Investments, by Albert Sharwood (all published at the *Bazaar* Office, 32, Wellington Street, W.C.—Pollen, by M. Pakenham Edgeworth, F.L.S. (Hardwicke & Bogue).—Giornale Botanico Italiano.—Bulletin d'Arboriculture—Familiar Wild Flowers.—The Indian Forester.—Le Moniteur Horticole Belge.—Science Gossip.—Hamburgh Garten Zeitung. — The Gardener. — Cassell's Domestic Dictionary. — Illustration Horticole.—Journal of Forestry.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, August 22, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Aug.	In.	In.	°	°	°	°	°	°			In.
10	29.74	−0.04	76.5	59.3	17.2	65.9	+ 4.5	55.2	68	WSW; S.W.	0.00
17	29.79	+0.01	74.1	56.6	17.5	63.0	+ 1.8	52.5	69	WSW	0.00
18	29.82	+0.03	75.0	55.9	19.1	63.0	+ 2.0	54.2	73	S.W.; S.S.W.	0.03
19	29.63	−0.17	76.6	62.4	14.2	67.9	+ 7.0	59.2	73	WSW	0.00
20	29.55	−0.25	84.7	63.0	21.7	71.1	+10.3	61.6	71	S.S.W.	0.02
21	29.46	−0.35	74.6	61.4	13.2	65.3	+ 4.6	54.4	68	S.W.; WSW	0.09
22	29.50	−0.32	71.2	55.0	16.2	60.7	+ 0.1	52.7	75	S.W.	1.00
Mean	29.64	−0.16	76.1	59.1	17.0	65.3	+1.43	55.7	71	S.W.	sum 1.11

Aug. 16.—A fine bright warm day. Partially cloudy.
— 17.—A fine warm day. Cloudy at times. Cloudless at night.
— 18.—A fine bright day. Very cloudy, with slight shower of rain at 3 P.M.
— 19.—Fine warm day, generally cloudy. Few drops of rain at times. Lunar rainbow in evening.
— 20.—A very fine hot day. Partially cloudy. Smart shower of rain at 4 P.M.
— 21.—A fine day, cloudy and showery at times. Strong wind.
— 22.—A fine bright day. Very heavy rain at 2 A.M., and a shower fell in the afternoon. Cloudless at night.

London: *Barometer.*—During the week ending Saturday, August 18, in the suburbs of London the reading of the barometer at the level of the sea increased from 30.07 inches at the beginning of the week to 30.08 inches by the morning of the 12th, decreased to 29.79 inches by the afternoon of the 14th, increased to 29.97 inches by the morning of the 16th, decreased to 29.92 inches by the evening of the same day, increased to 30.07 inches by the morning of the 18th, and decreased to 29.95 inches by the end of the week. The mean reading for the week at sea level was 29.95 inches, being 0.13 inch above that of the preceding week, and 0.02 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 80° on the 14th, to 70¼° on the 13th; the mean value for the week was 75°. The lowest temperatures of the air observed by night ranged from 51½° on the 12th to 59¾° on the 14th; the mean for the week was 57°. The mean daily range of temperature in the week was 18°, the greatest range in the day was 20½° on the 14th, and the least 12½°, on the 13th.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows: —12th, 59°.8, − 2°.4; 13th, 61°.9, — 0°.3; 14th, 67°.6, + 5°.6; 15th, 64°.0, + 2°.3; 16th, 63°.9, + 4°.5; 17th, 63°.0, + 1°.8; 18th, 63°.0, + 2°.0 The mean temperature of the air for the week was 64°.6, being 1°.9 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 140° on the 17th, 137½° on the 16th, 133° on the 14th, and 132° on the 15th. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 40½° on the 12th and 42¾° on the 18th; on the 13th the reading did not descend below 56°. The mean of the seven low readings was 48°.

Wind.—The direction of the wind was variable, and gentle in motion.

Weather.—The weather during the week was fine and dry, and the sky partially cloudy. Lightning was seen on the nights of the 14th and 15th.

Rain.—A few showers of rain fell on Wednesday afternoon, the 15th, but the amount was only 0.02 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 80° at Blackheath, 78¾° at Cambridge, 76¾° at Bristol, and 76¼° at Nottingham; at Portsmouth and Liverpool 70¾° was the highest temperature, the mean value from all stations was 74¼°. The lowest temperatures of the air observed by night were 41° at Truro, 45½° at Bristol, and 46½° at Wolverhampton; at Portsmouth 55½° was the lowest temperature, and at Hull 55°; the general mean from all stations was 50¾°. The range of temperature in the week was the greatest at Truro 33°, and the least at Portsmouth 15¼°; the mean range from all stations was 23½°.

The mean of the seven high day temperatures was the highest at Blackheath 75°, Cambridge 74¼°, and Bristol 74°; and the lowest at Sunderland, 63¼°. The mean value from all stations was 70¼°. The mean of the seven low night temperatures was the lowest at Truro, 51¼°, and at Wolverhampton and Eccles both 52½°; and the highest at Portsmouth, 58°; the mean from all stations was 55°. The mean daily range of temperature in the week was the greatest at Truro, 21°, and the least at Sunderland, 7½°; the mean daily range from all stations was 15¼°.

The mean temperature of the air for the week from all stations was 61°, being 7° lower than the value for the corresponding week in 1876. The highest was 63½° at Blackheath, and the lowest 58¾° at Wolverhampton.

Rain fell on six days at Cambridge and Sheffield, and on four days at most other places. The amounts collected varied from 1 inch and four-tenths at Truro and Cambridge, to two-hundredths of an inch at Blackheath. At Brighton and Portsmouth no rain fell; the average fall over the country was half an inch.

The weather during the week was generally fine, though the sky was cloudy. Thunderstorms occurred during the week at various places, but were felt most severely in the midland counties.

Scotland: *Temperature.*—The highest temperatures of the air observed by day varied from 73° at Greenock and Perth to 66¼° at Aberdeen; the mean value from all stations was 70¼°. The lowest temperatures of the air observed by night ranged from 46° at Dundee to 52¾° at Glasgow; the mean from all stations was 49¼°. The mean range of temperature from all stations was 21°.

The mean temperature of the air for the week from all stations was 58¾°, being 5° lower than the value for the corresponding week in 1876. The highest was 61°, at Greenock, and the lowest, 56½°, at both Edinburgh and Leith.

Rain.—The amounts of rain measured during the week varied from 2 inches at Edinburgh and Greenock, 1¾ inch at Dundee, and 1½ inch at Leith, to three-quarters of an inch at Glasgow and Aberdeen; the average fall over the country was 1 inch and four-tenths.

Dublin.—The highest temperature of the air was 73°, the lowest 45°, the range 28°, the mean 62°, and the fall of rain rather more than 1½ inch.

JAMES GLAISHER.

Variorum.

A French Garden.—It was not what our French friends call *un jardin lèché*, but something much more delightful, namely, a garden without design or plan, and, except for abundant watering, left much to itself; a dozen pleasure grounds in one, indeed, with bits of vegetable garden and orchard running into the parterres, delightful little corners, all turf and shadow, woods in miniature, green walks shaded by Cherry trees laden with lustrous fruit, trellised Vines, reminding me of Italy; a tiny rivulet overgrown with Loosestrife and Willow-herb, glimpses of yellow cornfields through all, and flowers in indescribable, royal, distracting abundance everywhere. Would I could describe them, but a chapter, nay, a volume, would not do it. Take, for instance, the Pinks and Carnations, or *œillet*, introduced into France by the good King René. What do we in England know of this glorious flower?—here rivalling the Rose both in splendour and perfume. Then take the Larkspur, a poor creature of a flower with us, banished long ago from rich people's gardens; but what a beautiful flower is the Larkspur when seen in perfection!—graceful, nay, stately, with glorious minarets of delicate blossoms in white, pink, lavender, and deep purple; in fact, a bed of Larkspurs is a garden in itself if properly cultivated. Then there is a countless variety of the familiar Dragon's-mouth, or Antirrhinum, brilliant gold and ruby colours predominating, but others in plenty; the bright rose-pink and pure white *Belle de Nuit*, known to us as Marvel of Peru, and to our American friends as Four-o'clock, and Roses in great splendour and abundance. In my friend's garden are hardly any but these old-fashioned flowers; a large variety of Sweet Williams, in French *œillet de Poète;* Roses, of course; and by no means least, if last mentioned, the exquisitely graceful and poetic Cornflower, or *bluet*, here cherished as a garden flower, but only known in England by one variety, that bluest of the blue, Centaurea cyanea. Here we have Cornflowers, white, purple, rose-coloured, or white with just a tinge of shell-like pink, violet or orange. It is the poet's and the children's flower in France, and you find no garden without it." *From "A Year in Western France," by M. Betham-Edwards.*

Enquiries.

He that questioneth much shall learn much.—Bacon.

202. Wasps' Nests.—I think I have seen some years ago advertisements of cartridges for smoking out wasps' nests, rats, vermin, &c., something like the stinking-pots of the Chinese. Can any of your readers tell me where to get them, and at what price they are sold? *Jean van Volxem.*

Answers to Correspondents.

Apple Trees Killed: *H. Beasley.* Undoubtedly the gas tar was the cause of their death. It should have been mixed with cowdung before being applied to the tree stems.

Ash Leaves. The brown spots cannot be distinguished from Ectostroma Liriodendii, to which the same remark applies as to E. herbarum. Nothing is more common than a similar affection on lime trees. No one, however, has been able either to ascertain the cause, or to find any trace of fungi. *M. J. B.*

Books: *G. B. The Amateur's Greenhouse* (Groombridge.—*S. O. A. Oliver's Elementary Lessons in Botany* (Macmillan & Co.)

Butcher's Broom: *Erratum.* Please allow me to correct two errors in my note on the "Butcher's Broom," at p. 214, "Kelen," not "Kelm," is Celtic for Holly; and it should be the "eclogues and Georgics."

Chrysanthemums: *J. H. M.* Seeds must be saved under glass in moderate heat. The Channel Islands have furnished much of the seed from which new kinds have been obtained.

Coleus: *J. H.M.* These fine varieties of Coleus now in cultivation are hybrids and garden mules, which have sported infinitely.

Cucumber Tubes: *J. Carter & Co.* We do not see any advantage whatever in the metal tube, of which you send an example. It is in our opinion neither so efficient nor so readily made as one of wood, with a loose cover or slip of glass. The fruit was far from being a handsome specimen.

Fungus: *G. S.* There is nothing uncommon in the little abnormal Agarics with long stems growing under your tub. The abnormal growth is produced by the uncomfortable position of the fungi.

Garden Lounge: *A. H. T. G.* They are manufactured by E. Salmon & Co., Steam Cabinet Works, Great Malvern.

Hollyhocks: *Camjee.* The two leaves are differently affected, the one with pale spots has been attacked by red spider, the other with brown spots has Ectostroma herbarum, if that is a fungus, and, if so, in an undeveloped state. *M. J. B.*

Lilies: Mr. Elwes recommends the following as not requiring special culture:—

Hardy Lilies.	Lilium longiflorum
Lilium martagon dalmaticum	,, superbum pyramidale
,, Szovitsianum	,, croceum umbellatum
,, Chalcedonicum	*For Greenhouse.*
,, californicum	Lilium nilgherriense
,, tigrinum splendens	,, longiflorum eximium
,, elegans alutaceum	,, auratum
,, ,, var. incomparabile	,, speciosum in variety
,, ,, var. venustum	
,, candidum	

Insects: *E. T.* Your Yew trees are being eaten by the larva of one of the Geometridæ, but we do not know the species, nor a remedy.—*J. Rogers.* Orchesella cincta; no doubt brought in with the leaf-mould, and easier to bring in than turn out.—*R. S. N.* They are not eggs, but pupæ, apparently of a fly, but unknown to A. M.—*R. Lowe.* 1, Leaf-cutter bee; 2, eggs and arvæ of some moth; we cannot say what.

Insects in a Vinery: *W. R.* The insect is the mealy-bug, Coccus Adonidum—a too well known pest. You can do nothing until the Vines are at rest, but rub off as much as you can with your fingers or with a brush, and persevere in so doing. After you have pruned the Vines dress them with Gishurst compound, and thoroughly cleanse all the woodwork of the house, as well as any other plants that may be grown in it.

Melon: *Dickson.* Scarlet Gem, we believe.

Names of Plants: *H. M. E.* Sedum ochroleucum, better known as S. altissimum.—*E. G.* 1, Pinus laricio; 2, Picea Pindrow; 3, 4, 5, Abies Smithiana; 6, Polygonum cuspidatum.—*Subscriber.* 1, Veronica Lindleyana; 2, Hybrid veronica; 3, Anemone japonica; 4, Adiantum æthiopicum; 5, a Selaginella, not to be determined from such a scrap.—*T. R.* Cytisus Laburnum, var. alpinus, commonly called the Scotch Laburnum.—*G. Palmer.* 1, Epidendrum cinnabarinum; 2, E. elongatum. — *James McRonald.* Veratrum nigrum. — *H. King.* Erica stricta.—*J. H. M.* Saxifraga sarmentosa.—*J. H.* Gesnera oblongata and Asplenium ebeneum (apparently).—*Reader.* We do not recognise your plant by the foliage; it is apparently some Composite. Send it by-and-by, when it blooms.—*W. Rutley.* Betonica officinalis, *alias* Stachys Betonica.

Proliferous Rose: *J. T.* Very common. The growth of the central part of the flower is continued instead of being checked, as it usually is.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

Catalogues Received.—Jules de Cock (Faubourg St. Liévin, Ghent, Belgium), Trade Catalogue of Ornamental Plants, &c.

Communications Received.—C. B. & Co.—F. B.—J. P.—G. C. (many thanks; next week).—W. G. T.—R. M.—F. C.—J. J. H. G.—E. M.—J. R. L.—T. B (thanks).—H. K.—J. R.—T. L.—An Old Subscriber. (We shall deal with the subject in our next issue).

DIED, on August 20, at Stamford Nursery, Bowdon, Cheshire, in his 22d year, George Cathcart, youngest son of John Shaw, landscape gardener. He was much and deservedly respected, and his loss will be long felt by a large circle of friends.

Markets.

COVENT GARDEN, August 23.

The market remains much about the same as last week, the supply of home produce being very short. *James Webber, Wholesale Apple Market.*

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	3 0– 9 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	0 6– 1 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	2 0– 9 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	3 0– 9 0
Gardenia, per doz.	3 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Sweet Sultan, 12 bun.	3 0– 6 0
Lilies (in variety), 12 sprays	1 0– 2 0	Tropæolum, 12 bun.	1 0– 4 0

Plants in Pots.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Heliotrope, per doz.	4 0–12 0
Begonias, per doz.	6 0–12 0	Hydrangea, per doz.	6 0–24 0
Bouvardias, do.	12 0–24 0	Liliums in var., each	1 6– 6 0
China Asters, dozen	4 0–12 0	Mignonette, per doz.	3 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargoniums, p. doz.	9 0–18 0
Cyperus, do.	6 0–12 0	— scarlet, per doz.	2 0– 9 0
Dracæna terminalis	30 0–60 0	Petunias, per doz.	4 0–12 0
— viridis, per doz.	18 0–24 0	Rhodanthe, per doz.	6 0–12 0
Ferns, in var., p. doz.	4 0– ..	Roses, fairy, p. doz.	4 0–12 0
Ficus elastica, each	2 6–15 0	Solanums	12 0–24 0
Fuchsias, per dozen	2 0–12 0	Valotta purpur., doz.	9 0–18 0
Heaths, variety, doz.	12 0–60 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	2 0– ..	Mint, green, bunch	0 6– ..
Beans, French, per bushel	3 0– ..	Mushrooms, per pott.	1 0– 3 0
Beet, per doz.	1 0– 2 0	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 6– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Rhubarb, per bundle	0 6– 0 8
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Gooseberries, green, per quart	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	1 6– 3 0
Leeks, per bunch	0 2– 0 4	Turnips, per bundle	0 4– 0 6
		— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos:—Jersey Kidneys, finished; Kent Regents, 100s. to 120s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Melons, each	4 0–10 0
Apricots, per doz.	2 6– 4 0	Oranges, per 100	12 0–20 0
Currants, red, ½-siev.	3 0– 3 6	Peaches, per doz.	3 0–18 0
— black, p. ½-sieve	6 6– 7 0	Pears, per doz.	1 0– 2 0
Grapes, per lb.	1 6– 6 0	Pine-apples, per lb.	5 0– 8 0
Lemons, per 100	8 0–12 0	Figs, green, each	0 2– 0 6

SEEDS.

London: *August 22.*—Nothing of special interest has transpired on the Seed market during the present week, but there has been a steady trade doing in those kinds of seeds wanted for present sowing. No new samples of Mustard have yet appeared; yearling parcels continue to find buyers at full rates. For Rapeseed there has been a brisk inquiry at a rise of several shillings per qr.; in all the growing districts the complaint, with respect to the yield, is universal, the out-turn averaging from 20 to 30 per cent. less than was expected. In the value of Trifolium incarnatum there is no alteration. Winter Tares, being in abundant supply, are obtainable on moderate terms. Of Rye, the arrivals continue limited, and, consequently, good prices are realised. Feeding Linseed shows no variation. The yield of Blue Peas proves disappointing, so that for the few lots on offer rather high prices are asked. Canary seed, with a quiet sale, keeps steady in value; for Hemp there is a fair request at the late advance. In White Clover Seed there has been some business passing on slightly enhanced quotations. One or two samples of red Clover and of Trefoil, both of the new growth, have just come to hand from France; the prospects of the English crops are not promising. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday the trade in Wheat was dull, and prices had a downward tendency. The Oat trade was dull, but Barley was scarce, and it was expected that malting produce would fetch high prices during the coming season. Beans and Peas were steady in value, but the flour trade was dull on rather easier terms. Foreign Wheat might be purchased at a reduction of 2*s.* per quarter from the rates of the previous Monday, but as regards new English Wheat quotations were not altogether fixed, 64*s.* per quarter being about the value of some of the best samples. Barley was slow of sale, with little variation in price. Malt was, perhaps, in rather better request. Oats were difficult to move, and Maize was comparatively firm.—On Wednesday trade was quiet, and prices remained much the same as on Monday. The small supply of new English Wheat was of rather variable quality, and the prices asked ranged from 58*s.* to 64*s.* per quarter. Foreign Wheat, of which the supplies were liberal, was difficult to sell, even at the late reduction. Barley and Maize were steady, while Oats continued heavy. The flour market was also heavy.

CATTLE.

At the Metropolitan Market, on Monday, there were a few more beasts than on the previous Monday, and the demand being good, prices rather improved. The number of sheep was about the same as last week, and trade was brisk at a small advance. There were but few lambs and calves on offer, equal, however, to the demand. Quotations:—Beasts, 5*s.* 10*d.* to 6*s.* 2*d.*, and 5*s.* 8*d.* to 5*s.* 10*d.*; second quality beasts, 4*s.* 6*d.* to 5*s.* 2*d.*; calves, 5*s.* to 6*s.*; sheep, 6*s.* 10*d.* to 7*s.* 2*d.*, and 6*s.* 6*d.* to 6*s.* 8*d.*; ewes and second quality, 5*s.* 6*d.* to 6*s.*; and lambs, 6*s.* 8*d.* to 7*s.* 8*d.*—On Thursday trade was quiet, but steady. Beasts in moderate supply. The demand was firm, and prices ruled rather higher than on Monday. Sheep were in short supply, and sold at about late rates. Lambs were quiet and unaltered. Calves sold on former terms.

HAY.

At Whitechapel on Tuesday the trade for fodder was dull, without variation in prices. Prime old Clover, 100*s.* to 135*s.*; inferior, 85*s.* to 95*s.*; good new Clover, 100*s.* to 126*s.*; prime meadow hay, 90*s.* to 120*s.*; inferior, 70*s.* to 85*s.*; good new hay, 80*s.* to 100*s.*; and straw, 44*s.* to 56*s.* per load.—On Thursday the supply of hay and straw was short. The trade was firm for best Clover, and prices were rather higher for best old Clover. Quotations:—Prime old Clover, 100*s.* to 137*s.*; inferior, 85*s.* to 95*s.*; good new, 100*s.* to 126*s.*; prime old meadow hay, 90*s.* to 120*s.*; inferior, 70*s.* to 85*s.*; good new, 80*s.* to 100*s.*; and straw, 44*s.* to 56*s.* per load.—Cumberland Market quotations:—Superior old meadow hay, 126*s.* to 132*s.*; inferior, 90*s.* to 105*s.*; new hay, 80*s.* to 105*s.*; superior old Clover, 132*s.* to 140*s.*; inferior, 100*s.* to 115*s.*; new Clover, 90*s.* to 120*s.*; and straw, 55*s.* to 60*s.* per load.

POTATOS.

At the Borough and Spitalfields markets on Monday there was a full average supply of Potatos on sale, and trade was good except for the better samples. Kent Regents, 100*s.* to 130*s.* per ton; Essex ditto, 100*s.* to 115*s.*; Shaws, 70*s.* to 100*s.*; Kidneys, 85*s.* to 120*s.*; Early Rose, 75*s.* to 100*s.*

COALS.

The prices quoted at the market on Monday were:—Walls End—Hetton, 20*s.*; Hetton Lyons, 17*s.* 3*d.*; Lambton, 19*s.* 6*d.*; Tunstall, 17*s.* 3*d.*; Hartlepool, 19*s.*; East Hartlepool, 19*s.* 9*d.* On Wednesday the market was quiet at Monday's rates.

WORTHINGTON SMITH'S

SALUS

IN SOLUTION.

A Powerful Fertiliser,

An Unfailing Insecticide & Disease Preventive,

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All Soils, Fruits, Vegetables, Flowers, and Grasses.

All PLANTS are at once greatly benefited by SALUS IN SOLUTION.

All PARASITES sink under SALUS IN SOLUTION.

Can be used through the Syringe, Vaporiser, or Watering Pot.

Directions for use will be sent with each parcel, or may be had gratis and post-free.

A 14 lb. box of SALUS is sufficient for 100 gals. of water.

A 7 lb. box of SALUS is sufficient for 50 gals. of water.

A Sample Packet of SALUS is sufficient for 5 gallons of water.

14 lb. for 14s.; 7 lb. for 7s.; Sample by post for 1s. 4d.

SALUS is sold as an excessively fine powder, and can be used in a dry state if desired.

"I feel it a public duty, as well as a personal pleasure of the highest kind, to be able to record this fact, and heartily congratulate Mr. Smith on the success of his SALUS in eradicating the Cucumber and Melon Disease.

"The whole of our plants, old and young, soon got infested with the disease,—they are now in robust health, without speck or spot, and are swelling off and ripening fine crops.

"The early Melons, badly affected at one time, are now carrying an enormous load of fine fruit—about a hundred in a small house—so we have reason to be proud of the powers of SALUS and grateful to its discoverer.

"Melons treated with SALUS took the First Prize at the *fête* of the Suffolk Agricultural Society.

"Our POTATOS were all dressed with SALUS—for the last six weeks their growth has been extraordinary. There is an immense crop of tubers, all sound, in these gardens." *D. T. Fish.*

"Potatos are in very good condition. Some little disease has shown itself in the haulm, but we have not found it communicated much to the tubers. I have planted all my crop with SALUS." *William Ward, Stoke Edith, Hereford.*

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A Microscopic Preparation of the actual Resting-spores of the Potato Fungus sent, post-free, on receipt of 2s.

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Our ENGLISH CATALOGUE for 1877-78 is now ready, and may be had gratis on application. It contains description and price of Azalea indica, Azalea mollis, hardy Ghent Azaleas, Camellias, Kalmia latifolia, Rhododendrons, Stove and Greenhouse Plants, Bulbous Begonias, Dutch Flower Roots, &c. Upwards of 200,000 plants, of unusual beauty and strength, and disposable at very advantageous prices.

Agents: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.

Fresh SPHAGNUM, 10s. 6d. per sack.

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COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, in 4 bushel bags, at 1s., bags included; or Truck-load, 25s. Delivered free to any rail in London.

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B G L Oilcake.

ARREST YOUR PURCHASES of all other Cake until you have read the "Book of Testimonials" from users of this cake. Sent post-free by the Agent for the County, or by the Makers.

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GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY Limited).

SCOTT'S WASP DESTROYER.—The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 1s. 6d., 2s. 6d. and 5s. each. The larger sizes are the cheapest. May be obtained through any Seedsman, or direct from

JOHN SCOTT, The Royal Seed Stores, Yeovil.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.

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Cocoa-nut Fibre, finest Kent and Hampshire Peats, Yellow Loam, Leaf-mould, coarse and fine Sand, Sphagnum, all Manures, Tobacco Cloth and Paper, Garden Sticks and Labels, Russia Mats, Raffia, Pot Covers, Hyacinth Glasses, Tiffany, Scrim, Tarred Twine, Coir Yarn, Garden Pots and Tiles, and every Horticultural Requisite. Write for free Price List. Liberal terms to the trade. Delivered free within 4 miles of Covent Garden at List Price. 4s. PER TON CARTAGE ALLOWED IF FETCHED FROM CASTLE STREET, LONG ACRE.

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Can be obtained in all sizes and qualities, of

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2 yards wide	1s. 10d.
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Can be had from all Florists and Seedsmen, and of E. T. ARCHER, Brockley Road, Forest Hill, London, S.E.

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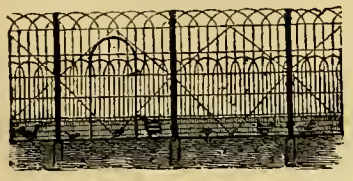
Very strong and durable. Reduced Prices, 1877.



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This ornamental Fencing is easily fixed or removed by any labourer, without extra cost.

PRICES:—

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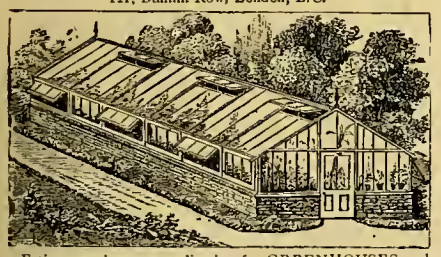

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Portable Box with One Light, 6 feet by 4 feet, glazed good 16 oz. sheet glass, painted four coats, and packed ready for use	35	0
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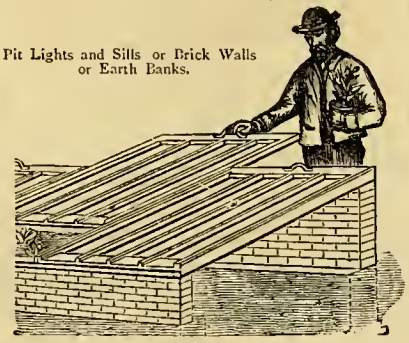

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Catalogue of every description of Horticultural Building, post-free, 24 stamps. Plant Preserver Lists, Melon Frame Lists and Greenhouse Lists, post-free.

Silver Medal, 1874.

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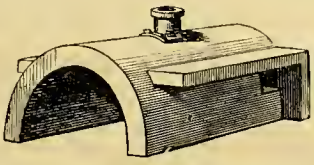

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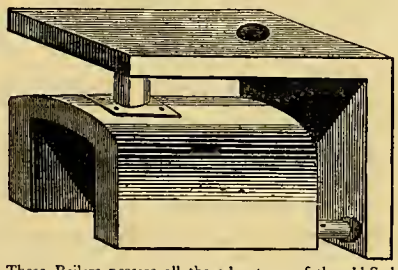

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

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High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

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"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

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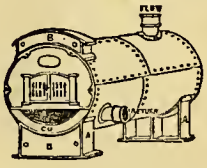

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HOT-WATER ENGINEERS, &c., &c.

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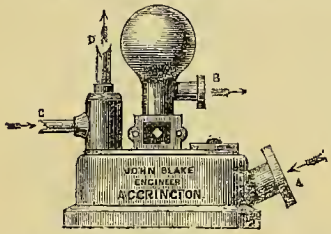

This Ram will raise a part of the same water that works it, or will raise pure water from a well whilst it is worked by a stream of impure water.

TESTIMONIALS.

From the Right Hon. T. SOTHERN ESTCOURT, *Estcourt Park, Gloucestershire. September* 6, 1875.

"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful."

(The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

From Captain TOWNSHEND, *Wineham, February* 10, 1877.

"In answer to your inquiry, I am glad to say, the Hydraulic Ram you sent me in November, 1875, is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000."

From JOHN BARNES, Esq., *Contractor, Chatburn and Hellifield Railway, Contractor's Office, March*, 1877.

"Dear Sir,—I have the pleasure to inform you that the three Hydraulic Rams you erected for me on this contract about two years ago, have continued to work very satisfactorily, without requiring any repairing. With a fall of 5 feet sufficient water has been raised daily by each Ram to supply two of my locomotive engines, they have fully answered my expectations and all that has been said of them."

Deanwater, Wilmslow, November 20, 1873.

"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house aboout 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required, namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—I am, yours truly, L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.

"Sir,—Your self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours to a height of 194 feet."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.

"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water wheel and force pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

JOHN BLAKE,
ENGINEER, ACCRINGTON.

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THE LARGEST AND BEST STOCK IN EUROPE.

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JAMES VEITCH & SONS

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J. REGINALD SYMONDS, Treasurer and Hon. Sec., BRIDGE STREET, HEREFORD.

August, 1877.

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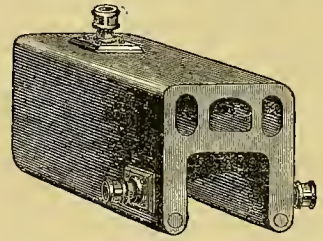

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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 192.—Vol. VIII. { New Series. } SATURDAY, SEPTEMBER 1, 1877. { Registered at the General Post Office as a Newspaper. } Price 6d. Post Free, 5½d.

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☞ *POSTPONEMENT—IMPORTANT NOTICE.—In consequence of a slight delay in the preparation, the Coloured Plate representing a selection of* "CHOICE PLUMS" *will not be issued until Sept.* 15, *instead of Sept.* 8, *as previously announced.*

THE GARDENERS' CHRONICLE for SATURDAY NEXT, September 8, WILL CONTAIN A SPECIAL TELEGRAPHIC REPORT OF THE GREAT INTERNATIONAL FRUIT and FLOWER SHOW at CARLISLE.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—FRUIT and FLORAL COMMITTEES' MEETINGS, on TUESDAY NEXT, September 4, in the Council Room, at 11 o'Clock. GENERAL MEETING, for ELECTION of FELLOWS, at 3 o'Clock.

CRYSTAL PALACE.—TWENTY-SECOND ANNUAL EXHIBITION of FRUIT and CUT FLOWERS, FRIDAY and SATURDAY, September 21 and 22. Schedules may be had on application to Secretary and Manager.
N.B. Rule 12 is cancelled.

ALEXANDRA PALACE.—The GREAT INTERNATIONAL FRUIT SHOW will be held on THURSDAY, FRIDAY and SATURDAY, September 13, 14 and 15, when Prizes to the amount of about THREE HUNDRED and FIFTY POUNDS will be offered for FRUIT, VEGETABLES, TABLE DECORATIONS, CUT FLOWERS, &c. Schedules are now ready, and may be obtained on application to JOHN A. McKENZIE.
1 and 2, Great Winchester Street Buildings, London, E.C.

ROYAL PAVILION, BRIGHTON.—The BRIGHTON and SUSSEX HORTICULTURAL SOCIETY will hold their TWENTY-FIFTH GRAND AUTUMN EXHIBITION on WEDNESDAY and THURSDAY, September 12 and 13. Prizes are offered on the usual liberal scale of former years, for Plants, Ferns, Cut Flowers, Fruits, &c. The Railway Cup, value £10, is offered for the best ten varieties of Variegated and Ornamental Plants.
Schedules of Prizes can be had on application to the Secretary, 06, St. James' Street; or of E. SPARY, Superintendent of the Exhibition, Queen's Graperies, Park Street, Brighton
EDWARD CARPENTER, Sec.

HORTICULTURAL CLUB.—Gentlemen joining the Club now will not be required to pay a Second Subscription until January, 1879. Its central position and the fact that (unlike many Clubs) it offers Bedroom accommodation, give great advantages to Country Members. Prospectuses may be had on application to the HON. SECRETARY, 3, Adelphi Terrace, W.C.

To the Trade.
JAMES CARTER AND CO. have received their FIRST CONSIGNMENT OF DUTCH ROOTS, and as the same have been personally selected by themselves in Holland, they think they will be found of good value. CATALOGUE sent in exchange for business card.
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B. MALLER begs to announce that his stock of ERICA HYEMALIS and other varieties is very extensive, and in excellent condition this season. He has also a large quantity of ADIANTUM CUNEATUM, SOLANUMS, BOUVARDIAS, &c. The usual Trade Sale will be held in September. An inspection is respectfully solicited.
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Hyacinths, Tulips, Crocus, Gladioli, &c.
OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.
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Dutch Flower Roots, Roses, and Fruit Trees.
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To the Trade.
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DANIELS BROS., The Queen's Seedsmen, Norwich.

JOHN MATTHEWS respectfully requests his Friends to favour him as early as convenient with their Orders for Autumn Supply of FLOWER POTS, &c.
Royal Pottery, Weston-super-Mare.

WANTED, Two or Three UPRIGHT TUBULAR BOILERS; also a few VALVES. Size and price to
A. Z., 1, Tavistock Row, Covent Garden, W.C.

To Grape Growers, &c.
WANTED, quantities of Fine MUSCAT GRAPES. Reply as to price and probable quantity, to A. Z., care of Willing, Jun., Advertising Offices, 301, Strand, London, E.C.

WANTED, CUTTINGS of EUONYMUS JAPONICA, AUREA MARGINATA, and E. LATIFOLIA ARGENTEA. State prices per 1000 to
STANSFIELD BROTHERS, Southport.

WANTED, MANETTI STOCKS, SEEDLING BRIERS, and GOOSEBERRIES Lancashire Lad and Warrington. Send size, age, and price per 100 to GROWER, 152, Fleet Street, E.C.

PRICKLY COMFREY (SYMPHYTUM ASPERRIMUM). Whole Roots purchased by
THOS. CHRISTY AND CO., 155, Fenchurch Street, London.

WANTED, in October, a large quantity of RHAMNUS FRANGULA, Black Dogwood, about 2 feet high, for planting. State price per 1000 to
H. ELWES, Preston, Cirencester.

WANTED, CUTTINGS of MRS. POLLOCK and other TRICOLORS; also of good BRONZES, such as MacMahon, Black Douglas; also of VESUVIUS, choice VIOLAS, PANSIES, &c.
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WANTED, GERANIUM CUTTINGS, leading Bedding varieties, including Tricolors and Bronzes. State names of sorts, and price per 100, to
SMITH AND SIMONS, Nurserymen, Glasgow.

To Gentlemen's Gardeners and Others.
WANTED GERANIUM CUTTINGS—Vesuvius, Gem, and Master Christine. Also good varieties of Tricolors, Gold and Bronze. State varieties and price per 1000.—M., The Nursery, Merton Abbey, S.W.

"Our Bouquet."
MR. W. H. FITCH, F.L.S., begs to inform the Subscribers to the *Gardeners' Chronicle* that in consequence of the numerous applications made to him to have the Chromolithograph "Our Bouquet"—issued in the *Gardeners' Chronicle* of July 7 last—coloured up to the Original Drawing, he will undertake to retouch it on receipt of the Plate, accompanied by a Fee of Two Guineas.
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JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers AZALEA INDICA, MOLLIS and PONTICA, CAMELLIAS, SPIRÆA JAPONICA, PALMS and DRACÆNAS. CATALOGUES free on application.

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To the Trade.
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To the Trade.
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JAMES DICKSON AND SONS, Newton Nurseries, Chester.

Garden Fruit Tree Culture.
PEACHES and NECTARINES.—Good crops are now ripening in the Orchard Houses, and an early inspection is invited.
THOMAS RIVERS AND SON, Nurseries, Sawbridgeworth, Herts.

Common Sainfoin and Giant Sainfoin.
MESSRS. LEVAVASSEUR AND SON, SEEDSMEN, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on commission.

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FORCING SEAKALE.—The Subscribers offer 10,000, extra strong. Orders are now being booked for delivery in the autumn. Price per 100 or 1000, on application to
JOHN LAING AND CO., Stanstead Park Nursery, Forest Hill, S.E.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.
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Important to the Trade and Others.

UNRESERVED SALE of 10,000 Selected HYACINTHS for glasses and borders; 70,000 CROCUS, of sorts; 35,000 TULIPS; also large quantities of Polyanthus Narcissus, Snowdrops, and other bulbs from Holland.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, September 70, at 11 for half-past 11 o'Clock precisely.

On view morning of Sale, and Catalogues had.

The Nurseries, Tooting, S.W.

GREAT ANNUAL TRADE SALE of many thousands of nicely-grown WINTER-BLOOMING HEATHS, promising a profusion of flowers, including 10,000 Hyemalis, 15,000 gracilis, 5000 Wilmoreana; also quantities of other varieties, such as verticillata, mammosa, melanthera, cerinthoides, Bowieana, caffra, &c.; also 8000 Epacris, 5000 Genistas, 5000 well-berried Solanums, 400 fine Pot-Vines, best kinds; 1000 Chrysanthemums, Bouvardias, 1000 choice Ferns, Palms, and Stove Plants for decorative purposes, Hardy Alpine and Herbaceous Plants, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above Stock by AUCTION on the Premises, without reserve, on TUESDAY and WEDNESDAY, September 11 and 12, at 11 for 12 o'Clock precisely each day, by order of Messrs. Rollisson & Sons, in consequence of the want of room to house so extensive a Stock.

The Stock may at any time be viewed. Catalogues may be had on the Premises, and of the Auctioneers.

Lea Bridge Road, E.

EXTENSIVE and IMPORTANT ANNUAL TRADE SALE of fine WINTER FLOWERING HEATHS, abundantly set with flower-buds; EPACRIS, CYCLAMEN, and other choice GREENHOUSE PLANTS, including 15,000 Hyemalis, 10,000 gracilis, 3000 Wilmoreana, large quantities of gracilis vernalis, Regerminans, colorans, assurgens, ventricosa, perspicua erecta, and others; 3000 Epacris of the choicest kinds, 1000 Cyclamen persicum, Tree Carnations, Tea-scented Roses, Solanum capsicastrum in berry; a large quantity of miscellaneous Greenhouse Plants, fine lot of Lapageria rosea, Daphne elegantissima, Gloxinias, Camellias, an assortment of the best kinds of Variegated Ivies, &c.; also a large quantity of young Heaths in small pots, for potting on.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Fraser to SELL the above by AUCTION, without reserve, upon the Premises known as Lea Bridge Nurseries, Lea Bridge Road, Leyton, Essex, E., on THURSDAY and FRIDAY, September 13 and 14, at 11 for 12 o'Clock precisely each day.

On view day prior to Sale. Catalogues may be had on the Premises; and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Edmonton.

CLEARANCE SALE of four recently erected GREENHOUSES, with about 2000 feet of 3 and 4-inch HOT-WATER PIPING, BOILERS, and other FITTINGS, also the whole of the GREENHOUSE PLANTS, and about 1500 DWARF ROSES.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, without reserve, on the Premises, the Rose Nursery, Angel Road, Edmonton, by order of Mr. J. D. Godwin, on MONDAY, September 17, at 12 for 1 o'Clock precisely.

May be viewed any day prior to Sale. Catalogues had on the Premises and of the Auctioneers.

N B.—The LEASE of the Nursery (1½ acre in extent) can be had at a nominal sum, giving the Purchaser the opportunity of securing, at auction prices, the Glass Erections and what stock he may require to carry on the business. Terms twelve years unexpired. Rent £20 per annum. Renewable at an increased rental of £4 per annum.

Burnt Ash Nursery, Lee, S.E.

IMPORTANT ANNUAL TRADE SALE of thousands of beautifully-grown Winter-flowering HEATHS and a quantity of choice GREENHOUSE and STOVE PLANTS.

MESSRS. PROTHEROE AND MORRIS beg to announce that this SALE will take place on TUESDAY and WEDNESDAY, September 18 and 19, by order of Mr. B. Maller.

Further particulars will appear.

Brunswick Nursery, Tottenham.

HIGHLY ATTRACTIVE ANNUAL SALE of Winter-blooming HEATHS, and other particularly well-grown Stock.

MESSRS. PROTHEROE AND MORRIS have received instructions from Mr. John Maller to announce that this SALE will take place on THURSDAY, September 20.

Full particulars next week.

Exotic Nursery, Tooting, S.W.

IMPORTANT ANNUAL SALE of extra STOVE and GREENHOUSE PLANTS, ORCHIDS, PALMS, and other valuable and thriving stock.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr R. Parker to SELL the above Stock by AUCTION on TUESDAY, September 25.

More detailed particulars will appear.

Importation of Valuable Orchids just to Hand.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 6, at half-past 12 o'Clock precisely, an importation in the finest possible condition of a NEW ODONTOGLOSSUM, O Karwinski; large, many bulbed masses of O. Roezli; masses in fine health of O. cirrhosum Klabochorum; Cattleya spec.; nearly 400 plants of Odontoglossum Kramerianum; O. madrense; fine pieces of Lycaste Skinneri; Odontoglossum Alexandræ; Uropedium Lindeni; a large quantity of Oncidium macranthum; an Odontoglossum probably new; Odontoglossum maculatum superbum; O. pulchellum, O. citrosmum roseum; together with some well established plants of Lælias, Oncidiums, Odontoglossums, and Cattleyas. The above have been recently collected by the Brothers Klaboch, and are offered for Sale by order of Mr. F. Sander, St. Albans.

On view the morning of Sale, and Catalogues had.

Odontoglossum cirrhosum, Oncidium macranthum, and other CHOICE IMPORTED and ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, September 7, at half-past 12 o'Clock precisely, IMPORTED PLANTS, in fine condition, of Oncidium macranthum, O. nubigenum, Mesospinidium vulcanicum, 1000 Odontoglossum cirrhosum; also established plants of Phalænopsis Schilleriana, P. amabilis, P. Luddemanniana, P. grandiflora, Lælia Dayana, 100 Oncidium varicosum, 2 o Dendrobium Bensoni, Aerides Lobbii, Cypripedium caudatum, Dendrobium Wardianum, D. luteolum, &c.

On view the morning of Sale, and Catalogues had.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during September, consignments of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS arriving from well-known farms in Holland.

On view the mornings of Sale, and Catalogues had.

Clearance Sale of Garden Ornaments.

MESSRS. LEREW AND RANDALL are instructed to SELL by AUCTION, on TUESDAY, September 4, and following day, the remainder of the Stock of Messrs. Austin & Seeley, of 375, Euston Road, N.W., consisting of a number of FOUNTAINS, VASES, GATE PIER ORNAMENTS, and a MISCELLANEOUS LOT of ITEMS, remaining from their long established business, and which will now be sold without reserve.

May be viewed on the previous days, and Catalogues had at the Yard, or of the Auctioneers, Cardington Street, Hampstead Road, N.W.

FOR SALE, a FLORIST and NURSERYMAN'S BUSINESS, under exceptional circumstances. Premises are commandingly situated, with 50 feet frontage to suburban main road, and consist of excellent Dwelling House, Six Greenhouses, hot-water heated, good Shop, &c.; grounds ¾ acre. Rent £46; annual returns £850. Price for goodwill, eleven years' lease, fixtures, utensils, and stock, £375 only. A genuine bargain.

GARFORD AND BUCK, 212, Great Dover Street, Borough, S.

Ember Nursery, Thames Ditton.

By order of the Executors of the late Mr. J. Lewis.

TO BE DISPOSED OF, on easy terms, the thoroughly genuine BUSINESS, connected with this old established Nursery. The Nursery comprises Dwelling House, about 9 acres of first-class Land, fully stocked, and about 11,500 feet super of modern Glass. Lease 16 years unexpired. Rent £75 per annum. Greenhouses belonging to tenant and also the indoor stock and utensils in trade to be taken by valuation.

N.B. To facilitate the disposal of the Business, it is proposed to effect an AUCTION SALE of the whole of the valuable OUT-DOOR STOCK, thus giving the Purchaser the opportunity of buying at a cheap rate what stock he might require to carry on the business.

Particulars to be obtained only of PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

TO BE LET, for Seven Years, from September 29, 1877, LORDINE COURT, Ewhurst, Sussex, a very convenient RESIDENCE, approached by a carriage drive, containing Dining and Drawing-rooms, Office, Kitchen, Scullery, Pantry, Dairy, Cellar, Wine Cellar, seven Bed-rooms, Bath-rooms, and three Attics; has indoor and out-door w.c.'s, Well of excellent water, Rain-water Tank, Wood-room and Wood-lodge, Hothouse, Greenhouse, two Pits, very large Garden, well stocked with productive wall and other fruit trees, including Apples, Pears, Plums, Nuts, Peaches, Cherries, &c. Summer-house, Croquet Lawn, three-stall Stable, Coach-house, Harness Cupboard, Cow-yard, Lodge, Pig-stye, Apple and Store-room, Potting Shed, and Out-buildings, with or without a Paddock, containing 2 a. 2r. 23 p.

Lordine Court is situate about 6 miles from Robertsbridge and Battle stations, and 10 miles from Rye.

For further particulars and orders to view apply to JAMES COLEMAN VIDLER, Auctioneer and Estate Agent, 26, Havelock Road, Hastings, and (postal address) Magdala House, Rye, Sussex.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land, Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

ROYAL SCHOOL of MINES. DEPARTMENT of SCIENCE and ART.

During the Twenty-seventh Session, 1877-78, which will commence on the 1st of October, the following COURSES of LECTURES and PRACTICAL DEMONSTRATIONS will be given:—

1. Chemistry. By E. Frankland, Ph.D., F.R.S.
2. Metallurgy. By John Percy, M.D., F.R.S.
3. Natural History. By T. H. Huxley, LL.D., F.R.S.
4. Mineralogy. } By Warington W. Smyth, M.A., F.R.S.,
5. Mining. } Chairman.
6. Geology. By John W. Judd, F.R.S.
7. Applied Mechanics. By T. M. Goodeve, M.A.
8. Physics. By Frederick Guthrie, Ph.D., F.R.S.
9. Mechanical Drawing. By Rev. J. H. Edgar, M.A.

The Lecture Fees for Students desirous of becoming Associates are £30 in one sum, on entrance, or two annual payments of £20, exclusive of the Laboratories.

Tickets to separate Courses of Lectures are issued at £3 and £4 each.

Officers in the Queen's Service, Her Majesty's Consuls, Acting Mining Agents and Managers may obtain Tickets at reduced prices.

Science Teachers are also admitted to the Lectures at reduced fees.

For a Prospectus and information apply to the Registrar, Royal School of Mines, Jermyn Street, London, S.W.

TRENHAM REEKS, Registrar.

NOTICE.—The Prizes of £5, £2, and £1, offered by Mr. J. R. PEARSON, of Chilwell, for the best SINGLE BUNCH of his NEW GRAPE GOLDEN QUEEN, will be competed for at the CRYSTAL PALACE FRUIT and FLOWER SHOW, September 21 and 22. The Awards will be made by the Crystal Palace Judges.

We propose to OFFER PRIZES to the SAME AMOUNT NEXT YEAR, for the best Bunch of MRS. PEARSON.

ARAUCARIA IMBRICATA.—A handsome pair of the above to be disposed of immediately.—Height 23 feet, girth 2 feet. Apply to

Mr. A. PENNY, Sunningdale.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Cabbage Plants for Sale at the noted Elms Farm, BARNES, S.W.,

F. TROWELL AND SON, having Grown Plants for Thirteen Seasons from Selected Stocks, now offer this Season's Plants to Market Gardeners and Others, at prices lower than in previous seasons, in Lots ranging from 5 Beds up to 10 Acres.

Cabbage Plants.

H. J. HARDY begs to offer fine strong Plants of—

ROBINSON'S DRUMHEAD, } 3s. 6d. per 1000.
ENFIELD MARKET, }

Carriage and package free. Terms cash.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

ADOLPHE D'HAENE, NURSERYMAN, Ghent, Belgium (Successor to ALEXIS DALLIERE).

AZALEA INDICA, well set with buds, £5 per 100.
CAMELLIAS, well set with buds, from £6 to £8 per 100.
SPIRÆA JAPONICA (strong clumps for forcing), £1 per 100.

Large stock of young PALMS, prices and dimensions forwarded on application.

AZALEAS.—For Sale, a fine Collection, varying in size from 3½ to 4½ feet high, and 3 to 4 feet in diameter, and including the following varieties:—Iveryana, Glory of Sunning Hill, Beauty of Europe, Broughtonii (Smith's), Reine des Belges, Stanleyana, Alba superba and lutescens, Delecta. Apply to

HEAD GARDENER, Manydown Park, Basingstoke.

Planting Season.

EVERGREENS IN GREAT VARIETY and of all ages and Sizes, including HOLLIES, &c., in the best transplanted condition for safe removal. The largest and best stock in Britain. CATALOGUES post-free.

JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

Important Clearance Sale of

FERNS.—Several thousand well-established Plants of Hardy and Greenhouse varieties of Ferns, both evergreen and deciduous, to be Sold cheap. List of sorts, with lowest Cash prices, on application to

T. CHITTY, 7, Warwick Road, Stoke Newington, London, N.

J. APERS, NURSERYMAN, Loochristy, near Ghent, Belgium—Great special Culture of CAMELLIAS, AZALEA INDICA, RHODODENDRONS, AZALEA MOLLIS, KALMIAS, AZALEA PONTICA, GLOXINIAS, Bulbous BEGONIAS, &c. CATALOGUES may be had of Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E C.

HURST AND SON'S CATALOGUE of DUTCH and other BULBS is now ready, and has been posted to all their customers; any not having received a copy will much oblige by informing them, and one shall be sent. Their Importations have arrived, and Orders can be executed at once.

6, Leadenhall Street, London, E.C.

FOR SALE, 21 AZALEAS of sorts, trained, from 1½ to 4 feet high; 5 do., smaller, not trained; 6 do., Standards, from 2½ to 4 feet high

1 GARDENIA FLORIDA, trained, 4 feet high.
9 CALADIUMS, of sorts.
4 LOMARIA GIBBA, &c.
Also 37 FRUITING PINES, of sorts.

Mr. A. GRANT, Gardener, at Sunnyside, Reigate, where they can be seen.

Hyacinths, Tulips, and other Spring Flowers.

WM. CUTBUSH AND SON beg to announce that they have just received their first consignment of the above, and are pleased to say they are in fine condition. CATALOGUES on application.

Their MUSHROOM SPAWN is now ready for despatch.

Highgate, London, N., and Barnet, Herts.

English Yews.

SANDY AND SON beg to call attention to their superb stock of the above, ranging in height from 2 to 7 feet. All are perfect specimens, pyramids, and lift with splendid roots. The sizes of which they hold the largest quantity are from 2 to 5 feet. Any person requiring a considerable number would find it advantageous to inspect the stock. All other Nursery Stock in quantities.

Special offers made of AUSTRIAN PINES, PORTUGAL and COMMON LAURELS, TREE BOX, &c.

The Nurseries, Stafford.

TO GENTLEMEN INTENDING TO PLANT.—In consequence of the decease of the late Mr. R. WEBB, of Calcot Gardens, near Reading, his valuable Collection of Young Prize NUT TREES, of named sorts, are offered at half the usual selling prices. Printed LISTS will be forwarded on application.

Immediate Orders are solicited, as the Trees will be supplied in the rotation in which the orders are received; delivery commencing on October 1. Apply to

The MANAGER, Calcot Gardens, near Reading, Berks.

To the Trade.

SCHIZOSTYLIS COCCINEA, fine clumps for potting, 9*s.* per dozen, 60*s.* per 100.

CZAR VIOLETS, fine clumps for potting, 3*s.* per dozen, 20*s.* per 100.

HELLEBORUS NIGER, fine flowering clumps, 9*s.* per dozen, 50*s.* per 100.

RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

To the Trade.

HYMENOPHYLLUM TUNBRIDGENSIS, nice tufts, in 4-inch pots, 18*s.* per dozen.

STATICE HOLFORDII, 4-inch pots, 9*s.* per dozen.

ARBORESCENS, 4-inch pots, 9*s.* per dozen.

DRACÆNA INDIVISA, nice young plants, 9*s.* per dozen.

RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12*s.* per dozen; extra strong plants, 2 years old, 18*s.* per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

Hyacinths, Tulips, Crocus, &c.

LILIUM GIGANTEUM SEED.

C. G. VAN TUBERGEN, JUN., Haarlem, Holland.—Wholesale CATALOGUE of DUTCH BULBS, now ready, will be sent post-free on application.

G. G. VAN T. has a quantity of fine fresh SEED of the magnificent LILIUM GIGANTEUM, which he now offers to the Trade at the following low prices, viz.:—In Packets of 100 Seeds, 1*s.* 3*d.*; 500 Seeds, 5*s.*; 1000 Seeds, 8*s.* 4*d.* Orders may be sent to his Agents,

Messrs R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C., who will also forward Catalogues on application.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

Address, HENRY SHEPHERD, Manager.

Bedding Violas and Pansies.

DICKSONS AND CO. invite inspection of their celebrated BEDDING VIOLAS and PANSIES, which for some months have been, and are now, in great beauty. The collection in their Pilrig Park Nursery numbers upwards of 130 sorts, so that intending purchasers have an opportunity rarely offered of making the best possible selection. Blooms can be sent by post on receipt of six stamps.

D. & Co. also call attention to their SEEDLING FANCY PANSIES, which are remarkably fine this season.

Seed Warehouse, 1, Waterloo Place, Edinburgh.

(Established upwards of a Century.)

26,000 Camellias.

B. WHITHAM begs most respectfully to call attention to his unrivalled collection of the above, of all the finest varieties in cultivation, and well set with buds, all home-grown, strong, healthy plants. Price from 24*s.* to 120*s.* per dozen, according to size and variety.

Also about 10,000 fine home-grown CAMELLIA STOCKS, in pots, fit for present Grafting—First size, 28*s.* per 100; second size, 21*s.* per 100.

CATALOGUES on application.

The Nurseries, Reddish, near Stockport.

To the Trade Only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland.—The WHOLESALE CATALOGUE for 1877-78, first part (327A) is now ready, and may be had free on prepaid application by Nurserymen, Florists, and Seedsmen. The Catalogue contains complete collections of Hyacinths, Tulips, Crocus, Narcissus, Fritillaria, Anemones, Ranunculus, Lilies, Iris, Gladiolus, Paeonies, and a selection of miscellaneous bulbous and tuberous plants. It is perhaps the most complete list ever published of these articles.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.

SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)

Agents: Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

BEAUTIFUL FLOWERS FOR WINTER & SPRING

WEBBS'

CHOICE COLLECTIONS

OF

HYACINTHS, CROCUS, TULIPS, NARCISSUS, &c.

NOW READY,

WEBBS' AUTUMN CATALOGUE

OF

DUTCH FLOWER ROOTS

&c.,

Which is beautifully Illustrated and contains Original and Complete Cultural Instructions.

GRATIS AND POST-FREE ON APPLICATION.

The Queen's Seedsmen,

WORDSLEY, STOURBRIDGE.

HARDY ORNAMENTAL TREES IN GREAT VARIETY.

EXTENSIVE COLLECTIONS,

Showing variation in colour, of deepest green and purple, and brightest gold and silver, assuming habits pyramidal, spreading, and weeping; leaves entire, or cut and divided like Ferns, spotted, or variegated—planted in groups to show contrast of form and colour—now in great beauty at THE ARBORETUM, five minutes' walk from Isleworth Station.

CHAS. LEE & SON, Proprietors.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO., KING'S ACRE, near HEREFORD.

Strawberrtes.

CHARLES TURNER recommends the following for a continuous supply of fine flavoured fruit. Prepared Runners are now ready.

Those best adapted for forcing are marked with an asterisk.

Aromatic	*Auguste Nicaise
Beauty	British Queen
Dr. Hogg	Duc de Magenta
Eleanor	Elton Pine
Frogmore Late Pine	James Veitch
*Keens' Seedling	*La Grosse Sucree
Lucas	*President
Royalty	*Sir C. Napier
Sir Jos. Paxton	*Vicomtesse H. de Thury

Descriptive CATALOGUE on application.

The Royal Nurseries, Slough.

STRAWBERRY PLANTS.—Strong well-rooted plants of the under-named varieties, 3*s.* 6*d.* per 100, purchasers' selection:—Aromatic, Amateur, Ananas Perpetual, Ascot Pine-apple, British Queen, Bicton Pine, Black Prince, Cockscomb, Comte de Paris, Cornucopia, Comte de Zans, Crimson Queen, Dr. Hogg, Duke of Edinburgh, Eleanor, Exquisite, Early Prolific, Enchantress, Eliza, Fairy Queen, Filbert Pine, Frogmore Pine, Grove End Scarlet, Garibaldi, Haiquin, James Veitch, John Powell, Keens' Seedling, La Grosse Sucrée, Leon St. Lannier, La Constante, Lucas, Marguerite, Newton Seedling, Oscar, Prince of Wales, Prince Arthur, President, Premier, Princess of Wales, Royalty, Sir J. Paxton, Sabreur, Stirling Castle, Sir John Falstaff, Souvenir de Kieff, Scarlet Pine, Countess, Vicomtesse Héricart de Thury, Victoria, Unza Fritz, Wonderful, W. J. Nicholson. Our selection, 2*s.* 6*d.* per 100, 20*s.* per 1000, in ten or twenty sorts, all true to name.

HARRISON'S MUSK, 2 plants 1*s.*, 12 for 3*s.* 6*d.*

PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2*s.* per dozen.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To Nurserymen and Others.

ORNAMENTAL TREES and SHRUBS, a large assortment for Sale, including Aucuba japonica, Euonymus, green, golden and silver; Bay, sweet; Box, Cupressus macrocarpa, Cedrus Deodara, Thuja Warreana and gigantea, Laurustinus, Evergreen Oaks, Phillyreas, Pinus insignis, &c. Size and price on application. The above have all been well transplanted, and are now fit for removal.

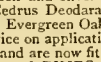
Also a large quantity of PINES, clean healthy plants—Queens, Smooth Cayennes, and Charlotte Rothschild.

All applications to be made to Mr. B. OLLIVER, Foreman at The Nurseries, Northgate, Chichester.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.



New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

GEO. WHEELER, NURSERYMAN, SEEDSMAN and FLORIST, Warminster, Wilts.

CALCEOLARIA.—Geo. Wheeler's Superb Strain, being in habit very compact, stout, and dwarf, of great variety in colour, and beautifully marked. Is inferior to none. Retail packets, 2*s.* 6*d.*, 1*s.* 6*d.* and 1*s.* each. Trade packets, 21*s.* to 5*s.* each.

G. W. distributed his first raised hybrid Calceolaria in 1830, at 21*s.* each in trade; and in 1832 supplied many sorts of 6 plants each to the trade at 42*s.* the set.

IMPERIAL CABBAGE.—G. Wheeler's Improved Genuine, after a test of about half a century, still maintains its character of first-rate Early. A limited quantity still on hand at the rate of 1*s.* 2*d.* per ounce.

Prepaid Orders for the above will be sent post-free.

CHARLES VUYLSTEKE, NURSERYMAN, Loochristy, near Ghent, Belgium.

Our ENGLISH CATALOGUE for 1877-78 is now ready, and may be had gratis on application. It contains description and price of Azalea indica, Azalea mollis, hardy Ghent Azaleas, Camellias, Kalmia latifolia, Rhododendrons, Stove and Greenhouse Plants, Bulbous Begonias, Dutch Flower Roots, &c. Upwards of 200,000 plants, of unusual beauty and strength, and disposable at very advantageous prices.

Agents: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

ROSES.

CRANSTON'S NURSERIES

KING'S ACRE, HEREFORD.

(ESTABLISHED 1785.)

THE LARGEST ROSE GARDENS IN ENGLAND.

MESSRS. CRANSTON & CO.

Beg to announce that their ROSES (extending over many acres) are now in full bloom.

As considerable time will be required to inspect the whole of their Collection, Visitors to the Nurseries should take the morning trains arriving at Barr's Court, or Barton Stations, 2½ miles from the Nurseries, where conveyances are to be had.

Rose Blooms for Decoration supplied.

POSTPONEMENT—IMPORTANT NOTICE.

In consequence of a slight delay in the preparation, the Coloured Plate representing a selection of "CHOICE PLUMS" *will not be issued until September* 15, *instead of September* 8, *as previously announced.*

THE

GARDENERS' CHRONICLE

For Saturday next, September 8, *will contain a*

SPECIAL TELEGRAPHIC REPORT

OF THE

GREAT INTERNATIONAL FRUIT AND FLOWER SHOW AT CARLISLE.

THE GARDENERS' CHRONICLE

For September 15 *will contain an*

EIGHT-PAGE SUPPLEMENT devoted to HARDY FRUIT CULTURE,

AND A

BEAUTIFULLY COLOURED PLATE,

REPRESENTING A SELECTION OF

"CHOICE PLUMS,"

BY FITCH.

PRICE FIVEPENCE; POST-FREE, FIVEPENCE-HALFPENNY.

NOTICE TO ADVERTISERS.

As a very large extra circulation of this Number will be guaranteed, Advertisers desirous of securing space are requested to communicate at once with the Publisher,

W. RICHARDS, 41, WELLINGTON STREET, W.C.

MAY BE ORDERED OF ALL BOOKSELLERS AND NEWSAGENTS.

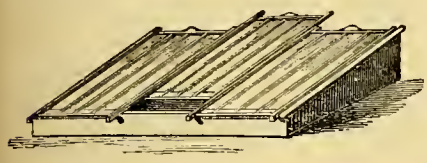
BOULTON & PAUL,

HORTICULTURAL BUILDERS, NORWICH.

No. 75.—MELON FRAMES and FORCING FRAMES.

The largest Stock in the Kingdom, ready to be despatched on receipt of order.

These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen; 24 in. high at the back, 13 in. high in front; painted three coats of good oil colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in with putty—the best method of glazing known, and adopted by the most eminent Builders and leading Nurserymen (see *The Garden* for January 13, 1877, p. 30). Iron handles to each light, and an iron strengthening bar across. Each light is 6 ft. by 4 ft., and 2 in. thick.

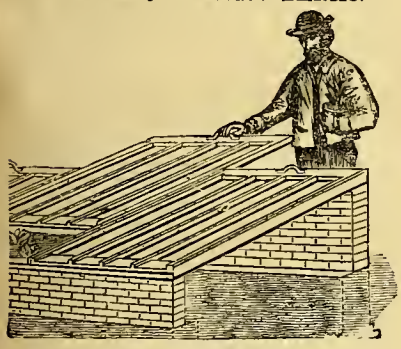


CASH PRICES (Carriage paid).

	Length.	Width.	£ s. d.
1-light frame	4 feet ..	6 feet	1 17 6
2 " "	8 feet ..	6 feet	3 5 0
3 " "	12 feet ..	6 feet	4 17 6
4 "	16 feet ..	6 feet	6 7 6
5 " "	20 feet ..	6 feet	7 17 6
6 " "	24 feet ..	6 feet	9 7 6

Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh, on Orders of 40s. and upwards.

PIT LIGHTS and SILLS for BRICK WALLS on EARTH BANKS.



PIT LIGHTS AND FRAMES,

Complete for fixing on Brickwork, made in two sizes of lights to work 6 feet by 4 feet 2 inches thick, 7 feet 6 inches by 4 feet 2½ inches thick, lights glazed with 21-oz. British sheet glass, painted four times, sills 4½ inches by 3 inches, with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

CASH PRICES.

Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.

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SATURDAY, SEPTEMBER 1, 1877.

THE PRINCIPLES OF RATING.

THE law enacts that the rate shall be founded upon "the net annual value" of the rateable land or hereditaments. The Parochial Assessment Act, 6 and 7 William IV., cap. 96, defines "the net annual value" to be "the rent at which the same (land or buildings) might reasonably be expected to let from year to year, free of all usual tenants' rates and taxes, and tithe commutation rent-charge, if any, and deducting therefrom the probable average cost of the repairs, insurance, and other expenses, if any, necessary to maintain them in a state to command such rent."

In order to discover what the rent is, at which the property "might reasonably be expected to let from year to year," the place itself, and not the acts nor desires of landlord and tenant, must be chiefly considered. The test is, not what rent is actually paid, but what in the opinion of persons in general is the market value per annum of the property in question. A landlord, out of feeling of relationship or friendship, might be willing to accept an almost nominal rent from one particular tenant; or, another tenant might for some special reason be glad to pay a fancy price for the same premises. In neither of these cases would the rent be of that reasonable kind contemplated by the framers of the statute. In the former instance the sum paid per annum would only be a portion of the reasonable rent, while in the latter only a portion of the sum paid would be rent at all, the rest being a kind of premium voluntarily paid by the tenant by reason of the premises being of exceptionable value to him. In neither case could the rate be calculated from the rent actually paid.

It will be observed that the statute requires the rent to be such as could be reasonably expected from year to year, and not for a term of years. In the case of Staley *v.* Castleton Overseers (32 *L. J.*, M. C., 178) the facts were that a silk mill was closed in consequence of the depression of trade. The owners of the mill appealed against the rate. Mr. Justice (now Lord) Blackburn decided that the rate was to be made upon the estimate of rent to be expected reasonably. A tenant would give nothing for it as a silk mill just then. Things might improve, and a tenant might be found who would take it for a term at a larger rent, but that was not the calculation intended by the Act. Again, in the case of the Attorney-General *v.* Lord Sefton (32 *L. J.*, Ex., 230), it was held that duty did not attach to land that was unproductive at the time the defendant succeeded to it, though it might become very valuable in the future. Again, it was held in the Tyne Coal Company *v.* Wallsend Overseers (35 *L. T.*, N.S., 854) that the colliery, which was drowned out, and had been so for six years, must be rated at its value from year to year as it was then, and not as if it were a going concern.

In each of the cases cited above the property had depreciated in value through no fault of the respective owners. In other words, the rate was to be calculated according to the present, and not the prior, nor future, nor speculative worth. In the case of Harter *v.* Overseers of Salford (34 *L. J.*, M. C., 206), Mr. Justice Crompton said:

"If the premises are unletable they are not rateable, but if they are unlet merely because the owner stands out for a higher price (*i.e.*, one above their reasonable value) they are liable to be rated at a fair rent." In the same case, Mr. Justice Blackburn laid down that where premises are to be let, and are not *de facto* let, in practice they are empty, and not considered rateable. But when the landlord retains possession, and has actually some beneficial occupation, he is rateable at least to the extent of that benefit.

No exact case is recorded of appeal upon rating of an unproductive nursery greenhouse, forcing frame, or vinery; but the cases above cited seem to point that the same principles should apply to this sort of property as are laid down in Staley's case and in that of the Tyne Coal Company.

GARDENING BY THE SEA.

A few lines on seaside gardening may not prove uninteresting to some of your readers. What I am about to notice is the bedding in the Queen's Gardens Inclosure, West Brighton. Only a few years ago, the area now so attractive was for the most part waste beach; now it is one of the most charming spots possible to conceive, adding another grand feature of interest to the queen of watering-places. The care of embellishing this spot was entrusted to Mr. W. Miles, who has fully exemplified what can be done by perseverance and skill, and it certainly reflects very great credit upon him. A well-kept lawn is bounded towards the inland frontage by a very neat and flourishing hedge of Tamarisk and Euonymus, which shelter about 1000 feet of a fine series of flower-beds. Banked in by a ridge of alternate horizontal and bay-like ridges of flowering plants, are formed seventeen ornamental beds of designs in carpet bedding that cannot fail to attract the attention of those who promenade this delightful spot.

Commencing at the end nearest Brighton, the first bed is of diamond shape. The edging is Sedum lividum, then a double row of Echeveria secunda glauca; the design is then worked out with Alternanthera paronychioides, lined in with Pyrethrum Golden Feather; and the ornamental brackets are pannelled with Alternanthera amœna and Sedum glaucum, which produces a lovely effect.

No. 2 bed is of crescent shape, and is very attractive, by reason of the pretty arrangement of curious succulent plants. The carpeting plant used is the pretty white flowering, moss-like plant Sagina procumbens, which is perfectly hardy here, and which eventually will become a great favourite with those who delight in this style of gardening.

No. 3 is also remarkably effective—star-shaped, and pointed with the vivid Alternanthera amœna, edged and interlined with Sempervivum and Mesembryanthemum.

No. 4 is worked out with Kleinia repens; the inner design is manipulated with beautiful green, compact-growing Mentha Pulegium gibraltarica—one of the neatest for this work. The inner designs are filled up with Leucophyton Brownii, the remaining brackets and panels being composed of Alternantheras and Mesembryanthemums in variety.

No. 5 is one of the most inviting in appearance, by reason of the beautiful arrangement of colours. The outer edging is Sedum glaucum, then a row of Sempervivum calcareum, next the Mesembryanthemum cordifolium variegatum. These three rows form the edging. The design itself is then worked out with Echeveria secunda, which forms eleven peg-top designs, which leave a small panel at the back and the large in the front. These panels are lined with Golden Pyrethrum, and filled in with Alternanthera amœna. The inner designs are lined with the beautiful Alternanthera paronychioides, followed up with Golden Pyrethrum, a circle then being struck with the compact Lobelia pumila, filled in with various novelties in white-foliage plants, which completely harmonise in colour.

I might go on enumerating the splendours in carpet-bedding which Mr. Miles has produced, but am afraid it would occupy too much space; I must not omit, however, to mention bed No. 11, which is very attractive, and claims attention from its peculiar design—a square-shaped bed with four points, Sedum glaucum lined with Alternanthera, the design being traced out with the Golden Pyrethrum and panels of Alternanthera amœna and spectabilis, it is certainly one of the most showy of all.

Overlooking these beautiful beds is the front of the West Brighton estate, which a few years ago was waste land and fields; now it is covered with stately mansions, and beautiful detached and semi-detached villas. The planting of the avenues and laying-out of the grounds was also entrusted to Mr. Miles. The avenues are planted for the most part alternately with Black Italian Poplars and English Elms, and it is at once apparent that these are the best trees adapted for the seaside [Doubtful as to the Elm], whilst Cupressus macrocarpa and the Euonymus for other purposes will be found equally valuable.

I could not help noticing how beautifully Clematis Jackmanni was growing on the walls of the houses, flowering magnificently facing the sea. Passing up one of these beautiful avenues, and within a stone's-throw of the Cliftonville Station, are the West Brighton Nurseries of Mr. Miles, upon which stand several fine newly-erected houses (by Boulton & Paul, of Norwich). The houses are stocked with a fine selection of foliage and flowering plants, several of which have recently made their appearance at most of the shows in Sussex and Kent with great success. The class of plants principally grown are bedding and decorative plants, as Mr. Miles is entrusted with the principal of the decorations for public and private balls and dinner parties in Brighton, and for which he has gained a high reputation.

I must not forget to mention that outside, growing in beds for seed, are about 2000 plants of his new Mignonette. The plants are a very even lot; most of them are 2 feet high and as much through. It has a fine branching habit; the flower-spikes attain the height of 18 to 20 inches, 6 inches of which were covered when I saw them (August 19) with fully expanded flowers. It is more fragrant than the older forms, and cannot fail to become a special favourite. *A. O.*

THE TRADE OF THE STREETS.

The costermonger with his barrow is an institution: he has taken possession of the trade of the streets, and has become an indispensable caterer for the multitude. His wares, laid out on an open barrow, lie for the ready inspection of every customer, and one would be apt to exclaim, that if those who spend their money with him do not get exactly what they want, it must be their own fault. In general this would be the case, but the costermonger, beyond his adult discriminating customers has a large *clientèle* of small children, who can scarcely be expected to know good from bad, and if they did are not likely to exercise much judgment in their eagerness to spend their halfpence. The costers generally drive a roaring trade, their barrows are covered with fruit, but the quality of this article seems to vary with the locality in which it is sold. In the City, the imported or home-grown fruits displayed on these shops upon wheels are excellent—indeed often so good as to compare favourably with that to be met with in the ordinary fruiterers' shops; but out in the suburban districts and along the bye-streets of a poor neighbourhood the goods of the itinerant vender of fruit present a very different picture. Instead of the well-grown, fully ripened Pears, Apples, and Plums, tempting to the sight and inviting even to the palate of an anchorite, little is to be seen save pyramids of windfalls, green, sour miniature Apples and Pears, together with stone fruit in the same unwholesome, nay, dangerous condition, which not even the eye of childhood, one would imagine, could look upon with favour; yet here they are displayed in heaps each morning, awaiting the juvenile purchasers, and by nightfall this accumulation of diarrhœa and cholera-inducing rubbish has been sold and devoured by scores of innocent children, who have not yet learnt to discriminate between that which is wholesome and that which is injurious.

We have inspectors of meat—the butcher who exposes bad beef, mutton, veal, or pork for sale may have it condemned and destroyed, and he be mulcted in a heavy fine beyond; should one ox be tainted with disease in a shipload the whole cargo of imported animals is doomed, and very properly, to immediate death; yet in regard to unsound fruit but little or no notice is ever taken of it, dealers may sell with impunity whatever trash they please, and thus fruit scarcely fit for the hog-tub finds its way into the small obscure shops and into street barrows, and is finally consumed by children, more especially of the poorer classes, whose digestion is already weakened by want or improper food.

Is it strange, then, that under such circumstances as the fruit season advances and autumn comes on disease and death increase? That which Nature gives us as a blessing is turned into a curse. The earth brings forth her increase, the horn of plenty is full to overflowing, but in our densely populated towns the poor taste but rarely of the richness of the land, they consume the very refuse that should be set before swine.

With the advent of the fruit season comes also a sickening scene at Covent Garden Market, indeed at all our large fruit and vegetable markets, where scores of little children, ragged, dirty, barefoot and hungry, the very scum of the low purlieus of the neighbourhood, may be seen dodging under carts, diving under stalls, and stealthily stealing in and out of the precincts of the place to pick up the refuse, rotten fruit, and even vegetables, which have been thrown aside, and which are appropriated by these poor outcasts of civilisation, and greedily eaten.

Is it not possible to do away with such pitiable sights? Could not the refuse be at once carried to some receptacle conveniently situated for the purpose, and there shut up away from the eyes and fingers of these poor children, until finally removed by the scavenger. *T. J.*

NOTES ON THE BEDDING SEASON.

As with other outdoor departments of the garden, the bedding season cannot be said to have been a general success. Even Pelargoniums and their kindred associates have not quite filled up their allotted spaces till a very short period ago, and their stunted appearance in many exposed situations points to the difficulty of late propagation—a matter to be regretted, both for sake of the well-being of a future stock as well as the extra labour entailed in working up anything like a large quantity so late in the season. Out of misfortunes and reverses there are, however, lessons to be learnt, and if these lessons be turned to proper account they may prove invaluable in future arrangements. Whatever the general opinion may be of the present style of bedding, or however much the grandeur of our public parks may be admired, the one thing that should be paramount above all others is the selection of suitable plants for various localities. It is a simple piece of folly to ape at comparison without the same working facilities and climate, and yet what a miserable longing we northern gardeners seem to have for imitation.

Who has ever witnessed the beauty of Hyde Park or Battersea without catching infection? I dare venture to suppose that not one gardener in fifty can summon up fortitude enough to withstand the contagion that floats about in any or all of those lovely places, without making a resolve to go home and do likewise. Of course, it is always understood that we never leave home without adding some little to our stores of existing knowledge. No one, therefore, can be blamed for being an aspirant on the way to progress; but that progress should be a reality, which is not the case when our fondest cherished notions are upset by unfavourable seasons, and a wrong selection of plants unsuited for the particular locality in which we may happen to reside. We are led away in our endeavour to improve on an existing state of things by a chance season now and then, though I venture to predict that the season of 1877 will have cured many a sceptic outright. We shall be nearer the mark if we not only cut our coat according to our cloth, but also try to discern whether the cloth is adapted for its intended purpose or not. I apprehend that, as a plain matter of fact, our duty is, not to ape exactly the same plants that people grow elsewhere, but to try and get a similar effect in colour from plants that will grow early and thrive in our own climate. Subtropical bedding is, indeed, a bore not many miles north of London. We do not grudge Londoners their climate, though we would often wish to go shares with them, and try to enhance the name and credit of bedding northwards. Delicate plants will not live, much less grow and colour, in a season like the past; they must, therefore, be replaced by those that are of a hardy constitution, and are known to be possessed of such qualities as will adapt

them for the place or position they are intended to occupy. Extensive flower gardens, without adequate means of supply, are a misfortune to a gardener and a burden to the place itself; but much may be done by encouraging hardy plants. It is a great relief when the next busy season comes round to find that your bedding stocks consists largely of Calceolarias, purple, yellow, blue, and white Pansies, Santolinas, &c., that can be cleared away to their summer quarters early. Then, again, there is an end of sleepless nights and unpleasant dreams because of a clear sky and a few bright stars; your plants grow and flower freely, there are no blanks to mar effect, and no harassing thoughts of failure from this point of view. It will be seen that we would urge the claims of hardy plants, where climate or other circumstances interfere with the successful management of more tender things. Those that require the greatest trouble to propagate and grow should be minimised or done without altogether if hardy substitutes can be found to take their place, or if a similar effect can be produced with other things. Try if possible and give a compost to each section of plants, whether the effect to be produced is by flower or foliage, that will induce flowering properties in the former and richness of colour in the latter; one or two trials will be sure to put you right. It is best to aim midway—we cannot tell what sort of season is coming, so that we must not expect always to hit things to a nicety. I wonder whether any one has tried the effect of sea-sand that has lain up for a number of years as a component for bedding plants? The effect it produces is almost incredible. The size and colour of Pelargonium trusses here is remarkable, and the profusion of bloom is more remarkable still; and we attribute this in a great measure to proper preparation of soil for each section of plants. What can be done in a select plot of bedding, would no doubt be out of the question where bedding is done by the thousand. Yet I think a little might be done annually by way of preparation. A good stock of well-grown carefully selected plants, put out early, in soils calculated to assist Nature in all her developments, is a treat compared to the scant treatment accorded to extensive gardens, which are seldom filled up or produce a telling effect before the middle of August. We have tried the experiment ourselves, and find it pays. Light fibry maiden loam, with a liberal mixture of sea-sand, we find an excellent compost for strong growing varieties of the Amy Hogg and Waltham Seedling type; the same mixture, with an additional dash of leaf-mould, does grandly for Lobelias; whilst the best loam to be found, well mixed with a portion of a spent Mushroom-bed, together with a solid dressing of several inches of good manure, from 9 inches to a foot from the surface, will keep Verbenas in luxuriant health up to November. Never mind what people say about a nasty climate, or a dry or sandy subsoil. Verbena culture can be mastered if proper means be taken, but you must begin at the beginning; I prefer cuttings taken in April to those taken earlier. Let the season of growth be without checks, the treatment liberal, and you will avoid insects, wiry growth, and premature flowering.

The grandest acquisition ever introduced for dwarf bedding is undoubtedly Lobelia pumila grandiflora compacta; nothing else that I know of will approach it when well done and planted in a suitable soil. In order to prolong the season, two batches of plants are necessary. The plants flower so densely and freely that they are quite exhausted in two months after planting; a second batch is therefore necessary to take their place, or, what is as good a plan, or perhaps better, is to have a reserve of Viola Blue Perfection to take its place. Those Pansies seem quite at home in this county, and are profuse flowerers till late in the season. Centaureas, too, are excellent things for giving effect with a band of Iresine Lindeni, which should be planted out, to live, not to grow very much before the month of August, edged with Mrs. Pollock Pelargonium. This makes a grand bed—a good central one—and a quiet effect, without varying, as flowering plants are bound to do with the changes of weather. This is one illustration of how we might select plants suitable for our own climate without attempting to manage the more tender class. Mesembryanthemum cordifolium variegatum and Lobelia pumila grandiflora compacta give us the earliest and best effect. Another hardy plant of medium growth we find in Santolina incana. It colours well in a sandy soil, and makes stubby growth of great beauty. Verbena venosa, planted alternately with Santolina, makes a very pleasing bed. Dwarf variegated Pelargoniums, autumn-struck, or the golden-leaved type, such as Crystal Palace Gem, go well with Purple King Verbena, or the more vigorous-growing Lobelias. Pyrethrum aureum, autumn-sown, is well adapted for any climate; and Echeverias and Sempervivums can be wintered with little trouble in any dry place. Cerastium tomentosum is still the simplest and best dwarf white to edge with, though nearly forgotten; and, with many more things that might be enumerated, I cannot see why we should not make such a selection of hardy plants as would rival in beauty many of the more tender things grown in the southern parts of the kingdom. Alternantheras and such-like plants may be a "curiosity," but they are far from being decorative plants in Lancashire. *W. Hinds, Otterspool.*

THE CULTIVATION OF THE ROSE IN TURKEY.

While we are complaining in this country of the high price of provisions owing to the present calamitous war in the East we are reminded of the serious impediment to the exportation from Eastern ports of numerous products of great commercial value. For some years past there has been a general complaint of the high price and inferior quality of Boxwood, as imported from the Black Sea, from whence, indeed, the best quality wood has hitherto been brought, being exported from Poti, but since that port has been in such a disturbed state it seems that much more serious attention must be devoted than has been done to discover and utilise other woods for engraving purposes. To this question we have already devoted some space, and through the instrumentality of Mr. Worthington Smith we have been enabled to give examples of engravings on many British and foreign woods, the latest and most suitable of which seems to be Hawthorn (Cratægus Oxyacantha). Amongst other Eastern products which we may expect to be largely affected by the war are Madder (Rubia tinctorum), and Scammony (Convolvulus Scammonia). The first, however, is of considerably less importance now than in former years, owing to the great strides chemistry has made in producing the aniline dyes, and their very general adoption. In consequence of this, Madder and other vegetable dyes have been rapidly decreasing in value, and naturally the importations have been yearly less and less. Nevertheless, the diminution in these and other products, though in themselves of comparatively minor importance, will in the aggregate make themselves felt. As a single crop the Rose perhaps is amongst the most important, and on this subject we learn from recent advices from Turkey that total ruin has overtaken the Rose crop in the valley of Kazanlik, and the neighbouring districts of Cirpan, Giopca, Karadshah-Dagh, Kofun-Tepé, Jeni-Sughra, and others. All these districts are devoted to this beautiful branch of husbandry. Roses are grown here in extensive fields, and in ridges, like Potatos, while the intervals between the Rose bushes are heaped high with fallen petals, useless for the staple manufacture of Kazanlik, but very good for making *pot pourri* and tooth-paste. Kazanlik is the headquarters of the manufacture of attar of Roses, and this place and the valley of the Tundja have been called the "Cashmere of Europe, the Turkish Gulistan, the Land of Roses." "But it seems only too probable that for a long time to come we shall get no more Roses from the Balkans, or, indeed, from any part of Turkey, European or Asian, since the demand for soldiers and more soldiers must, by suspending the labours of the peasantry, have been as destructive to the Rose country in Asia Minor and in Syria as in the districts actually ravaged by the war. Andalusia, Granada, and Valencia were all, in the time when the Moors held sway in Spain, important centres of the cultivation on a large scale of flowers and the fabrication of perfumes; and even at the present day there are many flower farms round Tangiers and Tetuan, in Morocco, where Roses are grown in enormous quantities for manufacturing purposes. Some seventy years ago an ingenious French emigrant in this country got together a large capital and obtained the patronage of the Prince Regent, afterwards George IV., for a scheme, the object of which was to cover the then open district lying between Brompton and Fulham with Rose farms, the final cause of which was to be the making of attar. The hypothesis of the ingenious emigrant was that as the soft and marshy soil of Putney was notoriously favourable to the growth of Asparagus, the land on the opposite shore would prove as propitious to the culture of Roses. He accordingly established more than one flower farm, but the scheme eventually came to nothing."

SELECT HERBACEOUS PLANTS.

In the following select list of herbaceous plants the approximate time of flowering is indicated by numbers corresponding with the months of the year. All will succeed in good garden soil except where peat is mentioned. The newer kinds are marked "*n.*" The letters "*d, c, s,*" are for division, cuttings, and seeds. With one or two exceptions those difficult of cultivation have been omitted. All may be considered essential, and very many additions may easily be made.

Acæna microphylla, 7—9, *d.*
Acanthus spinosus, 7—9, *d.s.*
Acantholimon venustum, 6—8, *d.*
Achillea tomentosa, 5—9, *d.*
,, umbellata, 6—9, *c.*
Aconitum heterophyllum, 8, *n.d.s.*
,, Napellus, 6—8, *d.s.*
,, ,, var. autumnale, 7—9. *d.s.*
Adonis vernalis, 3—4, *d.* only
Æthionema grandiflorum, 6—7, *c.s.*
Alyssum saxatile, 4—5, *s.*
Anemone apennina, 3, *d.*
,, hepatica vars., 3—4, *d.*
,, Pavonina var. fulgens, *d.*
,, ranunculoides, 4—5, *d.*
,, japonica var. Honorine Jobert, 6—9
Aquilegia alpina, 6, *s.*
,, cœrulea, 6, *s.*
,, chrysantha, 6, *s.n.*
Arabis albida, 4—6, *d.*
,, blepharophylla superba, 4—7, *n.s.*
,, lucida variegata, 4—6, *d.*
Arenaria balearica, 5—7, *d.*
Armeria vulgaris rubra, 5—7, *d.*
Asclepias tuberosa, 8, *d.*
Aster Amellus var. bessarabicus, 8—9, *d.*
,, Chapmanii, 8—9, *d n.*
,, novæ-angliæ pulchellus, 9—10, *d.*
,, ,, ,, roseus, 9—10, *d.*
,, Reevesii, 9—10, *d.*
,, Shortii, 9—10, *d.n.*
,, turbinellus, 8—10, *d.*
Astragalus monspessulanus, 6—7, *s.*
Aubrietia Campbellii, 3—6, *d.*
Bocconia cordata, 5—8, *d.*
Calystegia pubescens fl.-pl., 6—9, *d.*
Campanula carpatica, 6—9, *d.*
,, ,, var. alba, 6—9, *d.*
Campanula coronata vars., 6—9, *d.*
,, isophylla, 6—9, *s.*
,, lactiflora, 6—9, *s.*
,, pulla, 6—7, *d.*
,, turbinata, 6—7, *d.*
,, Van Houttei, 6—8, *d.*
,, pumila, 6—7, *d.*
,, ,, var. alba, 6—7, *d.*
,, nobilis, 5—7, *d.*
Cheiranthus alpinus, 6—7, *c s.*
,, Marshallii, 4—7, *c.* only
Chelone barbata, 7—8, *d.*
Convallaria majalis, 4—6, *d.*
Coronilla varia, 6—9, *d.s.*
Corydalis nobilis, 5—7, *d.*
Delphinium Belladonna, 6—9, *d.*
,, formosum and other hybrids, 6—9, *d.*
,, casbmirianum, 6—7, *n.d.s.*
Dianthus alpinus, 6—7, *c.s.*
,, cæsius, *c.s.*
,, superbus, *c.s.*
Dielytra spectabilis, 5—7, *d.*
Dodecatheon integrifolium, 4—6, *d.s.*
,, Meadia var. elegans, 4—7, *d*
Doronicum caucasicum, 4—6, *d.*
Dracocephalum Ruyschianum, 6—7, *d.s.*
,, speciosum, 6—7, *d.s.*
Epilobium angustifolium, 7—8, *d.*
,, ,, var. album, 7—8, *d.*
,, hirsutum fol. var. 6—7, *d.*
Epimedium alpinum, 5—6, *d.*
,, macranthum, 3—5, *d.*
,, sulphureum, 3—5, *d.*
Eranthus hyemalis, 2—3, *d.*
Erodium Maniscavi, 6—9, *d.* only
Eryngium amethystinum, 7—8, *d.s.*
,, maritimum, 7—8, *d.s.*
Erythrochæta palmatifida, 8—9, *d.*
Euphorbia Myrsinites, 4—6, *s.*
,, Characias, 6—7, *s.*
,, Cyparissias, 6—8, *s.d.*
Francoa sonchifolia, 8—9, *d.*
Fuchsia Riccartoni, 6—9, *c.*
Funkia lancifolia fol. vars., 8—9, *d.*
,, grandiflora, 8—9, *d.*
Galatella cana, 7—9, *d.*
Galax aphylla, 6—7, *d.*, peat
Gentiana acaulis, 4—7, *d.*
,, asclepiadea, 7—8, *d.*
,, ,, var. alba, 7—8, *d.*
,, septemfida, 7—8, *d.*, peat
,, verna, 4—5, *d.*
Geranium Endressii, 6—7, *d.*
,, sanguineum, 6—8, *d.*
,, striatum, 6—7, *d.*
Geum coccineum, fl-pl., 7—9, *d.*
Gunnera manicata, 8—9, *s.*
,, scabra, 8—9, *s.*
Helianthemum vulgare vars., *c.*
Helianthus orgyalis, 8—10, *d.*
,, rigidus, 8—9, *d.*
Helleborus atrorubens, 2—3, *d.*
,, fœtidus, 2—3, *s.*
,, niger major, 1—3, *d.*
,, olympicus, 2—3, *d.*
Hoteia japonica, 6—8, *d.*
Hypericum patulum, 6—7, *c.*
Iberis Garrexiana superba, 4—7, *c.*
Lathyrus latifolius, 6—9, *s.*
,, var. albus, 6—9, *s.*
Liatris pumila, 8—9, *d.*
Lindelhofia spectabilis, 5—7, *d.*
Linum flavum, 5—9, *c.*
,, Lewisii, 6—8, *s.*
,, candidissimum, 6—8, *s.*
Lithospermum prostratum, 4—8, *c.*
Lobelia cardinalis, 7—9, *d.*
Lupinus polyphyllus vars., 6—7 *d.s.*
Mertensia virginica, 6, *d.*
Lychnis Haageana, 6—7, *s.n.*
,, chalcedonica, 6—8, *d.*
,, ,, var. alba and dble., *d.*
Lysimachia clethroides, 6—7, *d.n.*
Lythrum virgatum, 6—7, *d.c.*
Monarda didyma, 6—8, *d.*
Myosotis dissitiflora, 3—6, *d.*
,, sylvatica, 4—6, *s.*
,, ,, var. alba, 4—6, *s.*
,, Impératrice Elizabeth, *s.*
Nepeta macrantha, 7—8, *d.*
Nierembergia rivularis, 6—9, *d.*
Œnothera acaulis, 6—9, *s.*
,, eximia, 6—9, *d.*
,, Fraseri, 6—9, *d.*
,, salicifolia, 6—9, *d.*
,, macrocarpa, 6—9, *s.*
Omphalodes verna, 4—7, *d.*
Oosoma taurica, 5—8, *c.*
Orobus luteus, 6, *d.*
,, vernus, 3, *d.*
Oxalis Bowiei, 7—10, *d.*
,, floribunda, 5—7, *d.*
,, lasiandra, 5—7, *d.*
,, spectabilis, 6—9, *d.*
Paeonia albiflora Reevesii, 5, *d.*
,, ,, Whitleyi, 5, *d.*
,, officinalis anemonæflora, 5, *d.*
,, tenuifolia fl.-pl., 5, *d.*
,, Montan vars., 5, *d*, and graft on roots
Papaver orientale, fl.-pl., 5—7, *d.*
,, nudicaule, 5—8, *s.*
Pentstemon centranthifolius, 8—9, *c.s.*
,, confertus, *d.s.*, 6—8
,, cordifolius, 7—8, *c.s.*
,, heterophyllus, 6—8, *c.s.*
,, Jeffreyanus, 6—9, *c.s.*
,, Hartwegii, 6—8, *c.s.*
,, Palmeri, 6—7, *c.s.n.* (one of the very finest; difficult of cultivation)
,, Scouleri, 6—8, *c.s.*
,, garden vars., *c.*
Phlox acuminata vars., 8—9, *c.*
,, divaricata, 6, *d.*
,, reptans, 4—5, *d.*
,, subulata violacea, 4—5, *c.*
,, ,, Nelsoni, 4—5, *c.*
Platycodon autumnale, 8, *d.*
Polemonium cœruleum, 6—7, *d.*
,, ,, variegatum, 6—7, *d.*
Polygonum Brunonis, 7—8, *d.*
,, vaccinifolium, 7—9, *c.*
,, cuspidatum compactum, 7—9, *d.*
Potentilla alba, 5—7, *d.*
,, bicolor, 5—7, *d.*
,, pyrenaica, 6—7, *d.*
,, garden vars., *d.*
Primula luteola, 6—7, *s.*
,, cortusoides amœna, 5—6, *d.s.*
,, ,, lilacina, 5—6, *d.s.*
,, japonica, 5—6, *s.*
,, marginata, 4, *c.*
,, verticillata, 3, *s.*
,, vulgaris vars., 4—5, *d.*
,, viscosa, 3, *d.*
,, ,, var. alba (nivea), 3, *d.*
Ptarmica serrata, fl.-pl., 8, *d.*
Pulmonaria saccharata, 6, *d.*
Pyrethrum uliginosum, 8, *d.*
,, roseum, vars., 7—9, *d.*
Pyrola rotundifolia, 6—7, *d.* peat
Ranunculus aconitifolius fl.-pl., 5—6, *d.*
,, amplexicaulis, 5—6, *d.*
Rhexia virginica, 7, peat
Rudbeckia speciosa, 7—8, *d.*
Salvia argentea, 6—8, *s.*
,, clionautha, 6—8, *s.*

Salvia interrupta, 6—8, *c.n.*
,, Horminum rubrum, 7—8, *d.*, annual
,, ,, violaceum, 7—8, *d.*
,, taraxacifolia, 6—8, *s.n.*
Saxifraga Cotyledon, 6—7, *d.*
,, ciliata, 4—5, *d.*
,, longifolia, 7—8, *d.*
,, Maweana, 4—5, *d.n.*
,, hypnoides, vars., 5—6, *d.*
,, oppositifolia, 3—4, *d.*
,, Stracheyii, 4—5, *d.n.*
,, Wilkomiana, 5—6, *d.*
and many others
Sedum albo-roseum, 6—7, *d.n.*
,, brevifolium, 6—8, *d.*
,, spathulifolium, 6—8, *c.n.*
,, spectabile, 8—9, *d.*
and many others
Sempervivum atlanticum, 6—8, *d.n.*
,, arachnoideum, 6, *d.*
,, Pittoni, 7—8, *d.*
,, Laggerii, 6—8, *d.*
,, cornutum, 7—8, *d.*
,, Reginæ Amaliæ, 7—8, *d.*
and many others
Senecio pulcher, 8—9, *d.n.*
Silene maritima, fl.-pl., *d.c.*
,, quadridentata, 6—7, *d.*
,, Schafta, 7—8, *d.*
Spigelia marilandica, 6—8, *d.*, peat
Silphium laciniatum, 8—9, *d.*
Spiræa palmata, 7—8, *d.*
,, venusta, 7—8, *d.*
,, Ulmaria, fl.-pl., 7—8, *d.*
Stachys lanata, 8—9, *d.*
Stokesia cyanea, 8—10, *d.*
Thalictrum collinum, 6, *d.*
,, minus, 6, *d.*
Thymus citriodorus aur. 7, *c.*
Tropæolum polyphyllum, 6—7, *d.*
,, tuberosum, 8—9, *d.*
Valoradia plumbaginoides, 7—9, *d.*
Veronica pectinata, 4—6, *d.*
,, Dabneyi, 4—6, *d.*
,, incana, 7—8, *d.*
,, pinguifolia, 7—8, *c.*
,, Teucrium, var. elegans, 6—7, *d.*
Vicia braceas 6—8, *d.s.*
Viola cornuta, 5—8, *c.*
,, ,, alba, 5—8, *c.*
,, lutea, 5—8, *c.*
,, odorata, 3—5, *d.*
,, pedata bicolor, 5—6, *d.n.*
,, Munbyana, 5—8, *c.*
Zauschneria californica, 8—6, *c.d.*, peat

THE GENUS AGAVE.

(*Continued from p. 202.*)

SERIES I.—CORIACEO CARNOSÆ.—Texture of the leaf rigid, not at all fleshy, nor yielding to the touch when mature. End-spine large, hard and pungent.

Group V. RIGIDÆ.—Edge of the thin rigid leaf without any distinct horny border; teeth deltoid, small, but distinct.

This is a considerable group, of which *A. lurida* and *Ixtli* may be regarded as the type, intermediate between the Americanæ and Aloideæ. From the former they may be distinguished by their more rigid habit, thinner leaves and small teeth: from the latter by their coriaceous texture and large pungent end-spines. Of the species of which the inflorescence is known, some belong to Euagave and some to Littæa.

* Leaves oblong-spatulate.

44. *A. Decaisneana*, Jacobi, Nachtrage, p. 28.—Acaulescent. Leaves oblong-spatulate, about 4 inches long, 3 inches broad at the middle, narrowed to 2 inches above the dilated base, a light rather shining green, the face concave, the terminal spine strong and blackish, the edge margined by crowded minute deltoid black teeth, which are rather recurved at the tip. Inflorescence unknown.

A native of Mexico, introduced about 1869. Described by General Jacobi from a specimen in the Jardin des Plantes, at Paris. So far as I am aware it is unknown in England.

45. *A. Warelliana*, Hort. Saunders; fig. 53.—Acaulescent. Leaves about 30 in a rosette, oblong-spathulate, 9—10 inches long, 3 inches broad above the middle, narrowed to 2 inches above the dilated base, nearly flat on the face, ⅜ inch thick in the centre, green, scarcely at all glaucous, tipped with a strong brown channelled spine 1 inch long, the border margined with close deltoid prickles about ½ line long, which are red-brown in a young state, and dark purple when mature. Inflorescence unknown.

This is a well-marked plant, which I do not find anywhere noticed. My description is taken from the specimen in the Reigate collection, from which the accompanying drawing was made. Probably it is a Mexican species.

46. *A.* (*Littæa*) *Botteri*, Baker, in Bot. Mag., t. 6248; fig. 54.—Acaulescent. Leaves about 50 in a rosette, oblong-spathulate, about 2 feet long, ½ foot broad above the middle, narrowed to 4—4½ inches above the base, pale green, hardly at all glaucous, concave in the centre, where it is ⅜ inch thick, 1½ inch thick at the base; the bard, pungent, channelled end-spine ½ inch long; the marginal teeth crowded, deltoid, nearly black, ⅛ inch long, upcurved at the tip. Scape twice as long as the leaves, covered with adpressed lanceolate bracts. Inflorescence a dense spike, longer than the leaves; primary bracts lanceolate, with a long point; the lower ones as long as the flowers; bracteoles as long as the perianth tube. Ovary under 1 inch long; tube funnel-shaped, ¾—⅞ inch long; segments greenish-yellow, oblong, 1 inch long. Filaments 2½ inches long, inserted at the throat of the perianth tube; anthers ½—⅝ inch long, linear, yellow, at first reddish. Style 3½ inches long; stigma capitate.

A native of Mexico, sent to Mr. Saunders by the collector after whom it is named. The plant from which the accompanying woodcut was made passed into the hands of Mr. J. T. Peacock, with whom it flowered in the spring of 1875. A full account, with a coloured figure, will be found, as cited, in the *Botanical Magazine*.

** Leaves oblanceolate-spatulate, decidedly glaucous.

47. *A. miradorensis*, Jacobi, Nachtrage, p. 31.—Acaulescent. Leaves about 30 in a rosette, oblanceolate-spatulate, 1½—2 feet long, 2—2½ inches broad above the middle, narrowed to 18—21 lines above the base, thin but firm in texture, ⅛ inch thick in the centre, very glaucous, with a firm red-brown end-spine 1 inch long, the side prickles very minute (¼—⅓ line long), deltoid, crowded and colourless, five or six to an inch in the centre of the leaf. Inflorescence unknown.

Said by General Jacobi to be a native of the banks of the River Tocantins, in the province of Goyaz, in Central Brazil. It is a well-marked plant, now to be seen at Kew and in other collections in this country, easily to be distinguished from all the forms of lurida and Ixtli by its very small crowded colourless prickles. Judging from the description alone, I strongly suspect A. Desmetianoa, Jacobi, *Monogr.*, p. 241, to be the same species, in which case the last name takes precedence on the ground of priority. The name miradorensis, which is said by Jacobi to be what it was called in the Belgian gardens when he described it in 1869, points to a Mexican origin.

48. *A.* (*Euagave*) *lurida*, Aiton; Bot. Mag., t. 1522; Kunth, Enum., vol. v., p. 825; Jacobi, Monogr., p. 109; *A. vera-cruz*, Miller, Gard. Dict., edit. vi., No. 7; *A. veræ-crucis*, Jacobi, Monogr., p. 111.—Acaulescent, or shortly caulescent. Leaves 30—40 in a rosette, oblanceolate-spatulate, 2—2½ feet long, 2½—3½ inches broad above the middle, narrowed to 21—24 lines above the dilated base, where it is ⅝ inch thick, very glaucous, firm in texture, ⅛ inch thick in the centre, the pungent red-brown end-spine ½—¾ inch long, the rather distant prickles of the margin deltoid, ⅛ inch long, shortly cuspidate, red-brown at first, finally nearly black. Scape, including the thyrsoid panicle, 12—16 feet long; bracts distant, linear, erecto-patent, the lower reaching 1 foot in length. Panicle 3—6 feet long, 1½ foot broad, with 12—20 ascending branches; pedicels ¼—⅜ inch long; bracteoles minute, lanceolate. Perianth greenish, 3—3½ inches long; ovary oblong-cylindrical, about 2 inches long; tube funnel-shaped, ½ inch long; segments oblong, 1 inch long. Filaments inserted at the throat of the tube, twice as long as the segments; anthers nearly 1 inch long. Style about 4 inches long.

A native of Mexico. Next to A. americana, this is the oldest and best-known of all the species. It is very fully described by Kunth and Jacobi, as cited above; a full account with a coloured figure, from a specimen that flowered with Mr. Saunders, in 1870, will be found in the *Refugium*.

Var. *A. Jacquiniana*, Schult. Syst., vol. vii. p. 727; Kunth, Enum., vol. v., p. 827; Hook. in Bot. Mag., t. 5097; Jacobi, Monogr., p. 96; Belg. Hort., vol. ix., t. 25; *A. lurida*, Jacq. Coll., vol. iv., p. 94, t. 1.—Trunk 1 foot or 1½ foot; leaf 2½—3 feet long; flowers smaller, 2—2½ inches long.

This seems to be quite connected with the type by intermediate stages. *J. C. Baker.*

(*To be continued.*)

THE MUSEUMS OF ECONOMIC BOTANY, ROYAL GARDENS, KEW.

IN our last article (vol. vi., N. S., pp. 423, 584) we referred to the contents of the No. 1 Museum as the products of Exogens and those of No. 2 as being derived from Endogens, consequently we find in this building the produce of two natural families which are amongst the most interesting, and certainly the most important in an economic point of view—we allude to the Palmaceæ and the Gramineæ. This building was that which contained the original collection, in fact the first museum formed in the gardens, and is briefly described at the beginning of our last article. It will suffice then to say that the building consists of two floors, the central portion of the building being a large room with a gallery running round it. At each end are small rooms, numbered. Commencing on the upper floor, at the east end we find in No. 1 room numerous well-known commercial products, and articles of general consumption either in their own country or for exportation. First in the Dioscoreaceæ are fine specimens of Yams, the tubers of several species of Dioscorea, which are so largely cultivated and form such an important esculent in tropical countries. These tubers often grow to an immense size, and weigh from 30 lb. to 40 lb. each. They abound in starchy or farinaceous matter, and are eaten either boiled or reduced to flour. An entirely different product is the Sarsaparilla, the rhizome of Smilax officinalis and other species growing in Mexico, Central and South America, and the West Indies. Numerous sorts are known in commerce under different names, varying in quality, and imported from different parts. The rhizomes are made up into bundles tightly bound round with the stems of some climbing plant, sometimes between 3 and 4 feet long, and 6 or 8 inches in diameter. The uses of sarsaparilla have been described as diaphoretic and tonic, and it has been extensively administered in chronic rheumatism, cutaneous affections, and generally, and, indeed, popularly, as a purifier of the blood. The efficacy of sarsaparilla is, however, at the present time very much questioned.

In the Orchidaceæ, a family of peculiar interest on account of the singularity and beauty of their flowers, we find but little of importance in an economic point of view. The only product of any real value belonging to the order is Vanilla, the fruit of Vanilla planifolia and allied species. These agreeably fragrant fruits, which grow in the form of a somewhat triangular pod, varying in thickness and length according to quality and kind, are largely grown in Mexico, Brazil, [the Mauritius, &c., and are used to flavour chocolate, liqueurs and confectionery generally. Belonging to the allied order Zingiberaceæ, we have fine commercial samples of the well-known condiment Ginger, the rhizome or root-like stem of the Zingiber officinale, a native of Asia, in the warmer countries of which it is now so generally cultivated that it is unknown in a wild state. It is likewise grown extensively in the West Indies, in Western Tropical Africa, and has been introduced more recently into Queensland. Here we have also represented the various kinds of Cardamoms, the fruits of Elettaria Cardamomum, an East Indian perennial plant 6 to 12 feet high, the uses of which are so well known for flavouring and in medicine; other kinds of Cardamom, furnished chiefly by species of Amomum, are also shown, as well as turmeric, which is the powdered rhizome of Curcuma longa, generally used in curries and Indian cookery as an aromatic condiment. It is largely cultivated in India and China. Passing to the other end of the room we see preserved in fluid a specimen of the rhizome of the arrowroot plant (Maranta arundinacea), which is cultivated very extensively at St. Vincent, Barbadoes, and Bermuda, as well as in Central and South America. From this rhizome is obtained the well-known and valuable food known as Arrowroot, to obtain which the scales are first removed from the rhizomes, which are then washed and ground in a mill, the pulp being afterwards washed on sieves, for the purpose of removing from it the starch, which is allowed to settle in clear water, and finally drained and dried with a gentle heat. Though Bermuda arrowroot has the highest reputation and realises the highest price in the English market, the supplies from the island are at the present time very small; the produce of the West Indies generally seems to be on the decline, and we receive arrowroot from other quarters, and notably from the colony of Natal. In the adjoining case to the arrowroot are the products of the Plantain order (Musaceæ), which yields not only the fruits known as Bananas and Plantains, and which form such an important article of food in nearly all tropical countries, but also the valuable fibre, Manilla hemp, obtained from the stems and leaf-stalks of Musa textilis, which is cultivated in the Philippine Islands for the sake of its fibre, the coarser kind being used for cordage and ropes, and the finer for textile fabrics. Here also may be seen the fruit of the celebrated Traveller's Tree of Madagascar (Ravenala madagascariensis), showing the seeds partly enveloped in a beautifully bright blue aril. The principal remaining economic products in this room are saffron, the dried orange-coloured stigmas of the flowers of Crocus sativus, a plant native of Asia Minor, but cultivated generally in Egypt and Southern Europe for the sake of the colouring matter, which is used for colouring and flavouring confectionary. Also various samples of the fibre of the American Aloe (Agave americana), with brushes and other articles made from it. This plant is generally known to us as a bold-growing inhabitant of our conservatories, the leaves of which abound in a coarse, strong fibre; but in Mexico, where it is abundant, the juice is drawn from it and fermented, when it forms a favourite intoxicating beverage, known as "pulque." Finally, we have under the Bromeliaceæ the Pine-apple (Bromelia Ananas), the delicious fruit of which is too well-known to need any further words. This plant, however, yields a very fine fibre, often used in the countries where it grows for delicate

fabrics almost identical with cambric. In this small room, then—the first in the arrangement of this Museum—are classified a large number of valuable and interesting products.

Room No. 2, still smaller, is entirely devoted to illustrations of Bamboos, and some of the multitudinous applications to which they are put. These gigantic grasses, of which Bambusa arundinacea is, perhaps, the best-known, are truly said by travellers to be applicable to almost every conceivable purpose. They are very rapid-growing plants, and in tropical countries quickly run up to a height of 50 or 60 feet. In China the leaves, simply dried, are very extensively used for lining Tea chests, being strung together by a thin cord passing through them. The sails, masts, and rigging of the vessels are all frequently made from Bamboo, as are also mats, screens, hammocks, and all kinds of furniture. The strong thick stems make excellent poles and posts for building purposes, and are constantly used for bridges. A few inches of the hollow stem, cut within a short distance of the joint so as to leave the joint itself for a bottom, makes a very good drinking-cup, and the larger stems thus treated are commonly used for water vessels; the split stems make excellent baskets, and when split very fine and plaited or woven, as is often done by the Chinese and Japanese, a very beautiful fabric is procured. The young shoots are boiled and eaten, and a beverage is prepared from the fermented juice of the plant. From the rhizomes, with the brown fibrous roots still attached, the Chinese forms various grotesque figures or toys. Finally, at the joints inside the hollow stems of the plant is found a siliceous deposit known as "tabasheer," which is reported to possess tonic properties. Besides all the uses here enumerated, and which are fully illustrated in the Museum, the most recent application of the Bamboo in European trade is for the manufacture of paper, for which it seems admirably suited.

The order Graminaceæ, which, as we have already said, commences with the Bamboos, is continued round the gallery of the large central room, the first plant illustrated being Rice (Oryza sativa). What Wheat is to us Rice is to the inhabitants of tropical countries, indeed to a large portion of the habitable globe; in fact it supplies food to a greater number of people than any other known plant, for not only is it the staple food in India—a failure in the crops nearly always resulting in a famine, as at the present time — but immense quantities are consumed in China and in the principal islands of the Indian Archipelago, as well as in America and Europe generally, the quantity imported into England alone amounting to about 7,000,000 cwt. annually. The Rice plant is found wild in India, where its cultivation dates from a very early period. Its introduction into China is said to date back some 4680 years. It was introduced about the year 1700 into the Southern States of America, and Carolina Rice is now one of the finest kinds imported, though at the present time it is cultivated in all hot countries where there is sufficient moisture to sustain it, for, being a marsh plant, its success depends upon the periodical inundation of the ground during certain stages of its growth (see *Gardeners' Chronicle*, 1876, vol. vii., p. 145). Even with us Rice is a most valuable article of food, being wholesome, nutritious, and, above all, cheap; nevertheless, it is not so extensively used by the poor as it ought to be and would be if the culinary art were better understood. In India Rice in the husk is universally known as paddy, but it seldom reaches England in this state. By removing the husk and winnowing it from the seeds the weight is considerably lessened, and consequently the cost of freight also. Of the numerous varieties of Rice known in India we need not speak, every one knows that in the English shops the different qualities are all distinguished, chiefly by the size and colour of the grain. The collection in the Museum is very large, various kinds of Rice from different countries being exhibited, and also a large series of commercial samples. An ear of Rice is perhaps the most graceful of all the grasses, and when seen in quantity, as in a field, has a very fine effect.

In close contiguity to the Rice is another important food-giving grass, of a character very different, however, so far as appearance goes, to the last-named; we allude to Maize (Zea Mays), a plant often grown in our gardens during the summer season for its bold and effective appearance. The plant is believed to be originally a native of America, and it is now largely cultivated in North and South America, as well as in India, the East Indian Islands, Northern Africa, and in some parts of South Europe. The flour obtained from the grains of this well-known plant is so extensively sold under the name of corn-flour, that we shall pass on to a hurried notice of the remainder of the grass products. Close to the Maize we find numerous specimens of Esparto-grass (Macrochloa tenacissima), now so abundantly used for paper-making that it is feared the supplies from Algeria and other parts will before long be exhausted. Samples of mats, hats, and baskets made in Spain from this strong grass are also shown in this case. A singular grass seed is that which attracts our notice under the name of Job's Tears (Coix lachryma); they are somewhat oval, about a quarter of an inch long, very hard, of a shining slate colour, and look more like shells than seeds. On account of their uniform size and shining appearance they are often used by the people where they grow for ornamental purposes as well as for rosaries. Close to the genus Coix—indeed, in the same case—is a sample of the so-called Canary seed (Phalaris canariensis). This corn is cultivated only sparingly in England, being grown only in a few of the English counties; nine-tenths of the annual consumption, which amounts to about 200,000 bushels, are obtained from Barbary, Turkey, and Holland. Its use is chiefly for feeding caged birds, and its greatest consumption is in the manufacturing districts of the North of England, the operatives mostly possessing a pet of the feathered tribe. Latterly, however, Canary seed has been used to some extent for feeding racehorses, owing to its reputation in forming muscle and not fat. We must pass over the numerous varieties of Millets, species of Panicum, Setaria, Penicillaria, and Sorghum, all important food-plants in India, China, Africa, and even in some parts of Europe, noting, however, as we pass, the novel way adopted by the natives of the Niger in stringing together the spikes of their Millet (Penicillaria spicata) for convenience in transport from one part of the country to another. In the specimens exhibited, which almost entirely covers the back of the case, the spikes, which individually are about 2 feet long, are secured by plaiting the stalks together, so that the whole can be easily rolled up or thrown across the backs of oxen. Any number of spikes can thus be attached; the specimen before us contains about 200. We must also pass over those grasses of British culture generally known to us as cereals, such as the all-important Wheat, Barley, Oats, &c., all of which are fully represented: and conclude our notice of this order by a brief reference to the Sugar-cane, Saccharum officinarum, S. violaceum, S. sinense, and perhaps other species or varieties. At the present time the Sugar-cane is chiefly cultivated in the East and West Indies, East Indian Islands, Mauritius, &c., for the supply of the European markets. The sugar consumed in this country was, until a comparatively recent date, derived almost entirely from the genus Saccharum; at the present time, however, we draw our supplies more largely from the Beet. Here we must leave the grass family; sufficient, perhaps, has been said to indicate its great importance and very varied products.

(*To be continued.*)

FIG. 53.—AGAVE WARELLIANA.

FIG. 54.—AGAVE BOTTERI.

THE LINDLEY LIBRARY.

THE following donations have recently been made to the Lindley Library:—Presented by Lord Alfred Churchill: "History of Cultivated Vegetables," by Henry Phillips, 2 vols. 8vo, London, 1822; "Pomarum Britannicum," by Henry Phillips, 1 vol. 8vo,

3d edition, London, 1823; "A Treatise on the Culture and Management of Fruit Trees," by Charles Harrison, 1 vol. 8vo, London, 1823; "The Horticultural Register and General Magazine," 4 vols. 8vo, 1832—35, the first three volumes conducted by Sir Joseph Paxton, the fourth by James Main; "Letters on the Elements of Botany," by J. J. Rousseau, translated into English, with notes and twenty-four additional letters, by Thomas Martyn, 1 vol. 8vo, 6th edition, London, 1802; "Flora Rustica," 1 vol. 8vo, with coloured figures, by F. P. Nodder and Thomas Martyn; "The Forester's Guide, and Practical Planter," by Robert Monteath, 1 vol. 8vo, Edinburgh, 1824; "The North American Sylva," illustrated by 156 coloured engravings, 4 vols. 8vo, Paris, 1819. Presented by Dr. M. C. Cooke: "Mycographia seu Icones Fungorum," by Dr. M. C. Cooke, part 4. "Proceedings of the Academy of Natural Sciences of Philadelphia," parts 1, 2 and 3, 1875: presented by the Academy. Presented by M. Verein: "Verhandlungen des Naturhistorisch-Medecinischen Vereins zu Heidelberg—neue folge, erster band, fünftes heft, 1877." Presented by the Authors: "Remarks on the Superposed Arrangement of the Parts of the Flower," by Dr. Maxwell T. Masters, pamphlet; "De l'Epuration des Eaux d'Egouts," par Ch. Joly, Paris, 1877; "Descriptive Notes on Papuan Plants," by Baron F. Mueller, parts 4 and 5; "Notes for Observations on Injurious Insects," by Eleanor A. Ormerod; "Polygalæ Britannicæ," by A. W. Bennett; "Acta Horti Petropolitani," fasciculi 1 and 2; "Proceedings of the American Academy of Arts and Sciences," vol. iii, Boston, 1876; "Proceedings of the Fifteenth Session of the American Pomological Society," held in Chicago, Illinois, 1875; Nouvelles Archives du Muséum d'Histoire Naturelle de Paris," four parts, 1873-4; "Contributions to Mycologia Britannica, the Myxomycetes of Great Britain," by Dr. M. C. Cooke, illustrated by 24 plates, London, 1877; "Tableau Général Méthodique et Alphabétique des Matières contenues dan les Publications de l'Académie Impériale des Sciences de St. Petersbourg depuis sa fondation," 1re partie; "Publications en Langues Etrangères," St. Petersburg, 1872, presented by Dr. M. T. Masters; "Bulletino della R. Societa Toscana di Orticultura," numbers 1—5, 1877; "The Royal Parks and Gardens of London," by Nathan Cole, London, 1877; "Thirtieth Annual Report of the Ohio State Board of Agriculture, for the year 1875," Columbus, 1876.

THE BRITISH ASSOCIATION.

LAVATERA SYLVESTRIS.

MR. H. TRIMEN, M.B., read a paper on Lavatera sylvestris recently found in the Scilly Islands. This Mallow was collected first in July, 1873, by Mr. Curnow, of Penzance; but during the past year it was found in abundance in the islands of St. Agnes and Tresco. The distribution of the species shows it to belong to the type to which the term "Atlantic" has been applied by Mr. H. C. Watson, who used the word to mark the species of this type, as well as others, confined to the West of England. Lavatera sylvestris, however, although agreeing with the true Atlantic type in its distribution, cannot be considered native in Scilly (as was supposed by its discoverer there), for these reasons: It was not seen there in 1863 by Mr. Townsend, a careful botanist, who published a list of the flora of the group; in the original station in St. Mary's it grows in company with Reseda fruticulosa, and, in the opinion of Mr. T. R. A. Briggs, looks clearly an introduction; it appears to have spread very rapidly at several points of the coast of Western France; and a few specimens have occurred near Penzance under circumstances which show their introduction to be merely casual.

INHERITANCE BY ANTICIPATION.

Mr. G. S. Boulger read a paper, "Notes on Anticipatory Inheritance in Plants, especially with reference to the Embryology of Parasites." This was designed to call attention to three groups of facts. The first group related to the embryology of parasites, epiphytes, saprophytes, and carnivorous plants, which were shown to agree in having fleshy perisperm, and, for the most part, to have reduced cotyledons. The cotyledons are absent in some, but not in all, leafless parasites and saprophytes, the latter class of plants having the most reduced type of embryology, on the whole. The second group of facts bore on the form of the young and mature leaves in Tropæolum and Aucuba japonica, and in seedlings of the latter species, which, in the writer's opinion, suggested that the immature and seedling leaves indicated an ancestral type now abandoned by the plants in favour of more recently acquired forms. The third group treated of the resemblance of detail between the floral organs of certain plants and their leaves, under which head reference was specially made to Sarracenia, Hypericum and Dionæa. These facts, taken together, were held by Mr. Boulger to justify an hypothesis advanced by Mr. Darwin, that at whatever period of life a peculiarity first appears it tends to reappear in the offspring at a somewhat earlier age. For this accumulated effect Mr. Boulger proposed the name "anticipatory inheritance."

THE MOVEMENTS OF WATER IN PLANTS.

was the subject of a paper read by Professor M'Nab. Experiments made by him, and the results of which were published some time since, showed that the rapidity of the ascent of water in the xylem of the stem of a plant was nearly 40 inches an hour. Since the publication of the result Professor Pfitzer, of Heidelberg, has made many experiments on the movement of water in plants. By him three methods were adopted. He first experimented by observing how soon leaves which had become flaccid from want of water regained their normal position when fed with the liquid. His second experiment was simply a repetition of that initiated by Professor M'Nab, viz., he used lithium, which could be detected with the spectroscope, instead of water. His third series of experiments combined both the other methods, and as a result of them it was found that in the Sunflower the velocity of the ascent of water in the xylem was nearly 22 metres per hour—that is, one-third of a metre, or 13 inches per minute. Later on, however, Professor Pfitzer adopted a new method, suggested by Professor Koehne. He substituted a solution of indigo and carmine, such as is extensively used by microscopists for water and lithium, and the results obtained by means of it corresponded precisely with those recorded by Dr. M'Nab, whose method of experimenting was adhered to. An important source of possible error in conducting these experiments has, however, been pointed out by Professor Koehne, who has shown that the air or gases in the vessels of the wood of transpiring shoots are in a state of diminished tension. Shoots cut under mercury in a few minutes exhibit a rise of mercury in the stem of from 20 to 38 centimetres. In the Sunflower the tension of the air in the vessels equals 46 centimetres of mercury. This rise of mercury or other fluids in the vessels, due to diminished tension, Professor McNab styles the abnormal current, in contradistinction to the normal current through the xylem. If the abnormal current were more rapid than the normal, experimenters might be led into grave errors, but Professor McNab showed that there was demonstrative evidence that this condition does not exist.

PRIMROSES AND COWSLIPS.

A specimen of an abnormal floral development found by Professor M'Nab at Howth, in Ireland, was next submitted to the section. It consisted of a Primrose plant, from the stem of which grew a true Primrose and a Cowslip flower. Accompanying it were specimens of a hybrid plant, the flowers of which partook of the nature of Cowslips and Primroses; and the object of displaying them with the abnormal growth was to suggest how the mutation was probably occasioned.

NARCISSUS CALATHINUS.

THE department of Finistère, in spite of the scantiness of its flora, yet contains some rare plants which are only to be found within its boundaries. At Roscoff may be found Amaryllis sarniensis, Herb., a plant which was imported from Japan a long time ago, and which has become perfectly acclimatised in that locality. A plant from the Cape of Good Hope, Mesembryanthemum edule, Linn., may also be seen there. The commune of Plougastel is equally famous for its Chili Strawberries (Fragaria chilensis, Ehrh.), which form an important article of commerce. A pretty Composite, Helichrysum fœtidum, Gært., also a native of the Cape, has flourished on the rocky shores of the coast between Brest and Le Goulet since the commencement of this century. Œnothera stricta, Ledeb., increases more and more on the old walls of the port and on the ramparts of the town; and Gnaphalium undulatum, Linn, is constantly found on the sands and heaths bordering the shore of the Channel between Lannilis and Cherbourg.

Leaving imported plants, and considering indigenous plants, we find some not less interesting. Thus in the adjacent isle of Crozon we find the magnificent Lithospermum prostratum, Lois., with its flowers of purplish blue, which certainly would not be out of place in any amateur's garden. The shores and heaths of the Elorn, between Kerhuon and Landerneau, serve as a retreat for Cistus hirsutus, Lamk., which is to be found in no other place in France. Finally in the islands of Glenans, near Concarneau, is to be found Narcissus calathinus, Linn. (N. reflexus, Lois.) a pretty little bulbous plant, coveted by amateurs and botanists, which rebels against cultivation and threatens to disappear some day from the flora of France and forms the subject of this notice.

It was M. Bonnemaison, an apothecary of Quimper and a distinguished botanist, who first discovered it, between 1805 to 1810; since that time several botanists have seen it. They are M. J. Gay, in September, 1847, M. Flénon, de Lyon, April 6, 1863,* M. Ducolombier, the inspector of the telegraphs, in 1866, and who first gave us information concerning it, and M. Besnou, the director of the Botanic Garden of Avranches, who wished to accompany us to that locality in May, 1869. According to the information rendered by the inhabitants, this Narcissus was formerly more abundant than it is now. It had existed in the isle of Penfret. M. le Men, keeper of the records of the department, stated that he had met with it in the island of Drenec, but the increase of the population and of the industries have no doubt much contributed to exterminate the species, and at the present time the construction of weirs, &c., will cause it to disappear from here also. The St. Nicholas island is the only one of the Glenans isles on which we have found N. calathinus; it grows on a sandy mound, which runs in a N. by N.W. direction, nearly 6 or 7 metres from the sea coast, and covers a space nearly 50 metres long and about 10 wide. The mound is formed of light, black, gravelly soil, covered with rather thick herbage, partly composed of Festuca duriuscula, Linn.† Two other rare plants among our flora of Finistère may be seen with Narcissus calathinus: these are, Omphalodes littoralis, Mut.; Leontodon bulbosum, Linn.; and Scilla nutans, Sm.; and this is about all.

The appearance and elegance of the flowers of this little Amaryllid remind one of a Cyclamen, and have induced several horticulturalists and amateurs to try to cultivate them, but they have never succeeded. M. Paugam, Sen., a horticulturalist at Quimper, and a friend of Bonnemaison, seems to have been the first to attempt this culture, but without success. As he generally raised his bulbs in the open air, the plants flowered the first year, but entirely disappeared the next. M. Paugam, jun., afterwards tried to cultivate them in pots in a temperate greenhouse. By this means he was able to preserve the bulbs for two years, but at the end of that time they all perished. M. J. Gay states that he also had raised them, and seen them bloom at Paris for several years, and that then they had died. The first time we cultivated them we were not more fortunate than our friends at Quimper and Paris; we raised ten bulbs in the open air, which were not to be seen the following spring;‡ another ten were placed in pots under a frame: these last bulbs blossomed and died immediately. Out of fifteen flowers produced by these plants five or six ripened their seeds, which were sown as soon as they were gathered in little pots and placed in a frame. These seeds germinated in the following spring, and the plants were pricked out in August, after the leaves had dried up. The second year all care was taken to water them; the third, in 1870, they had nearly all produced one flower, after which they were separated and repotted the same year.

In 1871 the bulbs, which did not bloom the preceding year, bloomed in their turn; those which had already produced one flower produced two, and even three, and gave ripe seeds abundantly. In 1872 all flowered plentifully, and in the following year the strongest began to disappear without making many suckers. Nevertheless, some had one or two small ones, which were planted, but without any good results.

In 1872 one of our friends, M. Delachienne, the surveyor of bridges and roads, who was sent to the Glenans Islands to construct weirs for the reception of crustaceans, brought us some fresh specimens of Narcissus calathinus. This time he took large clods of earth full of bulbs, and placed them in baskets, to avoid waste during the journey. We placed these clods in similar earth, taking all possible precautions. We placed them in a sheltered nook, but fully exposed them to the sun. The following year some of the bulbs bloomed, but the second year all had again disappeared.

At the time of our journey to St. Nicholas Island,

* See *Bull. de la Soc. Botan. de France*, vol. x., p. 187.
† *Cromon, Florule du Finistère*, p. 204.
‡ *Bull. de la Soc. Botan. de France*, vol. x., p. 191.

in 1869, we carefully examined the soil and situation. We noticed that this Narcissus did not grow in the same way as do the majority of species of this beautiful genus—that is to say, in tufts consisting of several bulbs, which generally produce sheaves of leaves and flowers in the fields where they grow. This one, on the contrary, was found scattered here and there among the grass; one scarcely ever finds two or three plants of the same size together. This proves that this plant makes few offsets, that it increases most often by seeds which it produces abundantly, that each bulb dies after a certain time, and that those planted hitherto by amateurs have been adult bulbs; and, moreover, it seems that the reason why this species has not been cultivated successfully is that no one has paid any attention to the seeds.

We do not intend to occupy ourselves with the botanical characteristics;* it will suffice to say that the season of flowering is at the same time as at Brest, where it is cultivated, as in the Glenans Islands, about April 8 to 20, and that we have never proved any modifications of the flower or any varieties of the species.

To judge by our experience, it will be seen that as regards the culture of this Narcissus only seedling plants have flourished. This is how it is cultivated at the Botanic Garden of Brest. For the culture of the seeds, as well as for that of the bulbs, soil is mixed as follows:—One-fourth of gravelly soil, one-fourth of fine white rivers and, or sea sand, that has long been exposed to the air, and one-half of fresh light earth, the whole being well mixed and sifted. We have said that only the seeds have any chance of success; we cultivate them according to the following method:—As soon as the seeds are ripe they are collected and sown in little pots of 3—4 inches in diameter across the top in earthenware pans, or anything porous. Great care is taken that the drainage should be good. As soon as the seeds are sown they are lightly covered with fine earth, watered, and placed in a frame near the glass. These seeds germinate in the following spring, and in August, when the leaves and the earth are dry, the pots are emptied on a sheet of paper, the clod of earth crushed, and the little bulbs taken out with great care. They are then pricked out, that is, placed by twenty or five-and-twenty at a time in pots similar to those in which the seeds were raised; fresh soil is given them, and they are planted a little deeper, so that when they are watered they are not uncovered. The second year there is nothing to be done but to water them well while they are growing; the third year they are again repotted, the small ones to the number of ten in each pot, the larger to five. They are placed in a cool greenhouse or under a frame, and in the following spring they produce their first flower. The second year they are in all their beauty, each stem bearing two, three, or even four flowers; the third year they begin to decline, and by the next year they have nearly all disappeared; or, if any offshoots remain, they are poor and weak, and unworthy of notice.

In spite of Narcissus calathinus being a wild plant, the cool greenhouse or the frame (with Ixias) are indispensable to it; it dislikes cold and damp; so that it should not be watered during the period of repose. This plant is not the only one of the locality that has the same characteristics: Scilla verna, Huds., Diotis candidissima, Desf., which grow on our coast, require a greenhouse in order to flourish in the botanic garden.† Perhaps in Holland, the country *par excellence* for the culture of flowering bulbs, this plant would have more chance of succeeding and giving satisfactory results. In consequence of the continual diminution of this Narcissus in the Glenans Islands, attempts at plantations of seeds were made by us in Béniguet Island in 1871, in the hope of acclimatising the plant at this place. Up to the present time, we do not know the results, as the opportunities of obtaining this knowledge are very rare, and the expenses heavy. *J. Blanchard, in the "Revue Horticole."* See also *Gard. Chron.*, vol. i., n.s., p. 176.

* See for these particulars, Loiseleur, *Recherches sur les Narcisses indigènes*, p. 42, 1810; De Candolle, *Fl. Fr.*, vol. v., p. 321; Grenier et Godron, *Fl. de France*, vol. iii., p. 261; Lloyd, *Fl. de l'Ouest*, 3d edit., p. 342.

† See the letter of M. Ch. Thiébaut, *Bull. de la Soc. Botan. de France*, vol. xxii., p. 30.

A MONOTONE OF FLOWERS.

WHILE artistic gardening is becoming more and more popular, and the contrasting or blending of colours with a view to effect is gaining increased attention, while the art of dinner-table decoration is becoming a special study, encouraged by handsome prizes at every flower show, and while windows receive a no mean share of the gardener's attention, the homely yet pleasing and beautifying custom of placing vase bouquets in rooms is becoming neglected. The epergne and the button-hole have each had a full share of consideration; the introduction and arrangement of flowers at feasts has been discussed in every paper, and the wearing of a button-hole bouquet been pressed upon the ruder sex as only a fit and proper encouragement to industry; but the latter is, so to speak, an individual and personal affair only, while to effect the former it is not only necessary to have the very choicest flowers, but a wealth of glass and silver as well—appendages of luxury not to be found in every middle-class dwelling, while chimney-vases full of flowers and bouquets on tables and brackets are every day matters, interesting to all, for they beautify home for those who live in it. Flowers of all descriptions are as fitting an ornament in the house-place of the cottager, as in the *salon* of the Duke; they impart an air of refinement to every room in which they are placed, and their tasteful arrangement should receive a due amount of care.

There are bouquets and bouquets: an intuitive perception and love of the beautiful will create a better effect with a few sprays of bloom than could be obtained from basket-loads of flowers unskilfully disposed.

Some persons appear to be endowed with an instinctive knack of tasteful arrangement; such indeed is the case with the Parisian *bouquetières*. "Every Frenchwoman knows how to convey a meaning to a few stalks turned one round the other, no matter whether it be the peasant girl binding wild flowerets, the young nun with Snowdrops for the convent altar, the Duchess with Violets, so displaying the imperial purple that her political opinions shall be conspicuous; or the Legitimist with a vase in which Fleurs-de-lys stand up right royally." Others, with as great a love for flowers, blunder on from day to day, never getting beyond the idea which is comprised in the expression a "posy" for the table. In our younger days this posy was to be seen quite fresh on a Saturday afternoon in every house. The posies, all of one pattern, and two, or at most three, varieties of flower, were culled from farm-house and cottage garden, and were brought, along with the weekly complement of poultry and butter, to market. As was to be expected, but little diversity marked their appearance, the flowers only changing with the seasons; but no matter what the blossoms—Primroses and Gillyflowers in spring, Pinks and Roses in summer, or great staring red and yellow Dahlias in autumn—it was *de rigueur* that every nosegay had a "backing" of green—Box as a rule, but sometimes Laurel, Laurustinus, Privet, Southernwood—anything, in fact, which happened to be plentiful and handy; the great art seemingly being to make up the greatest amount of foliage with the smallest quantity of flowers. Almost flat, and of a fan-like form, these bouquets were purchased by every housewife in the town. In the North of England in those days all women, high or low, rich or poor, attended the great Saturday market; the Metropolitan custom of sending round for orders, &c., did not then prevail; every housewife did her own shopping, and, whether her stores were taken home in a carriage, or borne in a capacious basket on her own strong arm, the posy was never forgotten; it crowned the day's purchases, and at home was placed, in the grim and inartistic form in which it was sold, in some ornamental receptacle, where it remained until replaced by a fresh bunch of flowers the following week.

In all our large towns at the present day the *bouquetière* follows a recognised calling. At the time referred to she was unknown, save in two or three large establishments in the metropolis; indeed, so little was the art of domestic floral embellishment understood or appreciated that the posy aforementioned was as often the only expression of a love of flowers in the sitting-room as it was in the kitchen. Mistress and maid both liked fresh blossoms, both were equally at a loss how to evolve the largest amount of grace and beauty out of their weekly nosegay. Within the last ten years we have changed all this; growing plants and cut flowers are the ordinary and daily ornaments of almost every home, and with a wider distribution of their beauty a better taste in their arrangement has arisen. In the same station of life at the present time at least one member of a household will know how to place flowers and foliage lightly and gracefully in vase or bowl; a leaf here, a blossom there, a spray of Fern or pendent flower will impart a charm to the arrangement which it would be impossible to obtain from any number of the choicest flowers lumped together without any regard to a pleasing artistic effect.

In recalling old times and old customs we have wandered from the subject-matter of our paper, and in case the title "A Monotone of Flowers" may prove a little incomprehensible, we proceed to explain it at once. By a monotone of flowers we wish to express the arranging of flowers all of the one colour, but of all shades of that colour, and should our use of words be considered out of keeping we shield ourselves under the plea of precedent; we have seen certain pictures catalogued as symphonies in grey, and harmonies in red and yellow, and when great artists thus employ words to express their meaning, we, humbly following in their footsteps, do the same.

Accident first taught us the chaste beauty of a monotone of flowers. Gathering some ordinary garden blossoms for indoor decoration, we were struck by the gorgeous loveliness of a handful of Nasturtiums, and resolved to try the effect of using these flowers and a little foliage alone. The blossoms were in profusion and furnished every tint of yellow, from the palest lemon to the deepest orange; some were blotched on the petals with a dark crimson patch, others of a self-colour were almost scarlet, others again pure unstreaked maize colour, some a deep orange-brown, almost black at the base of the petals; the varieties indeed were too numerous to remember, but one streaked red and yellow was quite novel, and so strikingly distinct that we christened it Tiger. Gathering a large basketful of flowers, we made choice of a large blue and white china bowl of a Japanese pattern, cranes flying over impossible mountains. In this bowl we placed an ordinary common glass goblet, and filling each with water, filled both with flowers. The effect was fine, and to soften the gorgeousness of such a brilliant mass three or four sprays of Maidenhair Fern were placed in the goblet, and allowed to droop over some of the lower flowers. It was necessary to arrange the blooms very lightly. When completed the pyramid was magnificent; so much, indeed, did it brighten up the room and centre attention upon its beauty, that again, following the example of artists, who, to avoid a too glaring effect of one colour, place the same in minor quantities in another part of their picture, we arranged the same flowers in smaller vases on chimney-piece and side-table, and found our "monotone of flowers" a perfect success. The dull corners of the room were positively lit up by the brilliancy of the blossoms, which came out in strong relief against the delicate pale drab, which was the prevailing tint of the walls.

In making choice of flowers, the aspect of the room might be taken into consideration. Roses would look superb, and impart a warm tone to a dull apartment, as did the Nasturtiums; while a room open to much sunlight might have freshness and coolness suggested by a monotone of flowers in all the various shades of blue. *Jane Jerrold.*

PLANT PORTRAITS.

AMPELOPSIS TRICUSPIDATA, *Belg. Hortic.*, 1877, t. 11.—The plant, generally known as A. Veitchii, deservedly esteemed for its neat foliage, hardihood, and power of attaching itself to walls without the aid of nails. Out-of-doors the leaves are small, but when grown under glass, as in the temperate-house at Kew, the leaves become very large and coarse.

BEGONIA DAVISII, Hook. fil., *Belg. Hortic.*, 1877, t. 12.—An acknowledged reproduction from the *Botanical Magazine*, t. 6252.

DIANTHUS GLACIALIS, *Floral Mag.*, t. 268.—A charming, slow-growing alpine, with short linear leaves and relatively large rose-lilac flowers. It is a veritable gem, but impatient of stagnant moisture.

HOULLETIA PICTA, Rchb. f., *Bot. Mag.*, t. 6305.—A New Granadan species, figured from the collection of the late Bishop Sumner, at Farnham Castle. The pseudobulbs are ovate-lanceolate, giving off long-stalked, broadly lanceolate, plicate leaves. The racemes of flowers are given off from the base of the pseudobulb, each flower being 3½ inches in diameter, with oblong-lanceolate sepals and petals, of a yellowish colour outside, brown and barred on the inner surface. The lip is shorter than the lateral petals, jointed in the middle, and provided with two recurved horns.

IRIS SPECULATRIX, Hance, *Bot. Mag.*, t. 6306.—A native of Hong-Kong, with linear, grassy leaves springing from a thick, creeping rootstock. Flowers about 2 inches diameter; "falls" lilac-coloured, with

a central yellow spot, bordered with a deep purple margin. Flowered at Kew in April.

MASSANGEA MUSAICA, E. Morr., *Belg. Hortic.*, 1877, t. 8—9.—This is the plant known in gardens as Tillandsia musaica, but which has been considered by M. Morren as the type of a new genus. The flowers are borne in terminal close heads on an erect scape, provided with scarlet bracts. The calyx is brownish, ivory-white at the apex, the corolla is snow-white.

TILLANDSIA USNEOIDES, Linn., *Bot. Mag.*, t. 6309.—A very interesting plant, having more the appearance of a moss or a lichen than of a flowering plant. In its native country, Tropical America, it grows on trees in the shape of long, intricately branching, slender threads, covered with small silvery scales, whence the name "Old Man's Beard." Though often introduced as a packing material, it has rarely flowered in our stoves. The present plant flowered at Kew in the spring.

TULIPA UNDULATIFOLIA, Boiss., *Bot. Mag.*, t. 6308.—A species introduced from Smyrna by Mr. Elwes, and which flowered at Kew in May. The glaucous leaves are wavy at the margin. The flowers are about 2 inches in diameter, with narrow, lanceolate, perianth segments of a bright crimson colour, each marked at the base with a purple spot edged with yellow.

TESTING SEEDS.

THE sample of the seed to be examined is taken from the barrel or bag, with instruments made for the purpose, or in such other way as to secure a perfect average sample. This, when brought to the laboratory, is thoroughly mixed, and a small part of it withdrawn, with very special precautions to ensure its representing the average quality of the whole. This portion, from 2 to 15 grammes ($\frac{1}{15}$ to $1\frac{3}{4}$ oz.), according to the kind of seed, is next carefully made, and then picked over by the examiner, seed by seed, with the aid of magnifying glasses and other instruments designed for the purpose. Each seed passes under the eye—the genuine seeds, those corresponding with the label under which they were sold, are put by themselves in one place, and the foreign matters, whether seeds, chaff, dust, or sand, in another. The pure seeds are weighed by themselves, and the impurities also.

In this way we learn the percentage of pure seed. For instance, suppose we take 4 grammes of seed, and find, after picking it over, 1 gramme of impurities, and 3 grammes of pure seed. We make then the proportions, 4 : 3 : : 100 : 75, *i.e.*, our sample contains 75 per cent. of pure seed, and 25 per cent. of impurities. The foreign seeds are examined botanically, to see if there are among them any which would produce parasitic plants or weeds poisonous to cattle. If there are, such an article should be at once rejected by the farmer. The germinating power of the pure seeds is next ascertained, as follows: Two lots of 200 seeds each are carefully counted out, and, after being weighed, are allowed to soak in distilled water twenty-four hours. They are then transferred, the one lot to an apparatus of porous earthenware, the other to a wrapper of bibulous paper.

The figures herewith (fig. 55, 56) represent Dr. Nobbe's apparatus for testing the sprouting power of seeds. It is made of burnt clay or earthenware, and consists of two parts—the base and cover. The base is about 8 inches square, and has in the middle a circular depression, about 4 inches wide and $\frac{3}{4}$ inch deep, which serves as a receptacle for the seeds. Around this "germinating bed," as it is called, runs a canal, a little over an inch deep, for water, which soaks through the porous material, and keeps the seeds moist. The base is glazed on the bottom, and part way up the sides, to prevent the water running through and wetting the support on which the apparatus rests. The cover is of the same material as the base, and fits over it like an ordinary paper-box cover. In order to allow circulation of air through the apparatus, the cover is somewhat wider than the base, and each interior corner is provided with a projection. It is thus prevented from closing down tight upon the base, and room is left on all sides for free movement of the air. A small aperture is left in the top of the cover, in which a thermometer may be inserted, if desired, for determining the temperature.

Supposing now that the seeds have been counted out, as above mentioned, in two lots of 200 each, soaked, and one lot put into the moistened paper. The other lot is laid in the germinating bed of the apparatus, which is kept moist by the water in the surrounding canal, the cover is put on, and the whole set in a convenient place, where the temperature is fit for the germination of the seeds. From time to time the cover is taken off, the seeds are examined, and those which have germinated are removed. The date of each counting, and the number which have germinated, are entered in a book kept for the purpose. At the expiration of ten days or two weeks, in most cases, the trial is concluded. The number which have sprouted, all told, is found, and to it is added one-third of the number which have remained sound during the experiment, and yet show no disposition to sprout. The number is divided by two, and the quotient taken as the number of seeds in 100, *i.e.*, the percentage which will sprout. The object in making two sprouting trials, one with the apparatus and one with the paper, is to provide a check on any possible

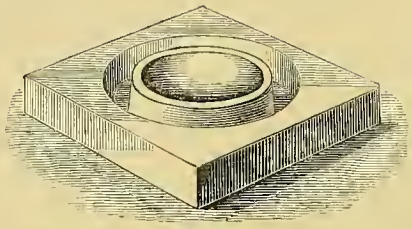

FIG. 55.—NOBBE'S SEED-TESTING APPARATUS: BASE.

mistake, which might pass unnoticed in a single experiment.

As was said, these 400 seeds were weighed previous to the sprouting trial. From this we calculate the weight of 1000 kernels. This is not an unimportant item in judging of the good quality of the seed. Heavier seed, other things being equal, is to be preferred to light seed.

From the percentage of pure seed in the sample, and the percentage of pure seed capable of germination, we calculate the "agricultural value," which expresses the percentage, or proportion by weight of the sample, which may be expected to furnish plants of the kind indicated by the label.

The report returned to the persons sending in the sample will run as is illustrated by the following example:—

The following is the result of examination of Trifolium pratense—red Clover, received March 21, 1877, from John Smith, Middletown, Conn.

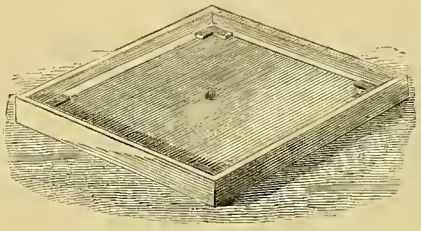

FIG. 56.—NOBBE'S SEED-TESTING APPARATUS: COVER.

Pure seed	94.3 per cent.
Impurities*	5.7 ,,
Pure seed capable of sprouting ..	89 ,,
Agricultural value	83.9 ,,
One thousand seeds weigh	1.59 grammes

The seed is accordingly of good quality.

As was said last month, the tests made at our laboratory indicate a remarkably favourable condition of the seeds sold in our markets, as to purity and vitality. But our examinations have not been extensive enough to enable us to judge accurately of the general state of the seed market, and where there is so much of opportunity for both innocent and wilful wrongdoing, a check must always be valuable. The interest is of too vast importance to the agriculture of the country to be neglected.

I wish to add a word about the germinating apparatus above described, and particularly to invite the careful attention of sellers and users of seeds to its merits. All of the methods commonly employed for testing the sprouting power of seeds are open to more or less objection in one way or another. When sand or earth is used, aside from the danger of presence of foreign seeds, and of improper covering, it is difficult to maintain a uniform and fit degree of moisture, while the process of germination cannot be watched without disturbing the seed. When paper or cloth is used, the seeds are liable to be disturbed, or come in contact with each other, or surrounding materials, in such way as to do injury, and there is danger that the covering will be allowed to get so moist as to exclude access of air, or so dry as to injure the germination. Nobbe's apparatus has all the advantages of simplicity, cleanliness, and convenience, offers abundant room for spreading out the seeds, so that they will not come in contact, while those that have germinated may be removed without disturbing the others, provides for the entire exclusion of light, plentiful access of air, maintenance of a proper temperature, uniform and fit degree of moisture, and allows the seeds to be examined at any moment, and the whole process of germination to be followed with the utmost convenience, and with no danger of injury whatever. *American Agriculturist.*

* Consisting of chaff, broken seeds, and a little Swedish Clover—T. hybridum

Notices of Books.

The Royal Parks and Gardens of London, &c. By Nathan Cole. With numerous wood engravings and geometrical designs. *Journal of Horticulture* Office, 171, Fleet Street, E.C.

The book before us is, as its title indicates, devoted to the history and mode of embellishment of the London parks, and contains hints on the propagation and culture of the plants employed, the artistic arrangement of colours, &c. "The information conveyed is thoroughly practical, for it is a record of the experience of one who has for many years been engaged in the propagation, culture, and planting of the flowers in the parks referred to." In accordance with the aim of the author, as thus expressed, the sections of his work devoted to the arrangement of colours in flower-beds, the mode of planting carpet and other beds, are far better than the earlier chapters devoted to the history and description of the several public parks and gardens round London. The historical and descriptive portion is indeed written without pretence of literary style or research, and is meagre and unsatisfactory.

A quarter of a century ago, nay, scarcely more than a dozen years ago, it was an accepted article of faith that trees would not grow in London, that flowers were an impossibility, and gardens a delusion. Yet even at that time Kensington Gardens and Hyde Park bore testimony to the contrary; the flower walk in Kensington Gardens was a delight then as now, and the Regent's Park and the Royal Botanic Gardens, thanks to Mr. Marnock, were powerful protests against the doctrine in question. Sometime afterwards came Victoria Park, with its rich collection of trees and shrubs; and then the swamps and flats of Battersea were made beautiful with undulating shrubberies, belts of trees, serpentine walks, wide lawns, limpid lakes, and, last not least, glades and sheltered nooks, where, thanks to John Gibson, Palms of stately outline, tree Ferns, noble-foliaged Arads and other plants, which, for want of a better name, were called sub-tropical, luxuriated as if London and its smoke were miles instead of furlongs away. Then the fine ladies and gentlemen who visit Paris, and frequent Hyde Park in the season, had their requirements satisfied, and miles of flower-beds decorated the sides of Park Lane and other spots in the Park. Of the popularity of these flower-beds there can be no question, but there are too many of them, the colouring is often glaringly offensive, and the intrinsic interest is *nil*. The popular taste wants educating, but all the time the public manifest a demand for these chromatic aberrations so long will the gardeners supply them, though the cost and labour are great, and the gardening skill and knowledge required but small. An eye for colour and a refined taste are, however, required, and if they were possessed as they should be the flower-beds would not only be better arranged, but their number would be diminished at least one half, and the stretches of green turf and fine-foliage plants correspondingly increased. Let any one compare the garden at the Royal Horticultural Society, South Kensington, now that most of the flower-beds are done away with and turfed over, with what they

were a few years ago. Instead of being worried and fatigued, the eye now rests placidly on green turf, and one great feature of a garden, "repose," is much more fully secured.

The practical hints and plans in the present volume are valuable, but on the whole the text is unsatisfactory, and the illustrations worse.

Select Orchidaceous Plants. By Robert Warner, F.R.H.S., F.L.S.; the Notes on Culture by B. S. Williams. London: Reeve & Co.

We are glad to see this work making its ppearance, in the shape of the first part of a third series. For an expensive publication like this, the fact that two series have already been issued in numbers, and a third series commenced, each series making a handsome volume, is pretty good evidence of the high quality of the work, and this indeed was to have been expected with the talent and experience which Mr. Fitch brought to bear on the artistic departments, and Mr. Williams' practical experience reflected in the cultural instructions. We could only wish the work appeared with more regularity. As yet it has come out by fits and starts, and no one knows when to be on the look-out for it, which would not be the case if a number were issued, say quarterly, or even half-yearly, if the three months' interval were considered too brief.

The present part opens with a plate of Lælia Warneri (t. 1), a fine plant, which is regarded as belonging botanically to a distinct section of L. elegans, verging towards L. purpurata. The figure more nearly resembles the latter, the flowers being large, almost white, with a very rich purple lip. It appears to have been imported by Mr. Warner direct from Brazil, and about the same time as, or along with, L. gigantea. Vanda teres Andersoni (t. 2) is a splendid form of this fine Orchid, standing out as a freer bloomer, with the racemes larger, and the flowers richer and brighter in colour than those of the type. This was figured from a plant in Mr. Williams' collection, which, though of comparatively small size—only 2 feet high—produces flowers every year, thus proving itself to be a free-bloomer, "which Vanda teres is not, since it has to grow several feet before it shows any signs of producing blossoms." The remaining subject is Sophronitis grandiflora (t. 3), of which the two forms—that with the longer leaf and brighter flower, and that with the shorter leaf and darker flower—both well-known to cultivators, are beautifully represented. The distinctive titles of S. grandiflora and S. coccinea are sometimes given to these two forms; and Mr. Warner adds:—"There are several other varieties, but those figured are amongst the best we have seen." The fact begins to be appreciated that Orchids, like other plants, are propagated by seed when in the wild state, and that consequently a certain amount of variation—less or more, often more than less—will certainly appear amongst the imported plants.

Der Obstbau im Deutschen Reiche und der Ausfall der Obsternte im Jahre 1876. Von Dr. Karl Koch. (Fruit Culture in the German Empire and the Fruit Crops of the Year 1876.) Berlin, 1877.

We have received a reprint of this report, which originally appeared in the *Monatshefte zur Statistik des Deutschen Reiches*. It is much more complete than any of the preceding reports, conjointly drawn up by Dr. Koch and Dr. Lucas, the well-known pomologists. This is due to the much fuller information received from the appointed local reporters in various districts. Some idea of its extent may be gathered from the fact that it occupies forty-four closely-printed quarto pages. It is issued by the Imperial Statistical Office for the purpose of promoting fruit culture generally, and the selection of the best varieties in particular. Nearly thirty pages are taken up with the reports furnished from twenty-seven different provinces, duchies, &c., most of which are represented by several districts. These reports relate to the condition of fruit culture in the several districts, and the prospects of the fruit crops. Following them is a summary of the principal features of the meteorological observations taken at various meteorological stations, and the latter part is devoted to the consideration of the crops actually obtained of different varieties of diverse fruits, with some statistics relating to exports, &c. As there is no general summary, we are obliged to content ourselves with calling attention to this valuable and interesting account of fruit culture in Germany. Any one interested in this particular question will find in it an immense amount of curious and instructive information.

BOOKS RECEIVED.—Scotch Live Stock, by James Bruce (Hamilton, Adams & Co.).—The Colorado Beetle, by Charles V. Riley, M.A., Ph.D. (Routledge & Sons).—The Colorado Beetle, by Dr. Andrew Wilson (W. & A. K. Johnston).

Foreign Correspondence.

CARROLL CITY, IOWA: *The Colorado Beetle.*—I have been much interested in reading several articles in your late numbers on the Colorado beetle (commonly called here in America the Potato bug). I have had to contend with them for the past eight years, and can give a little practical experience on them. About seven years ago they first made their appearance at Hamilton, Ontario, Canada, in some numbers, and were shown as specimens of some strange beetle. The next year they appeared quite numerous, and we had to adopt measures to destroy them; some tried hand-picking, others used Paris-green in different ways. Some mixed 1 lb. of Paris-green to 14 lb. of fine shorts, others the same quantity of fine ashes or plaster. It must be very carefully mixed. We then took it to the field or garden at early morning. A calm morning should be selected, and while the dew is on the Potato tops. We then dusted the mixture over the foliage; the beetles in eating the leaf partake also of the poison, and in a short time they died. Some mix the Paris-green with water, just sufficient to give the water a green tint, and water with a fine watercan. The beetle will also feed on and destroy Tomatos and Egg-plants after they have destroyed the Potatos, and will eat out any Potatos that appear to be above-ground and the fruit of the Tomato.

During the past year I removed from Canada to this western part of Iowa, some 866 miles west, and here we have the beetle in large numbers. We use the same means to destroy them as in Canada, and find it always effectual when done in time, and we save our Potato crops. There should be some means used as soon as the beetles appear to destroy them, and prevent them from laying their eggs, as they increase very fast if not prevented.

We do not trouble about the Colorado beetle, as we can master them with Paris-green; but we have at the present time an enemy which we cannot keep under. I speak of the grasshoppers, which have paid us a visit and destroyed all our garden crops, excepting the green Peas, which they do not appear to like. No doubt Paris-green would destroy them, but then it could not be used on many vegetables, as it is a poison, and requires great care in its use. The great drawback to this fine country is the grasshoppers, and no remedy that I know can hold them in check, excepting the Power which controls the winds, and says to the troubled sea, Peace! be still.

I should feel it a favour if any of your readers could give us a remedy for the grasshoppers through the *Gardeners' Chronicle*. *J. Rooke.*

Forestry.

MY last article related to diseases incidental to the roots or underground part of forest trees, while the present is designed to point out some of those diseases to which the stem and branches, but particularly the leaves, are most liable. The seat and root of disease, whether in the human body, the lower animal, or vegetable product, is often very remote, secret, and difficult to discover—so much so, indeed, that the effect is often mistaken for the cause, and the skin and foliage treated for diseases which lie, not on the surface, but in the interior—not in the skin and foliage, but in the stomach and roots.

Every species of tree is liable to some form of disease or accident from which others are more or less exempt; and, so far as is known, any species of tree is liable to one or other of the many diseases or accidents common to the vegetable kingdom; so that in plain language there is no tree perfect, and probably not a leaf upon the fairest and best but is found full of blemishes, blotches, eruptions, defects or excesses. Without, however, entering the dark, deep, and obscure part of the subject, we shall find material enough for the present in what lies upon the surface, and is spread out before us. Plants, like animals, are never wholly and entirely at rest, for while one set of organs is in repose another is busy and active. The Larch tree in mid-winter (being deciduous) enjoys a kind of rest, which the Scots Pine (an evergreen) is a stranger to. It is very evident that the foliage of the Scots Pine and other evergreen forest trees grow and develope long after the Larch and other deciduous trees have shed theirs, and are thus far gone to rest. I have said "thus far" because it does not follow that since the leaves have fallen off and are gone, that the sap and gases of the tree have ceased to operate actively. On the contrary, the sap appears never to be at rest; and the changes of temperature, whether in soil or atmosphere, instantly influence the vital parts of the tree, and set them in motion. If we cut a branch off a deciduous tree in winter, as the Birch and Sycamore, the watery sap immediately flows from the wound, while if cut from a Pine or Fir tree the sap in like manner rises in the form of resin.

It is, however, with the abnormal rather than the normal state of the plant that we have at present to do. The only part of a tree that really and truly suffers above-ground is the leaves or foliage. By a wise Providence the embryo leaves are all tenderly, carefully, and securely compressed and folded up within the scales, which in point of fact are also just leaves, of a kind and quality fitted for the hardships they have to endure in protecting the soft and tender leaves in their bosom.

The season of the year, and manner in which the buds open, the scales fall off, and the leaves expand, all contribute greatly towards the healthy and profitable future crop. For a climate like ours, the most suitable tree is that which is late in foliating, early in defoliating, and grows rapidly in the interval, of which the common Ash and Beech are specimens. The Beech tree also retains its old leaves till the young ones displace them by the bud expanding. True we have now and then a gale or summer storm off the sea, that blights and blasts both the Ash and Beech tree; this, however, is but rare, and the singular occurrences would by no means warrant us in making provision for them even if we could. Any damage done to the foliage of a tree, whether evergreen or deciduous, in summer or winter, just so far damages the tree on which it is situated.

The leaves perform a very important part in the economy of the tree's growth—they are probably to the plant much what the lungs and digestive organs are to the animal, namely, the laboratory in which everything requisite for building up the body is prepared.

Mildew is a leaf disease both common and hurtful, and moreover one that little or nothing can be done to cure. The Larch is often seriously affected by it, and I have observed that it is always worst in damp, confined places. Trees, however, that are affected by it one year are frequently clear another—more evidently depending upon the state of the weather and atmosphere than upon soil or situation. The most effective means of preventing mildew on Larch is to thin well, and admit abundance of air and light.

Various descriptions of insects attack the foliage of trees occasionally, such as the Coccus laneus, the great enemy of the Larch, which usually accompanies mildew. The same trees are not successively infested with it, but, on the contrary, the localities that are worst in a dry season are least affected in a wet one, and *vice versâ*. Trees amongst Whins, too, are in dry seasons usually covered with it, while in wet ones none of it appears. Any stagnation of growth is at once the signal for an attack of insects, mildew, or other malady, whether occasioned by superabundance of moisture or deficiency of it.

The Scots Pine, no less than the Larch, is liable to attack by its own peculiar natural enemies, of which there are several. The Hylurgus piniperda, or Pine beetle, is a serious one. Its ravages are committed, not upon the foliage but upon the young shoots, which it destroys by eating the pith out of them, thereby entirely destroying the shoot whether of subsidiary branches or principal leading shoot. It comes and goes, no one knowing whither, and rarely attacks the same parts of a plantation successively. It has no doubt done harm, but as yet, so far as I have seen, nothing very serious or alarming.

The Pine-leaf caterpillar, Bombyx Pini, is also an enemy of a somewhat formidable character. It rests in dense clusters upon such trees as it attacks, and the

insects do not, as in the case of most other caterpillars, spread over the whole tree or extend to others. From first to last, as far as I have seen, it remains congregated, and devours every leaf close in to the bark, and sometimes beyond it, till nothing green remains, and it is only because the buds remain uninjured that the vitality of the tree is preserved. I have searched for, but found no traces of it the succeeding year, which is a source of congratulation.

Squirrels are also very destructive to the Scots Pine, but they can easily be kept in subjection by the gun, hence need not be any source of alarm. Trees injured by insects, quadrupeds, birds, &c., come rather under the category of accidents than diseases; hence it would be well if some more definite terms were made use of to distinguish them than at present exist. *C. Y. Michie, Cullen House, August 27.*

Natural History.

THE CUCKOO.—Like your correspondent, Mr. Reed (p. 238), I was much interested in the fate of a young cuckoo during the early part of August. Cuckoos have been very numerous in this neighbourhood during the present summer, and, to use a Norfolk phrase, we have been "crazed out" with their repeated cries of "cuckoo" from early morn till dewy eve. One of the standing orders in this garden is that no bird's nest is to be destroyed or molested, and I attribute the frequent recurrence of the cuckoos around us to the multiplicity of small bird's eggs. Our gardens and grounds, being surrounded with shrubberies and plantations, afford shelter and protection to hosts of the feathered tribe. As a consequence of this I may say that we cannot ensure a single ripe fruit of any of the so-called small fruits, unless we net them up. The cuckoo is everywhere—at least in England—known as a bird exceedingly fond of sucking other birds eggs, and to this may be also attributed their capability of producing such a shrill sound, and so very articulate as well. This power they lose towards the end of July, when eggs become scarce, and it is somewhat pitiful to hear them struggling through hoarseness to repeat their wonted sound. It is premised that when eggs become scarce here they leave for some other country where they are more plentiful. In a Laurel bush, growing close to a much-used walk, and close to the end of one of the greenhouses here, a water-wagtail reared a young cuckoo during the present summer. Both the parents evinced the greatest care and watchfulness over the cuckoo by keeping near to it, hopping from branch to branch, and often flying to it with something in their mouths if no one was near. Some of the men found it when it was nearly full grown, and did not mention the circumstance to me until August 6. Whether the water-wagtails had a brood of their own in the nest or not we are unable to say, but they were positively the foster-parents of the young cuckoo. A few days after I was made acquainted with it, I was standing in the walk looking at it, when it left the nest and got into one of the trees near, and as it gained strength got farther away, but we could hear it call, and also see the water-wagtails flying around it. Eventually it went right away, and the wagtails also have gone. I never before knew that these birds built their nests in shrubs. *Thomas Wynne, Hemsby Hall, Norfolk.*

THE ROSELESS AUTUMN.

Do Flora and Pomona run in pairs? It seems like it. No fruit, few or no Roses this autumn. Here, however, this analogy ends, for seldom has there been a fuller crop of Roses than this July. They were later than usual, but they made up for their lateness by their brilliancy and numbers. Then the bushes and trees were all Roses, and, writing broadly, there have been none since. Most of the perpetual Roses have proved mere summer ones this season—they have flowered once, and then gone quietly to rest, forgetful alike of their character and the season. We have lately looked through some considerable collections of Roses, and could easily have counted all the so-called perpetual Roses in flower on our ten fingers. In fact, but for Teas, Noisettes, and such Roses as La France and Boule de Niege, not a few gardens would have been wholly Roseless from the middle of July till the end of August or later. The old Gloire de Dijon, the beautiful and most useful Céline Forestier, the pink Gloire de Dijon, Gloire de Bordeaux, Triomphe de Rennes, Devoniensis, Souvenir de la Malmaison, Homer and Safrano, have been among the finest Roses this autumn.

How comes it that so few of the others have flowered a second time as yet, and give no sign of flowering any more at all? The causes are probably very similar to those that brought about the general failure of fruit—a mild winter, a late and severe spring. Not a few Roses scarcely rested from growing all winter. Mild open wet weather kept roots and tops in a state of abnormal activity. The early months of the year also continued mild. The Roses started early into growth, or rather they never left off growing, and at one time it appeared as if we might have reaped a sweet harvest of Roses in April instead of June. Thousands of fine buds were cut off in March by the late pruners. The plants broke afresh, and growth proceeded cheerily as marriage bells, until May with its stinging frosts arrested, and in a few instances killed, the young wood. As a rule, however, the cold weather in May, with the drought succeeding it, merely put back the season of flowering, and made the Rose harvest later than usual by nearly a month. In this late pruning and late flowering may probably be found the whole secret of the scant bloom of Roses this autumn.

Absolutely the Roses were not perhaps pruned much later than usual, but it was later relatively in regard to their condition. More growth was made before pruning than usual, consequently more was cut away, and there was a greater, larger sacrifice of growing force and vital energy. In some cases this loss, and the debility resulting from it, told sensibly on the first bloom—the flowers were smaller, had less substance, were not so brilliant as usual. The foliage, too, was in many cases smaller, and in all, perhaps, less plentiful than in average seasons. But upon the whole most Roses got through the first flowering period creditably; but the first flowers seemed to expend all their vital force—use up, as it were, their growing energy. Hence, when the season came to break again into a second crop of wood and flowers the Roses seemed deaf to the customary cry, and remained dormant. Possibly the abnormal amount of wood made and buds put forth before pruning this spring may have a good deal to do with the flowerless Roses of this autumn.

The plants may have thought that early show their first Rose harvest; if so, the July bloom would be their second, and as they seldom yield three a year, the Roses might naturally conclude their working season ended, and go to sleep soundly throughout the autumn and early winter months. Be this as it may, of the fact that there are few Roses this autumn no one can doubt. It is one of the most marked peculiarities of this peculiarly trying horticultural season. Neither, as far as the Roses are concerned, do the difficulties and dangers end with the scarcity or lack of second flowers. The plants, especially should a wet autumn set in, will be sure to make a late growth; relieved, in fact, from bearing their usual second crop of flowers, they will be almost sure to take to the making of unseasonable wood. Growth out of season, again, means weakness—injury from winter's frost, enfeeblement, disease, and death, and imperfect blooms in 1878. Perhaps the best mode of treating late-growing Roses this autumn would be to root-prune them somewhat severely, or to take them up altogether and replant them next November. Careful transplantation arrests late growth, reduces its amount, and retards the start in the spring, all of which will prove favourable to a rich and full Rose harvest next June. By thus getting the bloom back to its normal time, and re-establishing the health of the plants, the probability is that the Roses may be got into flowering a second time next autumn with their usual profusion and perfection. *D. T. Fish.*

RHODANTHE MANGLESII.

THE delicate colouring and exquisite beauty of habit of the old Rhodanthe Manglesii renders it a general favourite as a bedding plant during the summer months, but, charming as it is outdoors at that season, it is much more so in early spring when grown in pots and used for decorating greenhouses or conservatories, for which purpose it is one of the most valuable and effective things that can be had, especially if the plants can be stood on shelves or other elevated positions, about on a level with the eye, as then they show off their gracefully drooping flowers to great advantage. To have them in good condition by April or May, seed should be sown at once in some light rich sandy soil and placed in any close moist frame, where, if shaded from the sun, it will soon germinate. The proper way to treat these and all other small seeds of light character, is to fill as many pots or pans as may be required, and, having pressed the soil moderately firm and made it perfectly level, then to give a gentle watering through a fine rose, and allow them to stand a few hours before sowing; after which a little dusty peat or loam should be sprinkled over the top. So treated the soil remains in a uniform state of moisture for a considerable length of time, which is a great point in raising plants from small delicate seeds. If this were more attended to nurserymen would escape much blame, as there would be but few failures in getting them up. It is the constant stopping or sudden alternations between wet and dry that are fatal to success, the one causing the seed to rot, and the other the tender germs to perish just as they emerge through the cuticle. A sheet of glass or a piece of brown paper, or both, laid over the pots or pans for the first day or two, is of great assistance in intercepting evaporation, but when these are used much watchfulness must be exercised, so as to have them removed the moment the plants appear, or they will be drawn up and spoiled.

In the management of Rhodanthes sown at this season, they should be potted off in 4-inch pots as soon as large enough to handle, placing from three to five in each, according to the purpose for which they may be required and the size of the specimens desired. If placed for a few days in any close moist frame, where they can be afforded a slight shade, they will soon get a start, after which a light airy shelf in a warm pit or intermediate house is the best situation in which to winter them, as there they remain free from damp and continue their growth in a regular and uniform manner. At the turn of the year they will be in a sufficiently advanced state to receive their final shift into 6 or 8-inch pots, in either of which sizes they may be grown from a foot to 18 inches in diameter, and plants such as these when in bloom form striking objects that will last a considerable length of time in great beauty.

To have the plants in this state of perfection they must be grown on without check from the first, otherwise they get into a stunted condition, and when this occurs it is a difficult matter to induce them to start away freely again, on account of the tendency they have to produce flowers after their progress has been interrupted from any cause, and more especially is this the case when under pot culture. It is therefore necessary to render them all the assistance possible by affording liberal treatment in increasing the temperature as the days lengthen, and keeping them well syringed once or twice a day, according to the state of the weather, besides continually maintaining a moist genial atmosphere to keep them free from red-spider, an insect to which they are rather subject, as also greenfly, which will soon cripple the leaves unless destroyed by timely fumigation. As the pots fill with roots liquid manure will be found of great benefit, but this should be well diluted, as it is better to administer it often than to give it strong at any one time, as is frequently the case. Soot-water in a thoroughly clarified state, or the drainings from cow or sheep droppings, or the two mixed, is the most suitable for pot plants as being cooler in their nature and altogether more mild than any of the artificial compounds, all of which require using with great care and judgment.

The soil which is best adapted for growing Rhodanthes is a mixture of turfy loam and peat, or well decomposed leaf-mould and the former in about equal proportions, to which should be added a sprinkling of silver-sand to keep it open and porous. Besides R. Manglesii there are several very desirable varieties, especially the white, which should be grown for the sake of the rich contrast its pure satiny flowers afford. *J. S.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Those who grow the unapproachable coloured Pleroma elegans for decorative purposes will be in possession of one of the most useful autumn-flowering plants for conservatory display existant. The individual flowers do not last very long, but where the plant is well managed they are produced in continuous succession for a month; but, like some others of the very finest blooming plants we possess, the colour is extremely sensitive, and is completely destroyed if subjected to much light, and as little or no leaf growth is being made whilst blooming, it should during this time be stood in a position where it will be well shaded. Swainsonas are not nearly so generally grown as they deserve to be; for conservatory decoration at this time of the year their bright-coloured, cheerful-looking flowers afford a pleasing contrast to the never-changing sameness resulting from the use of the quantities of Fuchsias and Zonal Pelargoniums that now often preponderate over everything else in greenhouses and conservatories. S. galegifolia, S. Osbornii, and S. Rollissoni, are all worth a place. The principal thing is to keep them clear from red-spider, which, from the character of the leaves, is a very easy matter, providing enough water is applied overhead. Not only should the syringe be used freely once a week during the growing season, but also through the present month, and so long as they remain in bloom; it will not injure the flowers unless applied too forcibly. For home decoration there is no need to expend much labour in training these plants, half a dozen sticks inserted just inside the rim of the pots round which to

loosely wind the shoots will be found sufficient. Tetratheca verticillata is another easily managed, almost continuous-flowering plant of moderate growth; its distinct, non-formal habit and equally distinct freely produced flowers alike fit it for standing in front of larger subjects in the greenhouse and conservatory. Plants that were slightly cut back after the spring blooming will again now be in full flower and continue for some weeks; if placed in a conservatory they should have a light situation.

Phœnocoma prolifera.—Plants that set their blooms late will for some time yet be fresh and effective, but when employed for conservatory decoration care must be taken that the flowers are not wetted should the syringe be used, or they will at once turn mouldy. Croweas will now be fast coming into bloom, and will keep on if well managed almost to the end of the year: they are somewhat subject to scale, and before the flowers open the insects should be removed by sponging, or else they soon get the leaves into such a dirty condition as to mar the appearance of the plants. The yellow flowered Cassia corymbosa will, from the uncommon colour of its blooms amongst hard-wooded plants, and its long continued flowering, be a useful addition to the conservatory; whilst here it will bear standing in positions where it will receive less light than most things. Desfontainea spinosa, grown in pots, and that has been exposed in the open air through the season, will now begin to open its attractive pendent, long-enduring flowers. It likewise, for many weeks, may be stood close to, or under, other larger glowing subjects. The red-flowered Leschenaultia formosa and L. intermedia are amongst the most useful small plants that can be used for standing on brackets, or anywhere near the front of conservatories, yet how seldom do we now see them. They keep on blooming incessantly almost the whole year round. There are few things more easily grown. The principal matter to attend to is not to let them get affected with greenfly, to which they are somewhat liable, and on them it attains so small a size as to often escape detection. Where Witsenia corymbosa is grown into moderate sized specimens, its exquisite blue flowers will now be produced in succession for many weeks; this plant also bears a confined situation without suffering much injury whilst it is blooming. The above are a few hard-wooded plants that give variety for conservatory decoration during the autumn months, yet in the too general disposition evinced now to use a preponderance of ornamental leaved subjects with few flowering things to assist them except the easiest grown soft-wooded plants, there are numbers of the most deserving old favourites lost sight of. The want of variety in the species of plants now generally met with through the autumn months in greenhouses and conservatories rob these structures of one-half the interest that would be attached to them were greater variety employed.

Mandevilla suaveolens.—Where this most useful and fragrant climber is grown it will either now be in flower or shortly begin to open; the reason why it does not succeed with many people is through its leaves becoming a prey to red-spider, to which it is more subject than many things; nevertheless from its distinct and beautiful character it should not be discarded on this account, as if well washed with the engine or syringe once a week it can be kept perfectly clean. It forms a charming contrast to Lapageria rosea, and where it has attained sufficient strength will keep on blooming till the middle of October or later. The use of the syringe should be continued whilst in flower so long as there is solar heat enough to give vitality to the insects.

Heaths.—Any plants of these that have deficient root-room should at once be potted. The principal advantage derivable from moving Heaths at this time in preference to the summer immediately after blooming, is that they are much less likely to suffer from the effects of the operation than when it is carried out whilst the weather is hot; this is more especially the case when the balls of the plants are very full of roots, and consequently have become matted to a considerable extent against the sides of the pots. Do not by any means disturb the roots further than removing the drainage from the bottom, and ram the new soil so as to make it thoroughly solid. When the potting is completed at once place them in a pit, or house, where they can be kept a little close for two or three weeks, but if the operation is carefully performed there will be no occasion for shading unless the weather is more than usually bright, as from the moist condition of the air in most parts of the country, consequent upon the recent more than ordinary rainfall we have had, they will not suffer as during a drier time. *T. Baines.*

FRUIT HOUSES.

Pines.—The advent of the autumnal months, with the concurrent atmospherical changes which naturally arise, will necessary entail more diligence in the way of airing the plants in this department, and not only so, but more foresight will also be needful towards sustaining with regularity a proper degree of heat in the houses when that arising from natural sources is defective. In the case of this particular section of plants, at this season, the greater part of them will be in a very active state of growth and full of vigour. Under such circumstances every proper means should be taken advantage of to harden and consolidate it before the short dull days of winter arrive, and particular care should be exercised so as to avoid extreme variableness of temperature in the houses, as this is in general somewhat detrimental to the plants, and particularly so with regard to those which are not wanted to show fruit yet, its effects oftentimes resulting in starting the fruit prematurely. Every care should consequently be given to this matter, especially in relation to plants of the Queen variety, as if this section start into fruit at this period of the year it is disastrous, inasmuch as they are not suitable for the purpose, and, moreover, in point of quality at the time they would ripen would not be at all comparable to other more suitable kinds for that purpose at that period. Assuming that at an early date all the fruiting plants will be brought together where they can have a good supply of heat and plenty of sunshine when its exists, with a corresponding amount of moisture supplied about the house to keep its temperature genial and invigorating—at 75° daily, by fire-heat 90° at the roots, 80° to 90° by sunshine, with air on the house, and 70° at night—remove all the suckers from the plants before they get large, save one for stock, and keep the fruit free from moisture during the flowering process. The set of plants which is intended to succeed the foregoing should consist for the most part of the Queen variety, as this sort is eminently suitable for the purpose. These plants should receive careful treatment during the period of rest, which should terminate about the middle of November next. For the present about 68° at night as a mean should rule, with 5° more daily if required by fire-heat, and 80° at the roots constantly. Open the house slightly at from 75° to 80°, and freely ventilate at the latter degree, closing up the house finally for the day at 76°. If during very fine weather the axils of the leaves become dry give a slight sprinkling overhead with the syringe, but avoid having a superabundance of moisture constantly in the house. In the case of later plants which are to be kept growing on for another month or six weeks, a temperature slightly in advance of the preceding temperatures should be permitted with an increased amount of moisture in the house, and those plants which are to be wintered in 7 or 8-inch pots need only be slowly advanced. *G. T. Miles, Wycombe Abbey.*

Orchard House.—All the early and midseason Peaches and Nectarines from which the fruit has been gathered, may be removed to the open air. If infested with any kind of insects let them be thoroughly cleansed at once, and afterwards keep the foliage clean by means of the syringe or garden engine on fine evenings. Early in September, when the foliage shows signs of ripening, the roots should be examined, and if repotting is necessary the operation may be performed without delay. Guard against large shifts, as medium-sized pots well filled with roots always give the best crops of fruit. Trees in pots sufficiently large may have a large portion of the old soil removed, the roots shortened back, and be returned to clean pots of the size they now occupy. In potting fruit trees, perfect drainage must be secured. Strong turfy loam from the limestone, with a liberal admixture of burnt earth, or old mortar and bone-dust, will form a suitable compost; use it in a dry state, and ram firmly into the pots, as for Melons. Give sufficient water to encourage the formation of new roots, and expose the pots to the genial influence of autumn sunshine. Having disposed of the early batch, a rearrangement of the house will be necessary and beneficial to the late kinds, which may be set out thinner. Remove all young growths, and turn aside old leaves which in any way interfere with the colouring of the fruit, and secure ripe wood for another season by keeping the trees under glass until the leaves fall. Encourage Figs now ripening with heat, liberal ventilation, and full exposure of the fruit to the sun. Guard against atmospheric moisture, but give liberal supplies of moisture to the roots. Examine Cherries which have been some time out-of-doors, and providing they do not require larger pots see that the drainage is perfect. Remove a portion of the surface soil well down the inside of the pots, and topdress with loam and bone-dust.

Cucumbers.—The wet, sunless weather has been against free, firm growth, and plants raised from cuttings or seeds in the early part of August will be somewhat later than usual, and liable to flag under bright sunshine; where this is the case a very slight shade may be laid on for a short time, until the foliage becomes stronger. Train straight up the trellis, remove all male blossoms, and defer stopping the points until three-fourths of the allotted space has been filled. Autumn-fruiting plants will require less shade and moisture as days decrease in length; the young growths should also be kept thinner, and if all surplus or ill-placed fruit are removed the bearing period may be greatly extended. Make another sowing for giving a supply of fruit from Christmas onwards, and make the last sowing about the second week in this month for carrying on into the spring. Where the houses are divided into compartments the raising of young plants should be regulated by the dates on which existing crops of Melons or summer Cucumbers are likely to be exhausted, young plants being always preferable to those which have become pot-bound. Push on the cleansing and painting as the pits are cleared, in order that there may be no delay when the time for planting arrives. If fermenting material is used for bottom-heat, no time should be lost in getting together a supply of Oak leaves and horse-dung, or, failing this, Oak bark, which, having been prepared by fermenting and turning in a dry, open shed, may be used as a good substitute. *W. Coleman, Eastnor Castle.*

KITCHEN GARDEN.

The late rains have proved very acceptable in this part of the country, where we were beginning to suffer from the effects of long drought; and where the necessary plantations of the various crops have been persistently carried out they will now grow away vigorously. Before they become too large it will be necessary to stir the soil deeply, and draw the earth up to the stems of any of the Brassica family requiring it. Buda Kale and Coleworts for spring may still be planted, but no time must be lost. A large breadth of the various sorts of Endive before recommended should now be got out at once; this will form the main supply for autumn and early winter purposes and for storing, but unless a very severe winter sets in a plantation made later on, in ground not too richly manured, will be found better adapted for winter use; but the ground for the present and largest plantation may be very liberally manured, in order to induce a free and constant growth. A large breadth of the various Lettuces should also be planted out at once, and encouraged by liberal treatment. The Old Bath Brown Cos should enter largely into this crop, as it is the best for taking up and storing for winter use. Plants intended to stand through the winter should be left a while longer, but it is a good plan now to make a sowing on a warm sheltered border to stand through the winter for planting out in the spring. For this purpose the bed should be larger than usual, and the seed thinly scattered; or if necessary they must be thinned out in good time, as the object is to secure a good short stocky growth of plant; the Bath Cos and hardy green Cos are good sorts for this sowing. The tying of Endive and Lettuce for blanching will require attention, as it must only be performed when the plants are perfectly dry; in catching weather this is sometimes neglected, and the result is a mass of putrescence inside when they come to be cut for use.

Onions should now be ready for harvesting; they should be taken to the store-room when perfectly dry, but as the ground will be wanted at once if the Onions are not ready they may be laid out in open sheds for a few days, and then stored. The ground should be cleared of rubbish, liberally manured, and trenched up two spits deep in readiness for Cabbages to stand through the winter. This in most cases is an important crop, and will require extra care in the manipulation. Let the ground remain roughly thrown up for a few days, then break it down level, and plant at 20 inches each way. This is quite near enough for the winter sorts; summer sorts may be planted nearer, as they are off and gone as soon as ready, and many plant the winter crop double thick and pull out every other plant for greens in the spring, but this practice is "more honoured in the breach than in th' observance," as the greens are but poor things at the best, and the ground ought not to be robbed when succulent and tender-hearted Cabbages are required and appreciated. After selecting all the best plants for the bed the remainder should be lifted, and pricked out rather closely in beds for stores to fill vacancies, and for early planting in spring. At the same time a bed should be sown soon to supplement them: these must remain in the seed-bed all the winter. Spinach beds for winter will now be ready for thinning out, which should be done before the plants get drawn. If the ground is good, and the plants likely to grow strong, from 10 inches to a foot is not too much to allow the plants. The earthing-up of Cardoons and Celery must now be diligently followed up in perfectly dry weather. At the same time plentiful applications of water and liquid manure must not be forgotten. This should not be poured down the centre of the ridges over the plants, but into the small trenches outside of the ridge. Turnip Radishes should now be sown every fortnight for two months. If a bed for very late Turnips is not sown not a day should be lost, and advancing crops of these should be constantly thinned out as soon as ready, and the ground stirred amongst them. Thin out autumn-sown Carrots as soon as ready. Nothing weakens plants which have to stand the winter so much as leaving them drawn up weakly in the seed-bed. The only remedy is to thin in time. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 1, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Sept. 3	—Sale of Dutch Bulbs at Stevens' Rooms.
TUESDAY,	Sept. 4	Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11 A.M.; General Meeting at 3 P.M. Kennington Amateur Horticultural Society's Show (two days).
WEDNESDAY,	Sept. 5	Glasgow and West of Scotland Horticultural Society's Autumn Show. Sale of Dutch Bulbs at Stevens' Rooms.
THURSDAY,	Sept. 6	Carlisle International Horticultural Exhibition (three days). Sale of Imported Orchids at Stevens' Rooms (two days)
SATURDAY,	Sept. 8	—Sale of Dutch Bulbs at Stevens' Rooms.

THE reappearance of the CULFORD VINE SPORT—or, as it has facetiously been termed, the Culford apparition—induces us to advert once more to the subject. When it was formerly under discussion we laboured under the disadvantage of not having ourselves seen the sportive Vine, and we could only discuss the matter on general principles, and reason from the analogy afforded by other and not infrequent examples of a similar, or supposed similar, character. Lately, however, we had an opportunity of inspecting this now famous Vine, of comparing it with other rods of Trebbiano and Golden Champion growing in the same and in different houses; and lastly, thanks to Mr. GRIEVE, we have had the opportunity of carefully comparing the foliage and berries of the sport with those of the Vines just mentioned. We have thus been enabled to arrive at some conclusions, which we propose to lay before our readers, but in no dogmatic or *ex cathedrâ* spirit. The facts observed admit of more than one interpretation; and, although we have our own views as to which is the more probable, yet so little is definitely and precisely known as to the causes of these phenomena, that we are quite disposed to consider the matter as an open question.

The history of the sport in question is now pretty widely known to Grape growers. It has been given and discussed in several of the gardening periodicals, and only a short time since Mr. GRIEVE briefly recapitulated in our own columns the history of the appearances presented (see *Gardeners' Chronicle*, August 18, 1877, p. 213, fig. 46). It is therefore not necessary to dwell on this part of the subject. We propose to confine ourselves to a brief mention of what we ourselves observed on a personal inspection of the Vine in question a few days since, to the results of the comparison we were enabled to make on the spot between the several Vines named, and of the examination of the materials we were allowed by Mr. GRIEVE to bring away with us. Without going into needless minutiæ it may suffice to say that the parent rod of the Trebbiano from which the sport which has given rise to this discussion emerges is trained in the usual way under the glass of a lean-to vinery, and that about the middle of its length it gives off three fruit bearing spurs which we shall have to refer to specially. Below these three on either side of the rod are borne some six or eight bunches of Trebbiano, about three parts ripe at the time of our visit.

It is then to three special shoots or spurs that we desire to draw attention. The lowermost of the three is the original one which in the year 1874 bore the bunch of Golden Champion, or one which was so like Golden Champion as to be taken for it by experienced Grape growers and amateurs, of whose good faith and competence not a shadow of doubt can possibly be entertained. The base of this spur still bears the label which, as we were informed, was attached to it by Dr. HOGG on the occasion of his visit. At the present time this shoot bears leaves which are indistinguishable from those of Trebbiano, but the bunch and its constituent berries, in form, in size, in stage of maturity, in tendency to spot, are unquestionably much more like those of true Golden Champion, growing close by in the same house, than they are those of the Trebbiano produced on the same rod, even when all due allowance is made, as it should be, for variation in individual berries. Incidentally, it may be remarked that the individual berries of Golden Champion exhibit a considerable range of variation. The bunch in question, as we learn from Mr. GRIEVE, measures 10 inches across the shoulders and 10 inches in length, exclusive of the stalk. The berries, at the time of our visit, were not quite ripe, and had not yet the pale amber tint of other Golden Champions in the same house. This may to some extent be attributed to the circumstance that the sport occupies a more shaded position than the fruit of the Champion rod, which grows close to the light at one end of the house. We may assume, however, that the general appearance of the sport is much the same as it was in 1874; indeed, such is the testimony of Mr. GRIEVE himself, and of others who have seen it in both years.

Next we come to the middle bunch of the three to which we desire to call attention. This is borne on the same side of the main rod, and on the next spur but one above the first mentioned. The leaves on this spur are in all essentials like those of Trebbiano and not those of the Golden Champion. The bunch measures 9 inches across the shoulder, and is 8 inches long, and its constituent berries, as compared with those of adjacent Trebbiano and Golden Champion respectively, are distinctly intermediate in character. They are smaller than Golden Champion and larger than Trebbiano, and in all ways appear to hold a middle position between the two. It may be mentioned that the largest bunch of Trebbiano proper measures 7 inches across the shoulder by 12 inches in length. We look upon the production of this intermediate bunch as a most important link in the evidence, though somewhat singularly Mr. GRIEVE made no mention of it in his last letter, and we presume a similar one was not produced on former occasions.

The third or topmost bunch on the same side as the two before mentioned hardly deserves notice, except for the fact that the terminal berry is more like one of Golden Champion than of the Trebbiano. On the other hand, it must be borne in mind that the terminal berry of the bunch is very often larger and of a different shape from the rest, the difference frequently being consequent upon a fusion or growing together, Siamese-twin fashion, of two or more berries. This did not appear to be the case in the bunch under consideration, whose terminal berry seemed to have, as we have said, a good deal of the Golden Champion character, and will probably develope still more in this direction as it ripens. We think, then, that we are justified in stating that this third bunch presents, like the two lower ones next next adjacent to it, but to a much smaller extent, the characteristics of Golden Champion.

Speaking, therefore, in general terms of the Vine in its present state, it may be stated, 1st, that the foliage on all three of these spurs is indistinguishable from that of Trebbiano (except in one minor point to be hereafter mentioned); 2d, that the bunch of the lowermost spur resembles that of Golden Champion very closely, indeed so much so that, were it not that the berries are not so mature as those on the Golden Champion adjoining, we should have had no hesitation in pronouncing them identical; 3d, that the middle bunch of the three is intermediate between Trebbiano and Golden Champion; and, 4th, that the third bunch, while almost entirely of Trebbiano character, has its terminal berry of a different shape and size to the rest, and in this point resembles Golden Champion.

We have now to mention some points of distinction between the foliage of Golden Champion and that of Trebbiano. Of course a large allowance must be made for variations in size, colour, hairiness, &c., according to the position of the leaves on the rod, and other circumstances so familiar that we need not take up time by further alluding to them. Setting aside these variations, there appear to, us from the comparisons we have been enabled to make, two special points in which a difference is clearly observable between the foliage of Trebbiano and Golden Champion. In Golden Champion, as a rule, the leaf-stalk is rather shorter in proportion to the leaf-blade than it is in Trebbiano, and the lobes of the leaf, as well as the smaller toothings of the margin, are narrower and more sharply pointed in the Champion than they are in Trebbiano. In other words, the teeth of the leaf in the Champion are deltoid Δ or triangular, with nearly straight sides, while in the Trebbiano the teeth are broader and with curved sides, so that they have an egg-shaped, pointed outline. As we have said, the leaves on the sporting spurs appear to us—regard being paid to individual variation—to be precisely those of Trebbiano, with the minor exception that in the relative length of the leaf-stalk and of the blade they approximate more nearly to the character presented by the Champion. As to the bunches and berries, speaking now entirely from those to be seen in the same house at Culford, we may say that Golden Champion, as compared with Trebbiano, has larger bunches with wider shoulders, the individual berries are also larger, have stouter footstalks, ripen earlier, are more amber-coloured, and have the constitutional peculiarity of spotting.

We are quite well aware how wide a margin must be left for natural variation according to circumstances. The variation in size and form of Grapes in the same bunch is, of course, a matter of very frequent observation. We can also quite well understand how even an expert may be deceived in certain cases by an unusually fine or an unusually poor condition of a particular Vine, and so be led to identify it wrongly; but that is a very different case to the production of one or more sports on a rod bearing several normal bunches.

The conclusions that we have arrived at, therefore, are that the Culford sport—we may now say sports—are real, and not fanciful; and that in the character of the bunches and berries one of them shows the characteristics of Golden Champion to such an extent as to justify the observer in pronouncing it to be all but, if not wholly, identical, the differences now observable in size of berry and period of ripening between Trebbiano and the sport being trifling.

After all, it is to us surprising that this case should have been received with so much incredulity. One would think analogous cases had never been noted, that the Cytisus Adami was unknown, that Peaches and Nectarines had never been seen on the same bough, and that "sporting" or bud variation, in fact, was an unknown phenomenon. The special interest in the present case arises from the fact that the rod of Golden Champion had been cut away before the appearance of the sport.

The question then becomes narrowed to this—are the "sports" now existing on this Vine the result of previous inoculation with Champion sap or with Champion pollen, or are they altogether independent of Champion influence? Seeing how strikingly the Champion characteristics are reproduced in bunch and berry, we can but conclude that they have been so to speak Championised, and that the case is one of those exceptional instances where graft hybridisation has been brought about.

A strong reason for this opinion is in our judgment afforded by the fact seen this year for the first time, and now for the first time made public, of the existence not only of one bunch but of three, one of which is almost a Champion if not quite, the one above it, midway between the Champion and Trebbiano, and the third almost entirely Trebbiano. These intermediate bunches are to our minds most significant, and, if the history of the Champion were not known, would raise the question whether it had not originated as a sport in the first instance. But the Champion is stated by Mr. THOMSON to have been raised as a cross between Mill Hill Hamburgh and Bowood Muscat. A sport or bud-variation is very frequently brought about by a separation of heretofore mixed elements, or by the sudden reappearance of the characteristics of a former generation. The offspring of hybrid parentage often manifest in this manner their paternal and maternal characteristics in different plants. Bud-variation may be due to a similar disentangling of previously mingled elements, or it may constitute an entirely new combination—a fresh departure. The Culford Vine, according to the history given of it, must have, or have had comparatively recently, a mixture of elements derived from five or six sources; each of those sources again is of composite origin; so that some settling down or filtration of the constituent elements should occur is not only what we might expect, but what we know does happen in other cases.

There is another explanation, but it is so improbable that we merely mention it. In some few cases pollen-hybridisation has been known to affect, not merely the seedling plants, but also the fruit of the parent plant. Such cases have been recorded, but they must naturally be received with hesitation. But, assuming the possibility of such an occurrence, it might be that the pollen rom the Golden Champion, transferred by bees or otherwise to the flowers of the closely adjacent Trebbiano, had caused the alteration in the berries of the latter. We know at once too much and too little of plant organisation to doubt the possibility of such occurrences, which must, like the Culford sports, be inquired into by the usual rules of scientific testimony.

IN our last issue we gave an illustration of a magnificent specimen of Dendrobium Wardianum in the collection belonging to J. G. HEPBURN, Esq., Sidcup Place, Kent, and have now the pleasure of placing before our readers a view in another of Mr. HEPBURN's Orchid-houses (fig. 57), which it will be seen is especially rich in good specimens of Cattleyas, Dendrobes, Phalænopsis, Lycastes, Aerides, Odontoglots, &c. Our illustration was prepared from a beautiful photograph by the London Stereoscopic and Photographic Company.

—— FLOWER GARDENING AT CLEVELAND HOUSE, CLAPHAM PARK, has now for several years past been remarkably well done, and many who have seen it expressed their conviction that there was room for little or no further improvement. That such opinions were incorrect is fully proved by the beautiful arrangements which Mr. LEGG has this season made. We have heard it said of the decorative gardening, known as carpet bedding that even when well done it admitted of so little variation that it was almost like ringing the changes on a peal of bells, which, to those not initiated in the performance, has much of a sameness about it. Yet so far is this from being the case that the plants that can be used in this description of gardening are sufficiently distinct in form, and possess such a variety of hues and shades as to admit of the most artistic and pleasing combinations of colour it is possible to conceive, and are the same time devoid of the too flat, even surface which conveys an idea that the object in view had been to pinch and distort every plant employed so as to destroy its individual character. "Carpet bedding" is no longer applicable to the greater portion of Mr. LEGG's work this summer; "embossed bedding" would be a more expres-

FIG. 57.—VIEW IN MR. HEPBURN'S ORCHID HOUSE.

sive term. Most of the beds and borders are freely relieved by raised, well-marked divisional lines and sloping mounds, on the top of which are planted small Dracænas, Chamæpeuce, Agaves, and Pachyphytums. Mentha pulegium gibraltarica plays a conspicuous part as a green ground, varied with green and glaucous Sedums; yellow ground colours are represented by Mesembryanthemum cordifolium variegatum, Pyrethrum, and the cream of white Sedums, S. acre elegans. All violent contrasts are avoided; the Alternantheras and Coleus are gradually toned down to the more subdued and grave ground colours, these latter much predominating, and until seen it would be difficult to realise the beautiful effect produced by the association of some of these plants with soft and subdued colours. Noticeable in this way we may mention Sempervivum calcareum, used as a setting in the dividing lines of Sedum glaucum, where the slightly bronzy tinge of the points of the leaves produce a beautiful effect by contrast with the metallic-hued cushion in which it is half embedded. Nertera depressa, which some people find difficult to manage, is very much finer here this season than it has ever been before, the berries on many of the little patches not only being as close as they can stand but almost piled on each other. The circular beds filled with large-leaved plants are in good order without being too coarse and rampant to harmonise with the rest; and the condition of the whole bears the stamp of careful and patient study, not only in the conception and working out of the different designs but also an intimate acquaintance with the nature, requirements, and capabilities of the various plants used. All who are interested in this style of bedding should pay a visit to Cleveland House at once, as we understand Mr. LEGG has resigned his charge of the gardens here, and leaves at the end of the season.

—— The Corporation of Bolton are about to make a new cemetery, and offered two premiums of £30 and £15 for the best plans for laying-out the same. Thirteen plans were sent in, and the prizes were eventually awarded to Mr. R. K. FREEMAN, Architect, Bolton, and Mr. ALFRED CALDWELL, Knutsford, first, and Mr. JOHN SHAW, of Bowden and Manchester, second.

—— We have received from Mr. J. HART, King's House, Jamaica, a couple of Pine-apples, there known as "Ripleys," or white and black Ripleys. They are said to be *the* Pines of Jamaica, all the other varieties being banished from the table in their favour; and are moreover stated to have been raised from seeds sent to Jamaica from the Island of Antigua. Considering that they were cut before they were quite ripe, to facilitate travelling, they proved to be uncommonly good as compared with the usual run of imported fruits, but as to their identification we can do nothing more than suggest that the sort called Black Ripley may probably be the Black Antigua, but, in the absence of foliage, we are unable to say with any degree of certainty. The White Ripley comes nearer to the description of the old Ripley (not Ripley Queen), but here also we are uncertain.

—— The inhabitants of Richmond and Kew remind us of OLIVER TWIST. They are among the most favoured of suburbans—they have a noble park, a terrace, an unequalled river walk, kept up at the Government expense, and now they want more. They are clamouring for the EARLIER OPENING OF KEW GARDENS, and for the removal of what is, no doubt, an eye-sore to neighbouring householders. We presume the opening of the gardens at an earlier hour is chiefly a matter of expense—more police would be wanted. But this is a matter for the Treasury. In any case, we think the authorities would be wise to accede to the request for an earlier opening of the gardens, at least in the summer months. In the case of the houses, a difficulty exists from the hindrance to the necessary work which the presence of the public entails. In all such questions it must not be overlooked that the primary object of Kew is not to supply a recreation ground for local nursemaids or Cockney excursionists. The primary aim of Kew is, and should always be, the advancement of botany and scientific horticulture at home and in the colonies. In the other parks and recreation-grounds of the metropolis the object is altogether different. Still if consistently with the special purpose of the institutions in question other objects can be carried out, by all means let them be.

—— Two very fine examples of LAPAGERIA ALBA growing in pots can now be seen in bloom in the stove-house at Bearwood, Wokingham, the residence of JOHN WALTER, Esq., M.P. Not only are these plants flowering freely, but they bear as many as five blooms in a cluster, and it is almost needless to state the plants are found of great value for cutting from. In the same house Tacsonia exoniensis is remarkably fine, growing and blooming with wonderful freedom. It is a prime favourite with Mr. TEGG, the gardener at Bearwood, who praises it highly.

—— Perhaps it is because the cool moist summer suited the plants best that PHLOX DRUMMONDII has proved very fine this season. At Cardiff Castle one of the exterior Vine borders was planted with a quantity of mixed varieties of the large flowering forms known as grandiflora, which are great improvements on the smaller types of a few years ago. The soil was good, the flowers were large, numerous, and finely coloured. If the Phlox has a drawback, it is the freedom with which it seeds, but it is not a difficult matter to keep them gathered, so that the energies of the plants may be directed to the production of flowers.

—— The Police Station in New Street, Basingstoke, cannot be, in any sense of the word, a "terror to evil-doers" as far as its exterior aspect is concerned. Unlike many modern constructions, which are of a cold, formal, and somewhat repellent character, this is in appearance a floral palace, for it is covered with a rare growth of creepers such as Jasmine, Glycine, Virginian Creeper, Roses, and such-like, and on the window-sills, hanging against the walls and crowded on raised stands, are numbers of bright flowering plants, all well cared for and singularly effective. It represents a bright and attractive spot in the midst of this respectable Hampshire town.

—— From the *Botanische Zeitung* we extract the summary of an "inaugural dissertation" by FR. RESA, ON THE PERIOD OF ROOT FORMATION. It is in the author's own words. Three kinds of roots, connected by transitional stages, may be distinguished —extension roots, by which the root system is enlarged; and absorbing roots, consisting of much-branched fibrous roots, and sometimes of secondary rootlets, increasing the surface of the latter. A periodical dying off of roots was only observed in Æsculus. In the growth of roots there is a certain fixed and specific period, influenced by the weather, but it never coincides with the growth of the parts above-ground; on the contrary, a division of labour is always perceptible. In the flat-leaved plants investigated it was found that there was root-growth in autumn after growth above-ground had ceased, which is completed sooner or later according to circumstances. The winter has only a retarding influence on root-growth, and does not terminate it. Needle-leaved plants (Coniferæ) stand so far in contrast to the flat-leaved plants, that the autumn and spring shoots are separated by the winter. Respecting the beginning and continuation of the course of the period of development, the influence of favourable and unfavourable weather has already been sufficiently dwelt upon. But just as a seed, a bulb, or a bud will not develope "before its time has come," and often cannot be made to grow at all, so we must regard the period of the root-formation of plants as a hereditary property. The question as to the place where the new fibrous roots originate may be answered in this way, that in general the roots of the highest order have the preference, without, however, excluding those of older orders from being able to produce new rootlets.

—— The prevailing depression in trade is being felt among the woollen manufactories and other departments of business at Trowbridge, consequently on the occasion of the annual exhibition of the Trowbridge Horticultural Society the streets were not so generally decorated as is usually the case. It was felt to be a decided loss, as the country people, who are great sightseers, are as much attracted by the town decorations as by the flower show and the fireworks. But there were two notable exceptions to the general falling off in street decorations one the remarkable Gothic archway erected by Messrs. HADEN BROS., engineers, Silver Street. This was an imposing and admirably constructed piece of decoration, graceful in outline and well-proportioned. A light but sufficiently strong framework of wood spanned the roadway, and there were smaller arches on the pavement on either side. The framework was covered with evergreens, and over the smaller arches were, on the one side, a triangular shaped shield edged with flowers, with "Welcome to all," and on the other, "Good night." The royal monogram, in floral letters, came out conspicuously against the dark green background. Flags tastefully arranged in groups, and placed at intervals round the arch, gave a life and colour to the structure and above the crown, at the top, rising some 40 feet above the roadway, waved the British ensign. At night the structure was lit up with unusual brilliancy, by means of 1400 gas jets, distributed over the surface. It was the general opinion that such an arch has never before been witnessed in the West of England, and its erection must have entailed a large expenditure of time and money. The other exception was the Great Western Railway Station, which is always dressed out with excellent taste and skilful decorative effect by the station master, Mr. J. A. COX, who was on this occasion even more successful than usual Huge Spruce Firs were planted at intervals on the spacious up-platform, and the topmost boughs of these were thickly hung with mimic banners. Wreaths of evergreens were suspended in all directions, and flags hung out bravely in the breeze. The notice board containing the name of the station had the sensible motto, "Be merry and wise." Mr. COX, who is a hard working member of the committee of the flower show, deserves much praise for the admirable display. We are indebted to the *Trowbridge Advertiser* for some of the foregoing particulars; and the report of the show given by this paper was as accurate as it was comprehensive—a marked contrast to many local performances of a similar character.

—— At a late meeting of the Horticultural Society of Berlin, one of the members described and recommended the CULTIVATION OF RHUBARB for eating. Although in Hamburgh it is largely grown and consumed, at Berlin it is only known to a few amateurs, and few even of those who have a chance of trying it are able to overcome their prejudice against the name, and housekeepers declare that it consumes too much sugar. However, two or three of the members of the Society who have grown it for some years, and are able to appreciate the real merits of some of the first-rate varieties, are now endeavouring to promote the cultivation of Rhubarb. In the discussion that followed nobody appeared to be aware of the large extent to which Rhubarb is forced in this country, and of its value as a cheap substitute for expensive fruits during the winter months. Rhubarb jam is to be had in Berlin, but there exists, as was long the case here, a strong prejudice against it simply on account of its name, which the people associate with the drug obtained from the root-stock.

—— One of the leading horticultural societies in the south-west has among its rules and regulations one to the effect that any exhibitor dissatisfied with the judgment in any class in which he exhibits may enter a protest against the awards, provided such protest be furnished in writing to the committee before 4 o'clock in the afternoon of the show day. This is an unusual rule, and scarcely to be commended; and it also leads to awkward results, as was seen at a recent exhibition. Two of the judges made their awards in a certain class for plants, and the exhibitor awarded the 2d prize sent in a protest as provided by the regulations. Two other judges were requested to express their opinion, and they unanimously declared in favour of the 2d prize collection as the best of the two. The result was that both collections were placed equal 1st. But what an unenviable position for the judges who made the first award!—for the modification of their decision practically amounted to an expression of their unfitness to fill the office to which they had been appointed. The committee may reasonably anticipate a considerable addition to the number of protests from disappointed exhibitors at their next show. Perhaps it would be as well if the judges appointed for next year were to subject themselves to a competitive examination at the hands of the exhibitors before undertaking the office.

—— We have before us the *Boletin Oficial de la Comision Central de Agricultura de la Republica Oriental del Uruguay* for June of the current year, which, according to an announcement on the cover, is published on the last day of every month. This is a well-printed and apparently carefully edited journal, the number in question consisting of some fifty pages of closely printed matter, chiefly, it is true, extracted from European publications, but none the less useful, probably, to the farming community in that country. The principal original articles are on the establishment at Fray Bentos for preparing LIEBIG'S *Extractum carnis*, and some agricultural statistics of the colony Diaz.

—— TULIPA KAUFMANNIANA, Regel, figured in the *Gartenflora* for July, is a very beautiful and distinct new species, collected by a son of the learned Dr. REGEL, Director of the Petersburg Botanic Garden. Very different from the gaudy T. Greigi, with which it was found growing on the mountains of the Tschirtschick River valley, in Turkestan, it is a modest, pretty, and attractive species, probably destined, as Dr. REGEL observes, to become the mother of a new race of Tulips in our gardens. It rises about 6 inches above the ground, the stem being 2-leaved, and the leaves about as high as the top of the flowers. The narrow bell-shaped flowers are about 1½ inch deep, the segments narrow, elliptical, oblong, obtuse, or the inner ones emarginate. A peculiarity of this species is the relatively short pistil, which is only about half or one-third the length of the filaments. Two varieties are figured, albo-variegata and luteo-variegata, the first with a white ground inside, passing into a beautiful yellow towards the base, and suffused with pink on the outside. The other has a tender pale yellow ground inside, with a carmine spot below the base, the three deep red outside bordered with yellow. Several other varieties as to colouring occur, and this species promises to be a valuable acquisition.

—— The *Journal des Roses* for August devotes a portion of its space to the recent exhibition of the National Rose Society at St. James' Hall. Speaking of the English system of exhibiting Roses, our contemporary states that the English Roses are "larger and richer in colour than the Roses of any other country in Europe." Think of that, ye grumblers at the climate of fog and suicide!

—— We are requested to state that in consequence of the Great International Show being held at Carlisle next week, the usual monthly meeting and dinner of the Horticultural Club will be held on September 18, instead of September 4.

—— The floral decoration of the Agricultural Hall was very successfully accomplished on Tuesday last, but as the display was one of no particular interest to horticulturists generally, we need say no more than that the leading prizes were pretty equally divided between Mr. WILLS and Mr. B. S. WILLIAMS, and that Mr. TURNER and Mr. LEY also secured some awards. In the "Garden Requisite" department the display was poor in the extreme.

—— We fear it will not do to put too much trust in "SALUS" as an antidote to the POTATO DISEASE. The worst patch we have seen this year was one dressed with this material, and by its side was a similar patch of equal size, and planted with the same variety of Potato, which had not been treated with the Salus. It was quite evident that the Salus had acted as a fertiliser, the haulms being more vigorous and taller where the Salus was applied; but the whole patch was equally, and very severely, attacked with the disease. Mr. SMITH'S report on the Potatos at Chiswick will be found in another column.

—— Dr. PIESSE, of Hughenden House, Chiswick, states in the *Times* that the real average yield of ATTAR OF ROSES in the district of Kazanlik is 1736 lb.; Gueupsa, 754 lb.; Karadja-Bahg, 384 lb.; Tchirpan, 162 lb.; Koyoun-Tépé, 118 lb.; Pazardjiki, 110 lb.; Yeni-Saghra, 108 lb.; Zaaghra, 98 lb.; say, total of 3470 lb., or 55,520 oz., which in truth is understated by these estimates, because the Turkish ounce in weight is rather more than as 17 is to 16 English. However, it may be taken in round numbers that the pure attar at 30s. per ounce produces for Roumelia an income of, say, over £80,000 per annum. Dr. PIESSE adds:—"Ruined, as you say, by the Russian campaign, at least for many years. Come, then, Western Australia; come, then, Queensland; come, then, Fiji!—all the Roses you can grow will be a welcome to British commerce."

—— CEANOTHUS AZUREUS should be grown on every flower garden wall having a sunny aspect. Not only is its beauty beyond question, but it blooms at a season when flowers other than "bedders," and the like, become scarce. Mr. EARLEY tells us that in February last he cut a large plant in—leaving not a leaf, and he now has a marvellous display of cool azure-blue blooms, of which he has sent us a splendid sample.

—— The following memorandum, showing the different descriptions of roots and herbs eaten by the poorer classes during the present distress at Codoor and the neighbouring villages has been sent by H. H. YARDE, Esq., Deputy Conservator of Forests, Codoor, in the Cuddapah district, to the Agri-Horticultural Society of Madras:—

Telugu Names of Roots and Herbs.	Botanical Names.	Mode in which the Roots, &c., are prepared for Food.
Roots, &c.		
Kulabunda Gadda	Aloe indica	All the outer portion of the plant is removed, and only the succulent substance found in the centre boiled and eaten
Nagamalapundloo	Cactus species (Prickly Pear)	The ripe fruits of the Cactus are eagerly consumed by the poor. The thorns are removed, and the raw fruit eaten
Eitha Gadda	Phœnix farinifera	The substance found in the tender stems is eaten
Alli Gadda	Villarsia cristata	This is a species of Water Lily found in tanks and wells. The substance found in the plant is cooked, or merely boiled and eaten
Thamara Gadda	Nelumbium speciosum	A plant of the Lotus species. The substance found in this plant is either cooked or consumed in a raw state
Yella Gadda and Injadi Gadda	Roxburghia gloriosoides	These bulbs are found on the hills, and form the chief food of the Yanadies, the hill tribes; but since the spread of famine the poorer classes are also eating them. The roots are boiled and eaten.
Mamidi Ethnâloo	Mangifera indica (seeds)	The seeds are collected, and the kernels are either pounded and boiled into a sort of porridge, or merely roasted and eaten.
Chinta Ethnâloo	Tamarindus indica (seeds)	Do. do.
Herbs, &c.		
Pâla Kura	Holostemma Rheedianum	These herbs are gathered and boiled with some salt and Chilies and eaten.
Davadary Kura	Sethia indica	Do. do.
Boddi Kura	Rivea hypocraterformis	Do. do.
Nelli Kura	Premna latifolia	Do. do.
Chinta Aku	Tamarindus indica leaves	Do. do.

—— In a report by the British representatives in HAYTI amongst some notes on the natural history of the island it is stated that the country is one of woods and forests, trees of all kinds being very abundant. Amongst the indigenous trees of economic value are enumerated Mahogany, Logwood, Fustic, and Lignum-vitæ; and amongst valuable edible plants that have been introduced occur the Mango, Cacao, Coffee, Orange, Apple, Breadfruit, Almond, Walnut, Fig, Sugar-cane, as well as Cotton, Indigo, Bamboo, and many others. Many of our commonest cultivated esculents, such as the Carrot, Cabbage, Turnip, Onions, Peas, Beans, and Beetroot, grow well. With regard to Coffee we are told that the commercial season commences in November and lasts till the end of March following. "During this period considerable activity prevails at the open ports to which the Coffee is brought from the plantations. It arrives in various ways—in coasting vessels, on beasts of burden, in bags and parcels carried by women and children on the head; but in whatever way it comes, it is anxiously expected by numbers to whom it brings profit and employment—brokers, driers, pickers, fillers, weighers, stevedores, and boatmen. The general activity thus prevailing communicates itself to local trade in all its branches so that in the capital, as well as throughout the country, the Coffee season is the season of the whole year." One plant referred to in this report is so remarkable in its action that we quote the report in the writer's own words: he says that it has "such strong narcotic powers that in the hands of a skilful practitioner it will produce coma of any intensity or duration, or even death itself when so intended. The knowledge of this plant is confined to a few families, who transmit the secret as an heirloom from generation to generation, and the heritage is highly prized, conferring, it is thought, the attributes of miracle-worker and priest, for the plant is in many ways used in aid of solemn imposture, superstition, and even crime. The power thus exercised is called 'Wanza,' a word that inspires the African with awe and dread. The Wanza priest can throw into a death-like coma, and, knowing the moment of returning consciousness, he will make a show of returning to life. If a burglary is to be committed he can, by means of his art, cast a deep sleep on all indoors; and one may understand how he can attain other forbidden ends in the same way." Such is the account given of the uses of this plant, but no description, however rough, is furnished of the plant itself, or any clue to its identification. Whether the plant is actually unknown, or whether its name only is referred to by the writer when he says, "An experienced botanist could not fail to discover this plant, which as an anæsthetic would no doubt prove a valuable acquisition to medical science," we are left in doubt.

—— In the temperate-house at Kew is now in flower a shrub seldom or ever seen elsewhere—PAVETTA CAFFRA. The plant at Kew is small, but its trusses of dead white flowers contrasted with its deep green foliage are very effective.

—— The *Revue Horticole* publishes a woodcut of CAMPANULA MACROSTYLA, of which we have also seen specimens. It is an annual of straggling habit, with large, open, purple bell or cup-shaped flowers, with a calyx like that of the Canterbury Bell, and a very long style, the stigmas of which cohere in a club-shaped mass. It is a very distinct looking plant, which lovers of annuals should be on the look-out for.

CARLISLE.

IN continuation of our Carlisle notes we may add that a visit to Brayton Hall, the country residence of Sir Wilfred Lawson, M.P. for Carlisle, will be interesting to the horticulturist particularly, and to the sightseer generally. It is about 18 miles from Carlisle, and is reached by the Maryport and Carlisle Railway, which passing through the pleasant valley of Cummerdale, past Dalston on the left, Crofton Hall, the seat of Sir Robert Briscoe, Bart., on the right, past the thriving and picturesque country town of Wigton, reaches Brayton Station. On alighting here the visitor will at once perceive a handsome new entrance lodge, which will direct him to the spot. The Hall is a palatial building, forming three sides of a square. On the east or open side is the principal entrance. The south front is adorned with a most chaste and effective panelled flower garden which runs the entire length of the building. On the west front is a considerable stretch of lawn dotted with fine trees, amongst which are three Larches of singular appearance, they having in their early days pushed out branches a few feet from the ground, which, contesting the leadership, are nearly as thick as the main trunk. The views from the terrace and windows are extensive and diversified. To the east and south is the fertile valley of Ellen, with Caldbeek Fells, Bennesse, and cloud-capped Skiddaw rising in the background. To the north and west in the distance are Criffel in Dumfries-shire, the hills of Galloway and Kirkcudbright, and the Solway stretching away to the west, as far as the eye can reach, like a silver thread. A walk leads through a unique flower garden, in which will be noticed a perfect specimen of the cut-leaved Beech—past the gardener's house, and a fine piece of water, to the kitchen garden, which is complete in its arrangements. The hothouse accommodation is extensive, new, and equipped with every modern improvement, comprising a range of vineries and Peach-houses, the occupants of which are in a most thriving condition—of stoves and greenhouses filled with choice specimens in luxuriant health, and Cucumber, Melon, and Strawberry-houses and pits and frames *ad libitum*, all reflecting credit on Mr. Hammond's careful and intelligent skill.

A three-quarters of a mile walk will bring the

visitor to the pleasant agricultural town of Aspatria, where the return train can be taken to Carlisle.

Six miles south-west of the city is Rose Castle, the residence of the Lord Bishop of Carlisle, a fine old building, celebrated in story, and situated in the Vale of the Caldew, amidst fine picturesque scenery. The drive in this direction is well worth the hire of a horse and conveyance. At the start from English Street, facing which and the New Victoria Aqueduct are the new premises of Messrs. Little & Ballantyne, now in course of erection, and rendered necessary by the wide extension of their business. They are from designs by C. J. Ferguson, Esq., the Diocesan architect, Grecian in style, of chaste outline, and will, when finished, form one of the most striking architectural features of the city. They are built of the celebrated Lazenby sandstone, which possesses a rich, warm tint, so much admired by Southerners, and of which all the railway stations and buildings on the new section of the Midland Railway between Settle and Carlisle are built. The visitor will proceed over the new viaduct, an immense undertaking, which bridges over the bewildering network of railways converging from all points of the compass into Carlisle, and connects the outlying suburbs in the Caldew Vale with the business part of the city. This will shortly be opened by H.R.H. the Princess Louise, attended by all the pomp and ceremony of municipal display.

On leaving this the ground soon begins to rise, until the cemetery, a tastefully laid out piece of ground, is reached, when a look back at the old city, castle, and cathedral, will show it from a picturesque, and, if the tourist is of a military turn of mind, a strategical point of view—the principal one in olden times. Indeed, on the other side of the valley, on a prominent spot, stands a farmhouse, where "Royal Charlie" took up his abode for several nights during his memorable incursions in this quarter.

A quaint old village will next be reached, with its picturesque church; then onwards for a space by the banks of the Caldew, on which are situated manufactories of some importance—amongst others, the spade foundry of Messrs. Cowan, examples of whose horticultural implements will no doubt be seen at the show. Near here, amidst vales and fine old trees, is the beautiful residence of Colonel Salkeld, another of the historical families of the Border. Close by is Rose Castle. The drive may be prolonged to Mealsgate, near which is Whitehall, the beautiful residence of the late lamented George Moore, Esq., of London, whose melancholy death, resulting from the effects of an accident in the streets of Carlisle, caused so much regret last fall. Situated as it is on the confines of the lake districts, the scenery is delightful and grand. The drive back can take place by way of Brayton and Wigton.

The principal places of interest for the horticulturist to see by the way of the London and North-Western Railway, within easy reach of Carlisle, are Lowther Castle and Brougham Hall. Lowther Castle, the seat of the Earls of Lonsdale, has been so often described, and is withal so princely a place, that it has become one of the lions which must be seen. The nearest station is Clifton, about 21 miles from Carlisle, and half-an-hour's walk through woods and finely timbered parks will bring the visitor to the Castle gardens, where we shall leave him with Mr. Shand, trusting some day ourselves to record the improvements which he is carrying out.

To the left of Clifton Station, coming from Carlisle, is Brougham Hall, the baronial residence of Lord Brougham. It is surrounded by fine romantic scenery, and the building shows signs of having been built in the times when "might was right." Attached is a quaint chapel, in which are many curious carvings, collected and placed there by the late celebrated Lord Brougham, which will be looked at with much interest. The gardens, which are under Mr. Campbell's care, do credit to his skill. There is a fine orchard-house, and a choice collection of Orchids. The clothing of large, bare, and otherwise unprofitable tracts of ground is a large item in the estate management here.

Greystoke Castle, the seat of H. C. Howard, Esq., formerly the property of the Dukes of Norfolk, who still enjoy the barony of Greystoke, stands in a picturesque park of 5000 acres. The present mansion was erected within the last 100 years, near the site of the ancient castle, which being garrisoned for the king in 1648, was taken and destroyed by the Cromwellian army. The present building is of great massiveness, but late improvements have caused it to assume an appearance of considerable elegance. It is easy of access, being about 5 miles west of Penrith by road; the drive affords one of the most variable and interesting bits of landscape and mountain scenery possible to be found in the North of England, especially so on nearing the Castle. The views embrace the distant lake and mountain, commanding also one of the most beautiful wooded parks in the North. The Castle, which is situated on an eminence, shows its towers and battlements amidst gigantic trees, and the extensive plantations are embellished with several ornamental buildings. The approach to the Castle is a gradual ascent from the north-east. On the east and south it stands on the brink of a precipice. On the west side, again, are a beautiful terrace, and grass slopes ornamented with lofty Lime trees, with their graceful branches hanging over a splendid sheet of water, which is made very picturesque by its flowing around several islands, and which in its course falls over a cascade about 20 feet into another sheet of water of considerable extent, of a serpentine form, with grass slopes and shaded walks, overhung with shrubs and ornamental trees, some of which may be mentioned as remarkable for their great height and circumference of stems—viz., the Silver Fir, measuring 16 feet at 6 feet from the ground. The water again rushes over a natural fall some 36 feet in height, and passes by an arch through the fence of the pleasure-ground, which is well laid out and very picturesque.

Returning to Carlisle the visitor may make an excursion by the Caledonian Railway. Near Kirtlebridge Station he will find Springkell, the seat of Sir John Heron Maxwell, Bart. This place is associated in border history with the tragedy of "Fair Helen of Kirkonnel Lea," which may interest the romantic tourist. Northwards is Ecclefechan Station, about 3 miles from which is Burn's Wark Hill, from the top of which a fine view of the beautiful and well cultivated vale of the Annan may be seen, the Solway Firth and the Cumberland coast and mountains in the distance. Ecclefechan is the birthplace of the great historian, Thomas Carlyle. Pursuing our course in a westerly direction is Castle Milk, the seat of R. Jardine, Esq. The house is a modern erection, most beautifully situated amongst fine trees on the banks of the Water of Milk. The gardens are commodious and well laid out, and are under the management of Mr. Findlay. Near here is Hoddam and Repentance Tower, from which fine views can be obtained, also Lochmaben, and the ruins of Bruce's Castle.

A run by the Glasgow and South-Western Railway by way of Annan will bring the visitor to Dumfries, which is surrounded by many gentlemen's seats, well worthy of a visit, and where the horticultural spirit is carefully and studiously nourished. Amongst these we may mention Terregles, The Grove, Friars' Carse—sacred to the genius of Burns—Munches, Ernespie, and by rail to Thornhill, for Drumlanrig. The latter place will, of course, require a special visit; and, as it is within a day's run to and from Carlisle, many will avail themselves of the opportunity.

By the North British Railway a run may be made to Langholm. The scenery is delightful, and the town interesting. Here is Langholm Lodge, one of the seats of the Duke of Buccleuch, Potholm, Craigcleugh, and a few miles on, nestled among the hills, is Arkleton, where those monster bunches of Grapes which have astonished the world were grown, and where everything else, even to a stick of Rhubarb, receives the same diligent attention. A delightful drive up Eskdale from Langholm will be a great treat to the Southern visitor; the hilly scenery is so different to the level plains of the South, and as the roads are good and good drivers and conveyances can be had, some may be glad of the hint. Silloth, the Brighton of Cumberland, can be reached in an hour's journey, and the healthful sea breezes enjoyed.

Home Correspondence.

The Rose Season.—The queen of flowers has produced the best return that we have noticed for some years, the flowers being large, symmetrical, and well up in colour; the plants themselves have not suffered from rust and mildew, as we have seen them other years; and the autumn crop of flowers promises to be good also. What with so much clean healthy growth and abundance of moisture, everything looks well for next year. Notwithstanding the untidy appearance of mulching in summer in decorative quarters its advantages are too important to be slightly overlooked; how it saves labour, how it benefits the roots in the retention of moisture, and how it adds to the quality and general appearance of the flowers, is too well known to require further comment here. Our own stock does not embrace many new varieties or novelties, those of "tried constitution" we find to suit our climate best; we never risk much on novelties before we have more than a paper account of their beauty, habit, and constitution: the latter is worth inquiring after before we enter on vague speculations. If we read over any prize list we invariably find the names of many old Roses well to the front. Just observe the well-stocked rosary, when all are in proper condition for inspection, and you have some trouble in distinguishing variety or even shade from amongst so many hundred names. Perhaps a little classification would assist beginners in selecting those colours, or different shades of colour, that would please the fancy; all are doubtless possessed of some degree of merit or beauty, and any improvement, however little, is sure to be heartily welcomed. Whilst our Roses were in bloom all our vases and dinner-table epergnes, &c., were done with Roses alone, with well-selected leaves, the only addition being a few sprays of Mignonette—true simplicity and a natural effect being our aim throughout. How a half-expanded bud or a bunch of buds with one or more rather advanced can be made to shine in a simple way and quite eclipse any other combination of colours, will be duly appreciated by all lovers of the Rose; nothing sets off a Rose like one of its own leaves, and defects can be filled up and humoured as required. Now about classification. Something might be done to improve existing arrangements; there are so many names with little or no difference to distinguish them by, and if we had a list from which a convenient selection could be made in a few telling colours many a rosary might be made to look different. I append a short list of those that have done best in our climate, from notes taken when the plants were in full bloom, as follows:—Abel Grand, Alfred Colomb, one of the finest crimson Roses grown; Marie Baumann, Dupuy Jamain, Captain Christy, one of the best of the Centifolia type, and a vigorous grower; Star of Waltham, Baronne de Rothschild, Général Jacqueminot, Ferdinand de Lesseps, Fisher Holmes, always a favourite for its depth of colour and imbricated form; Mdlle. Marie Rady, Madame Vidot, Madame Fillion, Madame Lacharme, Maurice Bernard, Bernard Verlot, Mdlle. Bonnaire, Duke of Wellington, La Ville de St. Dennis, Mdlle. Marguerite Dombrain, La France, François Michelon, Louis Van Houtte, Reynolds Hole, Horace Vernet, Mdlle. Eugénie Verdier, Xavier Olibo, deep crimson and a truly good and beautiful Rose. *W. Hinds.*

A Few Suggestions for an Autumn Rose Show.—It will scarcely be disputed that the greatest feature in the improvement of Roses is perpetuating the habit of blooming a second time through the autumn as well as at the usual season. Indeed it is that habit which constitutes their superiority over the summer Roses, many of which in symmetry of form and beauty of colour quite equal the finest of their modern rivals, to which also they are not inferior in vigour of growth nor hardiness of constitution. It is surprising, therefore, that few if any attempts are made to encourage autumnal bloomers by the establishment of Rose shows in September, on a similar scale of magnitude to the great summer exhibitions. Considering the undoubted popularity of such spectacles, there ought to be little fear of want of success as a commercial speculation, while the numerous benefits to the progress of the flower ought in itself to justify the venture. There are many of the finest varieties which scarcely show themselves in their best character in their earlier blooms. For instance, Charles Lefebvre, Gloire de Dijon, Malmaison, and many of the hardy Teas grown out-of-doors—for it must be recollected that many specimens of the latter exhibited earlier in the season are really cut from flowers under glass. There are likewise not a few amongst the Bourbons and Noisettes—essentially autumn Roses—which if not monstrous are of exquisitely perfect form, the display of which might work some little improvement in public taste, now vitiated by the craving for sensational size. To say there would be a difficulty in getting together blooms of sufficiently high quality to grace the show-tables is to throw a slur upon the very property upon which the *raison d'être* of the leading class of the day—the H. P.'s—is based. Or, again, it would imply that the resources of the exhibiting trade firms had been exhausted by their summer displays—an admission few would care to make. Moreover it affords an opportunity for the proprietors of Rose grounds who from circumstances of locality, climate, late soils, and other drawbacks, are rarely in a position to exhibit at the date of the fixtures of the great summer shows. As an encouragement for some endeavour in the direction here proposed, we recollect one (and only one) occasion. At the Crystal Palace an autumnal Rose show was held; that usually held in June or July had been from adverse climatic influences a comparative failure, but its successor was an unquestionable success, as was

remarked at the time, as far as the number and quality of the specimens was concerned. But, granting in some instances perhaps we might not get such overgrown samples of certain individual flowers as appear on the tables earlier in the year, what we lost in size we should gain in symmetry and finish, no mean considerations. Besides it would afford amateurs an opportunity of estimating the true character of varieties, and of so directing their choice to the exclusion it may be of the coarse and ragged montrosities, so eagerly booked by the inexperienced and unwary at the summer exhibitions. Even if insuperable difficulties were found to the establishment of a separate Rose show that in the autumn for fruit and flowers might be utilised for the object here proposed, by making Roses a prominent portion of the prize schedule. I throw out these suggestions in the hope they may attract the consideration of the enterprising managers of the Alexandra Palace, the place of all places for floral or cognate exhibitions. The brilliant success of the display of last July would no doubt induce the public to flock to a spectacle somewhat similar in kind, but yet out of the common way. *W. D. Prior.*

Gloxinia erecta and its Varieties.—These beautiful plants stand well in the conservatory and the drawing-room, and can be easily kept in flower throughout the year. I have had them in bloom here for more than two years, by placing twelve plants in heat every three weeks. They are easily increased by cutting up the leaves, and putting them in sand in heat. When the bulbs are formed, pot them off in sandy peat, and keep them in heat till they are large enough to ripen off; they are also easily raised from seed, by sowing them in sandy peat, with a very light covering of sand over the seed. So soon as the bulbs are large enough, pot them, and treat as above-mentioned for the cutting. I think 5 or 6-inch pots the best size to flower them in, and most useful size for the room. The best soil is rough peat mixed with sand. When out of bloom I place them on shelves, and keep them dry, in a cold house, till wanted. *Wm. Smythe, The Gardens, Basing Park, Alton, Hants.*

East Lothian White Stock.—I have sent for your inspection a plant of East Lothian White Stock. They are such beautiful things, and a select strain of them are worthy of especial care. The strain of this sample is the same as we grew here and had so fine three years ago; the seed was saved from a particularly fine type of white single, and you would be almost surprised to see how fine some of them are: some are a good deal larger than the one sent, though at present no better flowered, and they are only grown under ordinary circumstances. Good white flowers of almost any kind are often in demand, and such as this I feel sure you will say is very good. *Robert Mackellar, The Gardens, Abney Hall, Cheadle.* [Very good indeed. Eds.]

A Useful Plant.—What is termed "table decoration" has certainly gone beyond itself—has, in fact, become exhausted and ridiculous, and when I see such plants as the poisonous Hemlock and the deadly Nightshade proposed as decorative plants, I cannot help thinking their advocates have not only gone beyond but beside themselves, and I am prepared to hear of the "charming green Nettle," or the "tomentose Thistle" appearing in the cornucopias of our dining-tables. How palatable the "dinner of herbs" must be in a room decorated with Nightshade and Hemlock! The plant I would introduce to notice, Thalictrum Jaqueminianа [?], grows about a yard high, very bushy, stems stout and strong, shoots the thickness of Wheat-straw, the whole of which from the ground upwards are covered with beautiful Fern-like foliage, not easily distinguished from the Adiantums; indeed, a compact form of this plant is sold as Thalictrum adiantifolium. Nothing can equal the utility of this plant for toning down large masses of flowers, whether in vases or baskets. Lengths of the stem, with a single leaf attached, are admirable for thrusting in vases, &c., of flowers when put together, lasting for a week or more, and giving as complete a finish to the whole as the bit of Maidenhair does to the bridal bouquet. In conclusion, I may add that were I in the bouquet business I should grow a hundred plants of it. The plant is as hardy as a Nettle. *T. Williams, Bath Lodge, Ormskirk.*

Are Small-flowered Peaches the Best for Forcing?—A week or two ago I had the pleasure of spending a day in the company of two gardeners who stand high in their profession. One of them like myself was a visitor, but all were keen in the acquirement of "wrinkles," and as a matter of fact we talked "shop" all day. Amongst other things discussed was the merits of various sorts of Peaches and Nectarines for early forcing, and while this was going on our host expressed a decided objection to large flowered varieties, as many years experience had taught him that for early forcing—that is, to have the fruit ripe in May—the small-flowered varieties were the best. This was the first time that I had heard such a "notion" propounded, and I should be glad to know if such is the experience of any other of your readers. The subject is an important one to many, hence this note from *Cader Idris.*

Camellias in Sussex.—A grand specimen of Camellia alba-plena is growing on a lawn behind a cottage in Battle. It is 15 feet through and as much in height, and has hundred of buds set. The plant is furnished to the ground, and is in the best of health. *A. O.*

Carnivorous Plants.—I have a plant of Sarracenia flava with several well-developed pitchers, and for some weeks past I have with much interest watched the flies and bees at the plant. They generally settle upon the under surface of the lid of the pitcher, from which they evidently suck a fluid or matter, which stupifies or intoxicates them. In this condition they then drop into the pitcher, from which they cannot escape. I should like to know if any of your numerous readers ever observed this peculiar effect. *Alex. Paterson, M.D., Fernfield, Bridge of Allan, N.B.*

Mildew on Grapes.—A gentleman living near Liss had a Vine (growing out-of-doors) infested with mildew, and was advised to take it down from the wall, carefully scrape off all the bark, and nail up the Vine again. He followed the directions given and effected a perfect cure: the Vine has borne well ever since and the Grapes have not a trace of the disease, so I have been requested to inquire in the pages of the *Gardeners' Chronicle* and other journals if this mode of treatment is always to be depended on, or if the cure in the case I allude to was not an accidental circumstance. *Helen E. Watney, Berry Grove, Liss.* [Probably accidental. Eds.]

How to Destroy Wasps' Nests.—I cannot tell Mr. Jean van Volxem (see p. 250) where he can purchase cartridges for smoking out wasps' nests, but I have made them in the following manner:—Take two parts of rock powder and one part of sulphur. The powder should be made damp and pounded small (mixing the sulphur with it before pounding), then take a small portion of it, and roll in brown paper, about two tablespoonsful for a cartridge. When evening has set in and the wasps are all likely to be in their nests pay them a visit, light one end of the cartridge and place it in the nest, then stop the hole to keep in all the smoke. Let it stand for about two minutes, then dig out the nests and place them in a bag and afterwards put the bag in a kettle of boiling water and let it stay until the wasps are quite dead. Fowls will soon demolish the young wasps which the comb will very likely be full of. This is the most effectual plan I know of for destroying wasps' nests. *H. Hill, The Gardens, Glynn, Bodmin.*

The Hardiness of Mandevilla suaveolens.—When recently visiting the gardens at Battle Abbey, Sussex, I was much struck with the beauty of Mandevilla suaveolens growing outdoors on the wall of the old abbey, the plants being 20 feet high, and one mass of bloom. Mr. Burgoine, the gardener, informed me it had been even much better than when I saw it. I also saw growing luxuriantly Tropæolum speciosum and tricolorum, Trachelospermum jasminoides and the variegated variety, Clintonia, Coronilla, Mutisia decurrens, Swainsonia, Lapageria alba and rosea, and a fine lot of Camellias, all growing and doing remarkably well—which speaks well for the hardiness of those mentioned. *A. O.*

The Potatos Treated with Salus at Chiswick: Result.—In the *Gardeners' Chronicle* for April 14 last, p. 468, there is an account of the Potato-planting at Chiswick under my superintendence, and in your paper for July 14 last there is a description of the appearance presented by the Chiswick Potatos up to that date. The Potatos on the experimental plots were planted late in the season, viz., on April 5; they were planted in a cold stiff soil of loamy clay in unfavourable weather—it was raining nearly all the time—the worst position was purposely selected, viz., the spot where the murrain was so uncommonly bad in 1875, and the following varieties were chosen for experiment:—1, American Early Rose, on account of this Potato suffering more than any other in the 1875 attack, and being one of the worst to take the disease; 2, Lapstone, very subject to disease; 3, Bresee's Prolific, having the same character as the last; 4, Striped Don, often bad; 5, York Regents, having the same character as the last; and 6, Paterson's Victoria, a good Potato. No manure other than Salus was used. What I term the bad position was the one amongst the trees, the second position, in the open, I paid less attention to, it was moreover surrounded by large numbers of Potatos in close proximity with mine and untreated by me. I originally intended to give the Potatos two applications of Salus, once at planting and once about the end of July. As the dampest and worst place was amongst the trees, I had the Potatos in that position treated a second time on July 16. I had an appointment for August 2 at Chiswick, when I intended to treat the plants in the open to a second application of Salus, but the sudden death of my father on July 31 prevented me from keeping the appointment, and so the Potatos in the open place were only treated once. I had no chance of getting to Chiswick again till Friday last, August 24, when all the Potatos planted by me were taken up in my presence. It will be noted that the early autumn storms had been allowed to expend themselves over the plants before they were taken up. In the open, where the plants were imperfectly treated and surrounded by others untreated, the following is the result:—Out of 276 tubers of Lapstone 14 showed traces of the disease. Out of 214 tubers of Paterson's Victoria 10 showed traces. Out of 518 Bresee's Prolific 20 showed traces. Out of 326 American Early Rose 22 showed traces. Out of 544 Striped Don 53 showed traces. Out of 473 York Regents 19 showed traces. In all there were 2213 sound tubers and 138 marked with the disease; therefore, 1 in 16 tubers showed traces of the murrain. In the ground amongst the fruit trees where the Potatos were so terribly destroyed in 1875 the case was different: the plants had two applications of Salus. The first row unearthed was Lapstone (the same as Premier), a very bad Potato for taking the disease. 382 tubers were unearthed, and after careful searching by four men only two tainted tubers could be found. I had little fear of the second row. Paterson's Victoria, 307 tubers were dug up out of this, only one with a trace of the disease could be detected. The third row was Bresee's Prolific, a very bad Potato for taking the disease; 413 tubers were unearthed, and after the most careful search not a single diseased tuber could be found. The fourth row was American Pale Rose, of luckless memory; this row produced 351 tubers. After being searched over by four persons with the utmost care not one infected tuber could be met with. The fifth row was composed of Striped Don, a Potato very subject to bad attacks of the murrain; the row produced 455 tubers; on carefully looking over these, eleven were found to be tainted. The sixth and last row belonged to York Regents, a Potato with a bad character; the row produced 546 tubers, and, after a most searching examination, only one tuber could be found as showing any trace of the murrain. Summary: The entire plot on the bad ground amongst the trees produced 2439 sound tubers, with only fifteen showing a trace of the murrain: average, one tainted Potato only to every 162 sound ones. Average of both plots taken together: one tainted Potato to 89 sound ones. Elsewhere in the garden American Early Rose and some of the Ashleaf varieties were about one tainted to two sound; one-third of the crop gone. Minier's Perfection was in a still worse plight. In the experiments at Rothamsted last year, where the produce was 56 tons, the result showed one tainted Potato in every nine. It must be borne in mind in reference to these figures that many of the tubers experimented upon by me were tainted at the time of planting. The Potatos were not weighed last Friday, and the new small seed tubers are included in the figures. The result of the experiment must speak for itself, and be estimated according to its value, whatever that may be; but I believe far better results would arise from better conditions. Without pretending to entirely prevent or perfectly cure the Potato disease, I think the Chiswick result clearly shows that it is quite as possible to keep the diseases of plants in check as it is the diseases of man and animals. *W. G. Smith.*

Self-Sown Potatos.—Referring to an article in your publication of the 18th inst. respecting self-sown seedling Potatos, I wish to state that I have seen an instance of such many years ago. Before the Potato blight was heard of, in the years 1842 and 1843, a field of mine was planted in succession without manure on the lea with the old Apple Potato, well-known as the best keeping Potato in the Dublin market, but now lost. In the year 1847 I had some of the clay—strong alluvial—brought into a flower garden to mix with the natural soil. A number of seedling Potatos sprang up from the seeds dormant since 1843. I had great hopes of thus being able to recover the lost Apple Potato, but when the plants were about 8 inches high, they were all cut off by the disease. I tried the experiment some years later, but without any result, with the same soil. *J. W., Dublin.*

Turf.—As the season for laying down fresh turf is at hand, a few hints may be acceptable, *e.g.*, for making slopes and terraces. At this time I am mowing a quarter of an acre once a week, and shall now roll it as often. I shall select all the turf of this piece that is composed of Trefoil and white Clover for laying down the slopes, for, unless the turf is of good

quality, the slopes will always look bare and ragged. Two years since I commenced mowing and rolling a rough field for an extensive plantation and flower garden; at the same time I manured it with the following artificial composition:—One part guano, one Lawes' grass manure, and one of common salt. I selected these ingredients many years since for all grass land, and have never since had a bad crop of hay. The guano aids the growth, the grass manure encourages good quality, and the salt controls the whole, as well as keeps the earth moist. What with rolling, mowing, and manuring the field above alluded to I have now one of the finest pieces of velvet turf, chiefly of white Clover and Trefoil. I am using the Excelsior lawn mower, the best of all; it is wonderfully light in work, and the rapid action and weighted blades give so much momentum that, like the fly-wheel of a machine, it causes all the impediments to be overcome. I can strongly recommend it now that some improvement has been made in the shape of the cogs of the wheels. In laying down turf I do not at all object to some sand being mixed with the earth, the fibres of the turf root into it well, and the soil is not so apt to crack afterwards. Coal ashes some people use, but I find them poisonous to grass; not so wood ashes, nothing is better to produce a fine quality. Next week I will mention some other uses I put turf to. *Observer.*

Melon Growing at Longford Castle.—Mr. Ward, of Longford Castle, in your issue of August 18, gives an account of his Melon growing for the information of your readers. Will he kindly answer the following questions:—1, the length and breadth of his lights; 2, how many plants he has in each light; 3, does he mean sixteen fruit per light for each crop, or for all five crops; 4, how many were fit for the table, and how about flavour? From the first week in May to August 18 is fifteen weeks, and to finish five crops in fifteen weeks leaves three weeks for each crop. To flower, set, and swell and ripen a crop of Melons in twenty-one days, and that without much sun-heat, is quick work even in these fast days. *G. F. Didymus, Manchester.*

The Season and the Crops.—It is difficult to imagine a more disastrous report than that which has appeared lately in the pages of your journal as to the fruit crop of 1877, including too in this instance in the majority of cases the failure of that most useful fruit, the Apple. The opinions expressed in your columns as to the cause of that failure have well hit the mark, when they ascribe it not so much to the influence of frost as to the long period of dull, wet weather that we experienced during the blooming season, accompanied at intervals with high driving winds. The present state of vegetation in many places along our south coast bears testimony to the hurricane that swept over us late in the spring, checking and often destroying the young and tender growths. With such testimony before us, would it not be well to take into careful consideration, as one of the essential points for securing a good crop of Apples, the strong advisability of greatly increased protection for our orchards, to shield us not only from the biting north-easters, but also from the terrific gales of wind and rain which assail us occasionally from south-west and west? Belts of trees around the Apple orchard (always remembering not to bring them in too close proximity to your fruit) will render very effectual aid towards securing a good crop of fruit. Can you spare me the space to advocate briefly one more consideration that will help us to obtain the desired result, and that is, as much attention as we can possibly give to the judicious thinning of the fruit. I know from experience that where large quantities are grown it is a matter of impossibility to do much in this way, but when we see trees heavily laden one year and comparatively bare the next, it becomes evident that the removal, as far as practicable, of a portion of your fruit this year, will be conducive to the growth of the tree, and better development of fruit buds for next year's crop. *B.*

Root Pruning.—I was more than pleased to find root pruning (see p. 166) brought again before the attention of your readers. I consider it a most important subject, although my method differs widely from that detailed by "E. W." Yet when I practised it, some years ago, I found the greatest advantage in every respect; so successful was I that I prided myself in having almost any tree under control. Not only were the trees in the most beautiful health of foliage, thick, leathery in texture, a very dark green in summer, and in autumn fading off either light or dark, according to the variety, but they varied from the most beautiful crimson in some years to the palest lemon colour, but clear throughout, with no dark spots, and no leaves fading off from green to brown. When you have trees like this, you have a chance against frost and other evils, for flowers the following spring correspond with leaves of the previous summer and autumn. The wood has had such an opportunity of ripening that every bud is as if shielded by so many scales. Then the fruit is so abundant as to require very severe thinning, and ripen to perfection, having the most beautiful tints on the side next the sun. I hope this matter will be most thoroughly gone into. After all that has been said by Mr. Hibberd and others against pruning, by attention to the roots, with the addition of proper nutriment, &c., you will need little pruning. *George Lee, F.R.H.S.*

The Thunderstorms and the Potato Crop.—It would almost seem a libel on common sense to revive the electrical theory of the Potato disease after Mr. Worthington Smith's lucid and exhaustive demonstrations and illustrations, in which all the disastrous effects are so clearly brought home to the Peronospora infestans. But, granting all that Mr. Smith has so well proved, it does nevertheless seem that an electrical state of atmosphere, and all that such state involves in the way of heat and moisture, and perhaps even electricity itself, is the most active agent in arousing the resting-spores of the Peronospora infestans into a state of such intense activity as to convert thousands of tons of sound Potatos into mere masses of putrid corruption within a few days. That is the sad sight, these are the heart-breaking facts that have been forced upon our notice within the last fortnight. Before the thunderstorms the Potatos were sound, after them they have become a complete wreck. The destruction has been more sudden and complete than it has for a dozen or more years, in fact it threatens to be universal—not a garden or field, not a single plant has escaped the scourge. The stench of the rotting haulm pollutes the atmosphere. Every sound Potato snatched for a meal from the rotting masses is so far infested as to give out the most unpleasant odours in cooking. The rain it raineth every day, or if it clears up one day it raineth the harder the next to make up for the cessation, and the atmosphere is close. On the heels of such rain the disease stalks abroad over field and garden, and causes them to reek with the disease. The common people say the thunder and the rain carry the disease. Assuredly they are right—but the resting-spores? Well, I admit all that, and am grateful indeed to Mr. Smith for making it all intelligible. But the resting-spores are harmless enough; it is the active growth of the spores that causes the mischief. The spores at rest are like a barrel of gunpowder in store in a safe place; they are as harmless as a barrel of sand, but bring fire in contact with it and it blows up the house. It is so in measure with Peronospora infestans. It abounds in numbers beyond calculation; I fear there is little hope of sensibly reducing these numbers. They are powerless for mischief till the thunderstorm, the muggy, close atmosphere, the lightning, converts from the passive into the active state, and then farewell to the Potato crop if these favourable conditions for the growth of the Peronospora last long enough for the destruction of the Potato. As to combating the enemy with Salus or aught else when it is in full activity, as well dash water on a barrel of gunpowder after the match has touched it. What fire is to the powder a muggy atmosphere that follows the trail of thunder through the sky is to the other. In fact, Mr. Smith's Salus dressings are meant to deal with the disease in its weakest, that is, its resting state. It is powerful, and probably kills all the spores in the Potato itself. But it is to be feared that the earth is sown thickly with such spores. The whole of our seed Potatos were carefully dressed with Salus. At the first symptom of disease on early crops in the neighbourhood we lifted ours—a capital crop—and dressed all the late ones overhead with Salus. As far as appearance goes it has had but little effect. A good many of the early ones are now going since lifted. We fear we were a few days too late, and the late ones dressed overhead have also lost their tops like the others. It must, however, be stated that the whole of our ground has been potatoed for several years, and was probably full of the spores of Peronospora, so that though we probably started with clean seed they were planted in a foul bed. The weather, too, all through August has been the worst we ever remember for the Potato disease. A succession of thunderstorms of unusual severity, with enormous rains, dull weather, and little or no sun—weather made for the increase and multiplication of all forms of fungus life from the Peronospora upwards. The stimulating powers of Salus have also been most marked in many cases. Not only have the plants been abnormally strong, but after being cut down by the May frosts they pushed afresh with a rapidity, and tubered with an abundance, that I never remember to have seen equalled. I certainly intend to try Salus again, if any Potatos are left to try it upon. I have found it most useful and effectual in arresting disease, and curing it, on Melons; it is an excellent stimulus for Potatos and Hops, also may have proved positively deterrent. It has, however, possibly been overpowered by the season this year—a season the most favourable for the development of the Potato disease that we have had for full twenty years or more. I write in the midst of a steady downpour of warm rain, which has continued with hardly a moment's intermission for twenty-four hours. *D. T. Fish, August* 27.

An Early Frost.—It may possibly interest some of your readers to know that on the night of August 23 (the night of the moon eclipse) we had a sharp frost here. The ground was perfectly white in the morning, and covered with a hard rimey frost, cutting the Vegetable Marrows all to pieces, the leaves of these being completely destroyed, and quite black. The young growths on a large piece of Rhododendron ponticum were browned as if they had been scorched. *John Standish & Co., Royal Nurseries, Ascot, Berks.* [We have also had reports of frosts on the morning of the 24th ult. from near Richmond, and, in fact, all round London, and in the neighbourhood of Canterbury. EDS.]

Reports of Societies.

Royal Horticultural: *August* 24.—FRUIT COMMITTEE.—Henry Webb, Esq., V.P., in the chair. The meeting was held at the Society's garden, Chiswick. The collection of Tomatos, which have been grown in pots under glass, were first examined. The collection is represented by over sixty differently named varieties, two plants of each being grown. These the committee had arranged into classes as distinct in appearance, and amounting in all to thirty-one, which number may, however, be still further reduced or increased when further examined in comparison with those growing in the open air. These Tomatos at the present time are most interesting, and well worthy of inspection. The smallest variety is represented by Red Currant, of about the same size as a Currant; the largest variety is the Trophy, the earliest is the Early Gem, and the latest De Lay's, which is of little value. First-class Certificates were awarded to Little Gem (Bliss), a medium-sized, round, deep red variety, very free-fruiting, and very early; to New Improved (Vick), a large smooth ovate variety of a distinct rosy crimson colour, free-fruiting; to Vilmorin's Large Red (Vilmorin), a very large slightly-ribbed variety and wonderful cropper; to Trophy (Carter & Co., Veitch, Wheeler), an exceedingly large nearly smooth red variety, of fine appearance, and late. Hathaway's Excelsior was found to well merit the Certificate that was awarded to it some time ago; also Green Gage (Carter), as being by far the best yellow variety. Conquerer, One Hundred Days, and Portsmouth, amongst the new varieties, were greatly admired.

The collection of cordon-trained Peaches and Nectarines on open wall were next examined. These trees, which have this season done good service, are in perfect health, and many of them are bearing heavy crops. Prominent amongst all others stands the Lord Napier Nectarine, which was awarded a First-class Certificate. The fruit is very large, roundish oblate, of a deep, dark purplish colour; the flesh is pale throughout, of rich and excellent flavour, having a dash of the Stanwick in it. It is of fine constitution, and a free bearer.

Turnips were next examined. Of these a very extensive trial has been made. The earliest varieties were found to be the American Strap-leaf, white and red-topped. This is an exceedingly fine Turnip, and completely takes the place of the old White Dutch, which seems to be almost worn out; at least, no true or good stocks of it have been grown here. Following these come the Early Red-top, the Red Globe, and the Early Six-weeks or Snowball, which has numerous synonyms. This is the main crop garden Turnip, and the finest of all. Of other varieties—all good enough in their season, but including no novelties—were noted a very good stock of the Long Vertus, pointed-rooted, which comes in very early, and is much used in France, although not in this country; the Round Black or Chirk Castle, an excellent autumn sort; the Yellow Finland, Yellow Malta, Orange Jelly, &c. The whole of those dry-fleshed Turnips—as the Teltauer and others, so esteemed in some parts of the Continent—proved a failure, as well as many of the varieties generally grown for field culture. A later sowing of Turnips has been made, which will be in due course examined. The collection of Savoys, it may be mentioned, is now nearly ready for inspection.

FLORAL COMMITTEE.—Mr. John Fraser in the chair. This meeting was held at Chiswick, on August 27. The committee proceeded with the examination of the Zonal Pelargoniums, of which there is a large collection planted out this season. Many of the sorts have suffered severely from the recent heavy rains, but the following varieties, being in excellent condition, were deemed worthy of First-class Certificates, viz.:—Excelsior (Denny), scarlet, with distinct white eye; Charles Smith (Pearson), dark scarlet; Mrs. Huish (Pearson), magenta-scarlet; Portia (Denny), magenta-scarlet; Mabel Eden (Pearson), light magenta; Lais (Denny), magenta-scarlet; Mrs. Holden (Pearson), rosy pink; Mrs. Lancaster (Pearson), rosy pink; Lord Giffard (George), bright

scarlet. Among the older varieties Triomphe de Stella, Golden Harry Hieover, Vesta, Rose of Summer, Claude de la Meurthe, Arthur Pearson, Princess of Wales, Mrs. Turner, Christine, Cleopatra, Lady Emily, and Snowdon were conspicuous.

The collection of Pelargoniums, consisting of all the newer varieties which have this season been grown under glass, was then examined, and the following, being considered very suitable for pot culture, were awarded First-class Certificates—viz., Miss Wakefield (Pearson), orange-scarlet; Louis (Pearson), rosy purple; Lustrous (George), very bright scarlet; Lady Eva Campbell (Pearson), salmon; Mrs. Pearson (Pearson), bright orange-scarlet. Among other varieties Thisbe, Charles Smith, Miss Strachan, Lizzie Brooks, Rebecca, Blanche Gordon, and Lord Zetland were especially noticeable.

The double Pelargoniums, consisting of a selection of the best varieties of last season and new sorts received during the present year, were then examined, and First-class Certificates awarded to the following—viz., Député Anselon (Lemoine), deep magenta-rose; and Le Nord Est, bright scarlet. Madame Thibaut, Noemie, C. Glyim, Auguste Villaume, Meteor Flag, Mrs. Trevor Clarke, Madame Amilio Baltet were also very fine.

Asters.—A large collection of these now in full bloom was then examined, and the following were Highly Commended as being excellent stocks, viz, Pompon (Dippe Bros.).—Of erect moderately bushy habit, producing very close compact heads of flower. Diamond (Haage & Schmidt). This seems to be a larger and more vigorous-growing variety of the Pompon.—Dwarf Chrysanthemum-flowered (Dippe Bros.; Carter & Co.)—This is perhaps the best variety of any for general use, never exceeding 10 inches in height, and yielding in great profusion very large and well-formed flowers. Victoria.—This to all appearance seems to be a tall-growing variety of the Chrysanthemum-flowered. Betteridge's Exhibition Quilled.—A very distinct and pleasing variety, throwing the flowers well up; and, being of a hardy constitution, does not seem to be affected by rough weather. A full report on these will appear in the Society's *Journal*.

Dianthuses.—Of these beautiful annuals a very large collection has this season been grown, and on examination the following received First-class Certificates, viz.:—Heddewigii hybridus flore-pleno (Benary), Heddewigii laciniatus (Benary), Heddewigii hybridus atropurpureus (Benary), chinensis flore-pleno (Benary), imperialis flore-pleno (Benary), Heddewigii plenissimus splendens (Haage & Schmidt), and Heddewigii (Benary).

The National Carnation and Picotee Society held its fourth and final exhibition for the present season at the Drill Hall, Peel Park, Bradford, on Wednesday and Thursday, August 22 and 23, and it proved a worthy finale to a very interesting series of shows. Late, however, as was the date, it was too early, in this most unpropitious of all unpropitious seasons, for many of the growers of the hill districts of the North, and entirely so for the cultivators of Newcastle and its neighbourhood, who failed to produce even a solitary specimen. Of the collections from which contributions were received many had suffered greviously from the untoward weather preceding the day of show, and thus the show itself was shorn of the proportions which had been expected; but though of less extent than the generality of displays of the Carnation and Picotee in the North, the quality of the specimens produced more than compensated for this comparative paucity of number. Mr. Simonite, indeed, the popular and affectionate "Ben" of his fellows and familiars, fairly surpassed himself, and never did the writer see a finer collection of twelve Carnations, than that produced by him, and which so worthily obtained the first place. Ten of the twelve blooms were simply perfect specimens alike of good growth and artistic management—never to be forgotten by eyes permitted to feast upon their beauties; whilst Mr. Lord, Mr. Rudd, Mr. Bower, and some other contributors followed closely upon his heels. In Carnations, Mr. Simonite's Samuel Cooper, S.B., a new variety in the way of Admiral Curzon, but, as seen, even superior to that glorious old variety, was, by unanimous acclaim, selected as the premier bloom of the whole exhibition; whilst in Picotees a similar honour went to Mr. Lord, for a fine specimen of his Zerlina, purple-edge, a lovely flower of the highest properties and exquisite purity.

First-class Certificates were awarded to Mr. Lord, for his rose-edged Picotee Miss Horner, a variety in the style of Edith Dombrain, but with a brighter marginal colour, and a white ground, which is "purity personified;" and to Mr. Simonite, for his light-edged purple Picotee Rosalind, of which it may be sufficient to say it sustains and advances the repute the raiser has attained for excellence in this class. Of varieties now generally distributed there were fine examples in Carnations of Admiral Curzon, Lord Napier, Mars, Mercury, and True Briton, S.B.'s; Eccentric Jack, John Simonite, Lord Raglan, Lord Milton, and Marshal Ney, C.B.'s; Falconbridge, James Taylor, and Sarah Payne, P. P.B.'s; Dr. Foster, James Douglas, Juno, and Squire Meynell, P.F.'s; Clipper, John Bayley, James Cheetham, and Sportsman, S F.'s; Cleopatra, John Keet, Rose of Stapleford, and Sibyl, R.F.'s; and in Picotees, red-edged, Clara, John Smith, Miss Small, Mrs. Bower, Mrs. Dodwell, Master Norman, and Wm. Summers; purple-edged, Alliance, Ann Lord, Alice, Chanticleer, Mary, Minnie, Mrs. Douglas, and Zerlina; and in rose-edged, Ethel, Fairy Queen, Mrs. Allcroft, Mrs. Lord, and Miss Wood. Annexed is the award of the judges:—

Class A. 12 Carnations (dissimilar).—1st, Mr. B. Simonite, Rough Bank, Sheffield, with John Simonite, James Douglas, Samuel Cooper, Simonite; S.B., Sportsman, Cleopatra, Hartley; R.F., Curzon; Seedling R.F., James Taylor, Mercury, Clipper; Seedling C. B., and James Cheetham. 2d, Mr. George Rudd, Undercliff, Bradford, with Mercury, Juno, Garibaldi, Mary Ann, Mayor of Nottingham, Lord Milton, James Carter; R.F. (Adams), Sarah Payne, True Briton, John Bayley, Marshal Ney, and Admiral Curzon. 3d, Mr. Samuel Hartley, Headingly Nursery, near Leeds, with Falconbridge, John Keet, Lord Milton, Lord Derby; P.F., Mars, Elizabeth; S.F., Cleopatra, Admiral Curzon, Rose of Stapleford, James Taylor, Mr. Battersby, and Squire Meynell.

Class B. 12 Picotees (dissimilar).—1st, Mr. B. Simonite, with Mrs. Dodwell, Mrs. Slack, P.P. (Simonite); seedling Lt.P., Edith Dombrain, Rosalind; Lt. Purple (Simonite), John Smith; Seedling H.S., Mary, Mrs. Niven; Seedling Heavy Scarlet, Zerlina, and Seedling Heavy Scarlet. 2d, Mr. Rudd, with Alliance, Miss Wood, Ann Lord, Robert Scott, Rev. F. D. Horner, Mrs. Niven, Thomas Fleming; Lt. Rose, Miss Lee; medium red-edged, Unknown, John Harrison, Mary, and J. B. Bryant. 3d, Mr. Samuel Hartley, with Master Norman, broad heavy-edged red; Bertha, Mrs. Gibbons, John Harrison, Mrs. Hanaford, Mrs. Keynes, Fairy Queen, Norfolk Beauty, Brunette, Princess Alice, Mrs. Little, and John Smith.

Class C. 12 Carnations (9 dissimilar).—1st, Mr. John Fletcher, North Brierley, near Bradford, with John Keet, James Douglas, Clipper, Juno, Falconbridge, Admiral Curzon, Squire Meynell, James Carter, James Merryweather, Lord Milton, Sarah Payne, and Lord Napier. 2d, Mr. Samuel Hartley, with Lord Milton, Squire Meynell, Mars, Cristagalli, Eccentric Jack, Elizabeth; S.F., Mary Ann, Lord Napier, Admiral Curzon, John Keet, Mars, and Clipper.

Class D. 12 Picotees (9 dissimilar).—1st, Mr. Robert Lord, Todmorden, with John Smith, Ann Lord, Zerlina, Ann Lord, Mrs. Lord, Rev. F. D. Horner, Miss Horner, Miss Horner, Alice, Miss Horner, and Miss Small. 2d, Mr. John Fletcher, with Alliance, Mrs. Love, rose-edged; John Harrison, Miss Wood, Beauty of Plumstead, John Harrison, Miss Wood, Alliance, Leonora, Clara, Bower, light-edged red, Miss Wood, and J. B. Bryant. 3d, Mr. Samuel Hartley, with Mrs. Gibbons, Fairy Queen, Master Norman, Bertha, William Summers, Mrs. Allcroft, Fanny Helen, Mrs. Gibbons, Mrs. Bower, Robin Hood, Alliance, and Master Norman.

Class E. 6 Carnations (dissimilar).—1st, Mr. Thomas Bower, Little Horton Green, near Bradford, with Sibyl, Lord Raglan, Eccentric Jack, Clipper, Admiral Curzon, and Squire Meynell. 2d, F. Bateman, Esq., Park House, Low Moor, Bradford, with Mayor of Nottingham, John Keet, James Taylor, Admiral Curzon, and Juno.

Class F. 6 Picotees (dissimilar).—1st, Mr. Thomas Bower, with Chanticleer, Minnie, Ethel, Alice, Zerlina, and Mrs. Dodwell. 2d, F. Bateman, Esq., with John Harrison, Mrs. Dodwell, Mary, Mrs. Allcroft, Mrs. Forester, and Beauty of Plumstead.

Single Specimens.

Carnations: *Scarlet Bizarres.*—1st, Admiral Curzon, Mr. B. Simonite; 2d, Admiral Curzon, Mr. G. Rudd; 3d, Admiral Curzon, Mr. B. Simonite; 4th and 5th, True Briton, Mr. R. Lord. *Crimson Bizarres.*—1st and 2d, John Simonite, Mr. B. Simonite; 3d, Seedling, Mr. B. Simonite; 4th, Lord Milton, Mr. S. Hartley; 5th, Lord Milton, Mr. John Fletcher. *Pink and Purple Bizarres.*—1st, James Taylor, Mr. B. Simonite; 2d, Seedling, Mr. B. Simonite; 3d, James Taylor, Mr. B. Simonite; 4th, James Taylor, Mr. George Rudd; 5th, Falconbridge, Mr. George Rudd. *Purple Flakes.*—1st, Dr. Foster, Mr. R. Lord; 2d, James Douglas, Mr. B. Simonite; 3d and 4th, Squire Meynell, Mr. G. Rudd; 5th, Lady Peel, Mr. B. Simonite. *Scarlet Flakes.*—1st, Sportsman, Mr. B. Simonite; 2d, Clipper, Mr. Robert Lord; 3d, Seedling, Mr. B. Simonite; 4th, Clipper, Mr. Thomas Bower; 5th, Sportsman, Mr. B. Simonite. *Rose Flakes.*—1st, Seedling, Mr. B. Simonite; 2d and 3d, John Keet, Mr. Robert Lord; 4th, Seedling, Mr. B. Simonite; 5th, John Keet, Mr. R. Lord.

Picotees.—*Red, heavy-edged.*—1st and 2d, Master Norman, Mr. S. Hartley; 3d, Mrs. Dodwell, Mr. B. Simonite; 4th and 5th, J. B. Bryant, Mr. B. Simonite. *Red, light-edged.*—1st, Miss Sharp, Simonite, Mr. B. Simonite; 2d, Wm. Summers, Mr. John Fletcher; 3d, Wm. Summers, Mr. George Rudd. *Purple, heavy-edged.*—1st, Mrs. Slack, Mr. B. Simonite; 2d, Alliance, Mr. B. Simonite; 3d, Mrs. Slack, Mr. B. Simonite; 4th, Mrs. Niven, Mr. B. Simonite; 5th, Mrs. Douglas, Mr. B. Simonite. *Purple, light-edged.*—1st, Rosalind, Mr. B. Simonite; 2d and 3d, Ann Lord, Mr. R. Lord; 4th, Seedling, Mr. B. Simonite; 5th, Seedling No. 28, Mr. R. Lord. *Rose, heavy-edged.*—1st, Miss Horner, Mr. R. Lord; 2d, Seedling, Mr. B. Simonite; 3d, Miss Horner, Mr. R. Lord; 4th, Flower of the Day, Mr. John Fletcher; 5th, Juliana, Mr. S. Hartley. *Rose, light-edged.*—1st, Mrs. Allcroft, Mr. R. Lord; 2d, Ethel, Mr. B. Simonite; 3d, Fairy Queen, Mr. S. Hartley, 4th, Miss Wood, Mr. Jno. Fletcher; 5th, Miss Wood; Mr. G. Rudd.

First-class Certificates, not less than two blooms being exhibited, were awarded to Mr. Robert Lord, Hole Bottom, Todmorden, for his heavy-edged rose Picotee Miss Horner; and to Mr. Ben. Simonite, Rough Bank, Sheffield, for his light-edged purple Picotee Rosalind.

The premier prize for the best Carnation selected from the entire exhibition was awarded to Mr. B. Simonite for his scarlet bizarre Samuel Cooper, a new and superb variety, with the rich colours and quality of a fine Curzon, though quite distinct and more definitely marked. The premier prize for the best Picotee, also selected from the entire exhibition, was awarded to Mr. Robert Lord for a lovely specimen of his fine purple-edged variety Zerlina. *E. S. Dodwell.*

Battle Horticultural: *August* 23.—This show was held in the grounds of Battle Abbey, kindly lent by the Duke of Cleveland, and a more beautiful and suitable spot it would be impossible to find. In the early part of the day rain fell in torrents, but it fortunately cleared up, and by the time the gates were opened the sun came out brightly, and the rest of the day was all that could be desired. Stove and greenhouse plants both foliage and flowering were well represented, also Ferns. The flowering and fine-foliage plants sent by Mr. Gilbert, Hastings, would have done credit to any of our London shows. Fruit and cut flowers were also well represented, especially the fine examples of Muscat of Alexandria and Black Hamburgh, shown by Mr. Allen, gr. to J. Brassey, Esq., Norman House, who also showed, some of the best examples of Adiantum it has been our good fortune to meet with. They were shown in 24-pots and measured over 3 feet through. In the ladies' tent novelties recently brought from China by Mr. Brassey were exhibited in the shape of Euphorbia splendens trained to represent Chinese junks, and specimens of the Banyan tree said to be eighty years old, trained representing Chinese temples: these attracted great attention and were much admired. The cottagers' classes were well represented, competition being very strong; some of the plants, flowers, and fruit exhibited would have made some of our professionals blush. (*From a Correspondent*).

Sevenoaks Horticultural: *Aug.* 23.—Favoured with beautiful weather, this Society held its ninth show on the above date, under very encouraging circumstances. Having left the old selected grounds, the committee, thanks to the liberality of the Right Honourable the Earl Amherst, pitched their tents, and made an excellent and varied display, in Montreal Park This domain is of the most picturesque type. The ground is excessively undulated, the old timber very fine, whilst the view from the terrace gardens so kindly thrown open afford, on all sides around, pictures which belong, perhaps, to Kent alone. The Wellingtonias, draped to the ground upon the lowlands in intimate association with a meandering watercourse, add greatly to the charm. This part of the garden is ably cultivated in the good old style. Tulip trees, Venetian Sumachs, Magnolia pumila, &c., here meet the eye in fine masses, as well as such a mass of St. John's Wort as we have never before seen cultivated.

The show itself was quite up to the average, the only falling off observable being in connection with Plums, Apples, and Pears, this being a very favoured locality, especially for the former. The stove and greenhouse plants, Ferns, Fuchsias, &c., occupied one huge tent, while others were set apart for cut flowers, fruit, table decorations, &c., and the cottagers' productions.

To W. Spottiswoode, Esq., Coombe Bank (Mr. James Bolton, gr.), was awarded the premier prize for eight distinct varieties of exotic flowering and fine-foliaged plants, amongst which were very excellent examples of Ixora Williamsii, Croton Weismanni, Allamanda Hendersoni, the good old Clerodendron fallax, &c. Mr. Spottiswoode also took 1st prizes for a collection of cut flowers, stove and greenhouse; cut Phloxes, six ornamental-foliaged plants, out-door Peaches, vegetables, &c. H. B. Mildmay, Esq., Shoreham (Mr. Burt, gr.), won 1st prize for three Orchids and single specimen plants, showing in the first Vanda suavis, an excellent specimen of Thunia alba, and Cattleya violacea—his Saccolabium Blumei majus in the other class being fine in length of spike. The same exhibitor won, in a severely contested competition, for best three Caladiums, and the prize for collection of plants arranged for effect. In the above Caladium class Mr. G. Meakin was a very meritorious 2d; and in the class for effective arrangement of a group of plants, Messrs. Boulton (2d), Hubbard, Phillips, and Staples were all well worthy the high commendations they received. H. Oppenheim, Esq. (Mr. J. Staples, gr.), ably took 1st prize for collection of fruit, showing a splendid dish of Nectarines.

A. Swanzy, Esq., The Quarry (Mr. Bligh, gr.), staged a splendid collection of flowering Begonias. Mr. Phillips being an admirable 2d with amongst

others a Begonia weltoniensis, about a yard in diameter. The former was also 1st with six exotic Ferns. Some three exhibitors here contested the award most strenuously, Messrs. Staples and Boulton staging very admirable collections, all of which were worthy of a higher award.

Captain Jackson, Moepeth (Mr. Phillips, gr.), was 1st with well bloomed Pelargoniums—still called Geraniums in this schedule, &c. Earl Stanhope, Clevering Park (Mr. Gray, gr.), was 1st with an excellent collection of vegetables. Mr. A. Henderson, Tonbridge, showed and was 1st with Pine-apple named Thorsley Queen. He also staged an immense fruit of the variety named Prince Albert, which in appearance resembles Black Prince. He had also the best black Grapes (Hamburghs), the best collection of three bunches distinct, &c. Colonel Warde, Squerrils Court, Westerham (Mr. Hubbard, gr.), showed the best dish of Peaches (indoors), consisting of Violet Hâtive and other meritorious exhibits. The Rev. T. T. Curteis (Mr. H. Huntley, gr.), obtained 1st prizes for Achimenes, which were splendidly grown and flowered—Boissier and Ambroise Verschaffelt being especially good; also for one brace of Cucumbers. L. Lambarde, Esq. (Mr. J. Wood, gr.), had the best flavoured Melon—a splendid green-flesh.

The best white Grapes were those of J. S. Douglass, Esq. (Mr. A. Bashford, gr.)

In the classes for table decorations, which are always well contested, and with very superior taste, at this show, Mrs. Seale took 1st prize in the larger class with an arrangement light and highly pleasing, with but few flowers; Mrs. Fennell, Fairlawn, being a pretty 2d. Her chief effect was produced by an admixture of flowers of Mangles' Pelargonium, and the white leaves only of Acer Negundo variegata. For single epergne Mrs. Bolton was 1st, Mrs. Don being 2d. Wild flowers and three button-hole bouquets were carried by Mr. J. W. Seale. For hand bouquets, Mr. and Mrs. Boultoy, Coombe Bank, each took a 1st prize, with very chaste arrangements. A very lovely bouquet was also staged by Mrs. Seale, consisting of Tuberoses and Plumbago capensis.

Mr. Seale, nurseryman, Sevenoaks, took 1st prizes for Asters, Gladioli, Dahlias and Roses, showing also an immense bank of splendid Dahlia blooms. Some of his best blooms were—Vice President, Mrs. Saunders, Fanny Sturt, Her Majesty, Criterion, Grand Duchess, Negro Boy, Chancellor, Henry Walton, James Service, &c. For twelve distinct Dahlias Mr. W. Godden was 1st. Mr. Cannell, Swanley, showed beautiful boxes of Pelargoniums New Life, Echinatum, and a sport from Echinatum called Spotted Gem, a most taking bloom for button-holes, &c. Mr. Cattell, Westerham, brought a collection consisting of Lilies, &c., whilst the display of maiden honey afforded from the apiary of J. M. Hooker, Esq., and produced in his Alexandra hives, deserves mention, as being so pure as to be free from speck or stain, the comb white, and honey transparent. *W. E.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, AUGUST 29, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Aug. 23	In. 29 87	In. + 0 05	° 69.0	° 49.6	° 19.4	° 57.0	° − 3 6	40.8	55	WNW W.; WSW	In. 0.00
24	29.97	+0.14	70.0	42.6	27.4	54.7	− 5 9	40.3	58	S.S.E.; S.E.	0.00
25	29 50	−0 34	61.2	54.8	6.4	56.8	− 3.7	52.2	85	S.S.E.; S.E.	0.58
26	29 63	−0.12	66.5	59 5	7 0	61 1	+ 0.7	56.2	85	WNW; WSW	0.13
27	29.69	−0.16	68 9	55 8	13.1	61.6	+ 1.3	57 9	88	WSW	0.14
28	29 57	−0.29	71.0	59.0	12.0	62 4	+ 2 2	56 1	80	S W.; WSW	0.06
29	29.78	−0.08	71.9	55.2	16 7	62.0	+ 1 9	49.0	62	W.; WSW	0.00
Mean	29 72	−0.11	68 4	53 8	14.6	59.4	− 1 0	50.4	73	variable	sum 0.91

Aug. 23.—A very fine bright day. Cool.
— 24.—A fine day. Cloudy after 3 P.M. Cool.
— 25.—Generally dull and cloudy, with frequent rain, accompanied with thunder and lightning. Vivid lightning in evening.
— 26.—A dull, cool, cloudy day. Rain fell in early morning.
— 27.—Overcast and dull throughout. Cool and windy. A little rain fell in early morning, and a few drops in afternoon and evening.
— 28.—Overcast, dull, with thin rain till 10 A.M. Fine but cloudy after. Shower of rain at 8 P.M.
— 29.—A fine bright day, partially cloudy.

LONDON: *Barometer.*—During the week ending Saturday, August 25, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.95 inches at the beginning of the week to 29 78 inches by the morning of the 19th, increased to 29 85 inches by the evening of the same day, decreased to 29 57 inches by the morning of the 21st, increased to 29 71 inches by the night of the same day, decreased to 29.62 inches by the morning of the 22d, increased to 30.21 inches by the morning of the 24th, and decreased to 29.53 inches by the end of the week. The mean reading for the week at sea level was 29 83 inches, being 0 12 inch blow that of the preceding week, and 0.18 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 84¾° on the 20th, to 71¼° on the 25th; the mean value for the week was 72½°. The lowest temperatures of the air observed by night ranged from 42½° on the 24th to 63° on the 20th; the mean for the week was 55½°. The mean daily range of temperature in the week was 17°, the least range in the day was 6½° on the 25th, and the greatest 27½°, on the 24th.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows:—19th, 67°.9, + 7°; 20th, 71°.1, + 10°.3; 21st, 65°.3, + 4°.6; 22d, 60°.7, + 0°.1; 23d, 57°, − 3°.6; 24th, 54°.7, − 5°.9; 25th, 56°.8, − 3°.7. The mean temperature of the air for the week was 61°.9, being 1°.3 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 137° on the 22d, 136° on the 21st and 23d, and 130° on the 20th, but on the 25th the reading did not rise above 83¼°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30½° on the 24th and 39½° on the 23d; on the 20th 58° was the lowest reading. The mean of the seven low readings was 48°.

Wind.—The direction of the wind was S.W., and its strength brisk.

The weather during the week was fine, though showery and dull at times. There was frequent thunder and lightning during the whole day of Saturday, the 25th.

Rain fell on four days during the week; the amount collected was 1.69 inch, 1 inch of which fell during the early morning hours of Wednesday, the 22d.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 84¾° at Blackheath, 81½° at Bristol, 81° at Nottingham, and 80° at Cambridge; the highest temperature at Sunderland was 67°, and at Liverpool was 69°; the mean value from all stations was 74°. The lowest temperatures of the air observed by night were 37¾° at Bristol, 38° at Truro, and 38¾° at Nottingham; the lowest temperature at Portsmouth was 50°; the general mean from all stations was 42¾°. The range of temperature in the week was the greatest at Bristol, 43½°, and the least at Liverpool, 19½°; the mean range of temperature from all stations was 31½°.

The mean of the seven high day temperatures was the highest at Blackheath, 72½°, and at Cambridge and Nottingham, both 72°; and the lowest at Sunderland, 62°. The general mean from all stations was 69½°. The mean of the seven low night temperatures was the lowest at Eccles, 50½°, and Sunderland, 51½°; and the highest at Portsmouth, 57¾°; the mean value from all stations was 53½°. The mean daily range of temperature in the week was the greatest at Nottingham, 20°, and the least at Liverpool, 9½°; the mean daily range from all stations was 14°.

The mean temperature of the air for the week from all stations was 58¾°, being ¾° higher than the value for the corresponding week in 1876. The highest was at Blackheath, 62°, and the lowest at Sunderland, 55°.

Rain fell on every day in the week at Eccles and Hull, and on six days at most other places. The fall was generally large, and varied in amount from 3¼ inches at Liverpool, and 3 inches at Sunderland, to three-tenths of an inch at Portsmouth; the average fall over the country was 1¾ inch.

The weather during the week was fine, but showery, and the sky was generally cloudy. A thunderstorm occurred at Truro on the 22d, and at Blackheath and Hull on the 25th. Floods have been prevalent in different parts of the country during the week.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 64° at Dundee to 60° at Paisley; the mean from all stations was 62¼°. The lowest temperatures of the air ranged from 35° at Perth to 44° at Glasgow; the mean value from all stations was 39¾°. The mean range of temperature in the week from all stations was 22½°.

The mean temperature of the air for the week from all stations was 51¾°, being 7° lower than that of England, and 5° lower than the value for the corresponding week in 1875. The highest was 52¾°, at Glasgow, and the lowest 50½°, at Paisley.

Rain.—The fall of rain was excessive everywhere, as will be seen from the following:—The amount measured at Edinburgh was 5.46 inches; at Paisley was 3 60 inches; at Perth was 3 52 inches; at Greenock was 3.13 inches; at Aberdeen was 2 92 inches; at Glasgow was 2.80 inches; and at Dundee was 2.40 inches. The average fall over the country was 3½ inches.

DUBLIN.—The highest temperature of the air was 77¾°, the lowest was 38¾°, the range was therefore 39°, the mean was 57°, and the fall of rain was 1 inch.

JAMES GLAISHER.

Answers to Correspondents.

ANTS: *T. J.* Drown them out by immersing the pots in water for a short time. You must let them well drain afterwards though.

AZALEAS: *A Small Grower.* Azalea cuttings in a similar state to those enclosed will strike in a temperature of 70°, inserted in sand, and covered with a bell-glass, either with or without bottom-heat; but they will take longer to root, and not grow away so freely as if they had been put in sooner. The wood has got considerably harder than it ought to have been; if taken off three weeks ago they would have done better.

BOILERS: *E. W. S.* We know of no composition such as you allude to. If you keep the boilers constantly filled with water you need not fear their being injured by rust.

BOOKS: *Warwick.* Bradbury, Agnew & Co., Bouverie Street, Fleet Street, E.C.

INSECTS: *J. Mullins.* Yes, quite correct, as you will see by the accompanying illustration of the larva and perfect insect (fig. 58). The larva feeds on the Potato haulm, and the perfect insect will appear next

FIG. 58.—DEATH'S-HEAD MOTH AND CATERPILLAR.

month.—*Camjee.* We are not quite sure of this. Could you get us a specimen of the beetle that proceeds from it? *A. M.—A. McI., Forres.* One of the smaller Cockchafers—probably Amphimalla solstitialis. Remedy not known. *A. M.—A Constant Reader.* Hylobius abietis. Feeds on Conifers. *A. M.—C. E. F.* A species of Eupteryx, very near, if not identical with, one of the species described by Curtis as infesting Potatos, Eupteryx Solani. It is one of the cuckoo spits, that do not make any spit. *A. M.*

CARNATION: *D. M.* Your seedling Carnation is certainly worth saving for its pretty colour and delicious Clove perfume, and if free flowering, as it appears to be, it is doubly worth growing for decorative purposes. There is nothing in the form of the flower to recommend it to florists, so that if you show it at South Kensington it should be in pots, not as cut blooms. The next meeting is on Tuesday, September 4.

CLEMATIS: *Amateur.* We cannot name variety. Yours looks like lanuginosa.

CUCUMBER TENDER AND TRUE: *J. H. & S.* Tender and True is neither a white nor a black spine, as Mr. Douglas had it originally; but the spines cannot be expected to come true every time from seed. When it does produce spines it is generally white with a black tip. If it comes white all the better; but being what is called smooth—that is, with few spines—the colour is not noticed much.

EVERLASTINGS: *A Subscriber.* Cut the flowers before they become fully expanded, on a dry sunny morning, and either tie them up in small bundles, and hang them up to dry in a cool shady place, or lay them thinly on shelves. The sealing-wax would do no good. After the flowers are dried, should you want them to expand a little more, place them in front of a slow fire for a short time.

LIQUID MANURE: *N. E. S.* You might easily ascertain the effect of the acid by trying the mixture on a few worthless plants. We should think if you were to dilute the liquid-manure well with water, and use it only in showery weather, you would not experience any annoyance from bad smells. If not, try a little chloride of lime.

NAMES OF PLANTS: *A. W.* Viburnum Opulus—the wild Gueldres Rose.—*F. E. C.* Lonicera Ledebourii,

and Acer Negundo.—*A. G.* 1, Ipomopsis elegans; 2, Stachys Betonica; 3, Hieracium — a wretched scrap; 4. Teucrium scorodonia; 5, an Umbellifer—a miserable scrap; 6, Solidago virga aurea.—*G. Thomson.* Lastrea patens.—*T. S. P.* The Fern is Asplenium Hemionitis, *alias* A. palmatum. It is infested with thrips, which in your case would, perhaps, be most readily removed by two or three careful spongings of tepid water in which soft-soap has been dissolved. Fumigation with tobacco smoke, repeated at intervals of two or three days, will also destroy the thrips. If the insect is upon the young fronds they must be very carefully handled. — *T. Phillpotts.* Neither of the Fuchsias you mention, but the common F. virgata.

PASSION-FLOWER: *T. J.* It strikes easily from cuttings.

RATING: *An Old Subscriber.* See p. 261.

TOMATO: *T. J.* Jackson's Favourite or Trophy. The latter is the largest, but the former the best.

TOMATOS IN VINERIES: *S. Lloyd.* The story that Tomatos grown on the back walls of vineries are poisonous or injurious to the Vines, is sheer nonsense.

TUBEROSES: *Warwick.* We have never known Tuberoses do much good after the first time of flowering in this country. Like Hyacinths, they need to be prepared by open-air cultivation, and our climate is not suitable for maturing them as they require to be. Similar treatment as to soil and size of pot will answer for Hyacinths and Narcissus. Both require to have their pots well filled with roots before being subjected to heat. The same temperature, as also light, will answer for each during the time they are making growth.

WHITE PELARGONIUM: *T. J.* Snowdon.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—Thomas Meehan (Germantown, Philadelphia, U.S.A.), List of American Tree Seeds.—Messrs. Ward & Co. (2, Bridge Parade, Bristol), Catalogue of Dutch and Cape Bulbs and other Flower Roots.—The New Plant and Bulb Company (Lion Walk, Colchester), Retail List of Lilies, Orchids, Bulbs, &c. — Messrs. J. Veitch & Sons (King's Road, Chelsea, S.W.), Catalogue of Hyacinths and Bulbous Roots; also Descriptive Fruit Catalogue. —Messrs. Dicksons & Co. (1, Waterloo Place, Edinburgh), Descriptive Catalogue of Roses; also Catalogue of Dutch Flower Roots, Pansies, &c.—Messrs. Kent & Brydon (Priestgate, Darlington), Catalogue of Flowering Bulbs, &c.—Messrs. Sutton & Sons (Reading, Berks), Catalogue of Bulbs.—Messrs. Carter & Co. (High Holborn, London, W.C.), Catalogue of Dutch Flower Roots, Plants, Roses, &c.—J. Smith (Stratford-on-Avon), Illustrated List of Imperishable Labels, &c.—Messrs. Webb & Sons (Wordsley, Stourbridge), Catalogue of Hyacinths, Tulips, and other Bulbs.—Messrs John Waterer & Sons (Bagshot, Surrey), Catalogue of Rhododendrons and other Plants, Evergreens, &c.—Ch. Vuylsteke (Loochristy, near Ghent, Belgium), Trade Catalogue of Azaleas, Rhododendrons, &c.—Messrs. Dickson & Robinson (12, Old Millgate, Manchester), Catalogue of Dutch Flowering Bulbs.—B. S. Williams (Victoria and Paradise Nurseries, Upper Holloway, London, N.), General Catalogue of Bulbs, Fruit Trees, New Plants, Roses, &c.

COMMUNICATIONS RECEIVED.—E. W.—Camjee (see our last and present numbers).—G. H.—Amateur (yes).—W. S. C. P. —C. E F.—H.—J. C. M.—J. S. & Co.—T. S.—F. G.—W. E. H.

Markets.

COVENT GARDEN, August 30.

The market remains much the same as last week, the supply of home produce being short, with the exception of Nuts and Apples, for which there is a fair demand.

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Lettuces, per score	2 0– ..
Aubergines, p. doz.	2 0– ..	Mint, green, bunch	0 6– ..
Beans, French, per bushel	3 0– ..	Mushrooms, per pott.	1 0– 3 0
— Scarlet Runners, per bushel	2 6– ..	Onions, 12 bunches	3 6– ..
Beet, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per bunch	0 9– ..
Carrots, per bunch	0 4– 0 6	Peas, green, p. bush	3 0– 6 0
Cauliflowers, per doz.	1 0– 4 0	— shelled, per qt.	1 6– ..
Celery, per bundle	1 6– 2 0	Radishes, per bunch	0 1– 0 3
Chilis, per 100	3 0– ..	— Spanish, doz.	1 0– ..
Cucumbers, each	0 6– 1 6	— New Jersey, doz.	2 0– ..
Endive, per doz.	1 0– 2 0	Salsafy, per bundle	1 0– ..
— Batavian, p. doz.	2 0– 3 0	Shallots, per lb.	0 6– ..
Garlic, per lb.	0 6– ..	Spinach, per bushel	2 6– ..
Herbs, per bunch	0 2– 0 4	Tomatos, per doz.	1 6– 3 0
Horse Radish, p. bun.	4 0– ..	Turnips, per bundle	0 4– 0 6
Leeks, per bunch	0 2– 0 4	— new, per bundle	1 0– 1 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos:—Kent Regents, 100s. to 120s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Nuts, Cobs, per lb.	0 4– 0 6
Apricots, per doz	2 6– 4 0	Oranges, per 100	12 0–20 0
Currants, red, ½-siev.	3 0– 3 6	Peaches, per doz.	3 0–24 0
— black, p. ½-sieve	6 6– 7 0	Pears, per doz.	1 0– 3 0
Grapes, per lb.	1 6– 6 0	Pine-apples, per lb.	5 0– 8 0
Lemons, per 100	8 0–12 0	Figs, green, each	0 2– 0 4
Melons, each	4 0–10 0		

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	3 0– 9 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	0 6– 1 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	2 0– 9 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	4 0–12 0
Gardenia, per doz.	3 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0
Lilies (in var.), 12 spr.	1 0– 2 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Fuchsias, per dozen	2 0–12 0
Begonias, per doz.	6 0–12 0	Heliotrope, per doz.	4 0–12 0
Bouvardias, do.	12 0–24 0	Hydrangea, per doz.	6 0–24 0
China Asters, dozen	4 0–12 0	Liliums in var., each	1 6– 6 0
Chrysanth., per doz.	5 0–12 0	Mignonette, per doz.	6 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargon., scarlet, p. dozen	2 0– 9 0
Cyperus, do.	4 0–12 0	Petunias, per doz.	4 0–12 0
Dracæna terminalis	30 0–60 0	Roses, fairy, p. doz.	4 0–12 0
— viridis, per doz.	18 0–24 0	Solanums	12 0–24 0
Ferns, in var., p. doz.	4 0– ..	Valotta purpur., doz.	9 0–18 0
Ficus elastica, each	2 6–15 0		

CORN.

Trade at Mark Lane on Monday was firm, but with little animation in the trade, and as regards Wheat an attempt to establish a higher range of values did not altogether succeed. There was a small supply of new English Wheat, the best samples of which were worth 64s. per qr. Barley was quiet and unaltered, while the same prices prevailed for malt. Oats were from 3*d.* to 6*d.* per qr. dearer. Maize was steady, and in Beans and Peas no change was reported. Flour was firmer, in sympathy with the Wheat market, but in the absence of business prices were nominally as before.—Wednesday's trade was firm, but the more settled weather checked the tendency to improvement. Wheat was quoted nominally the same as on Monday. Barley was fully as dear, while Oats and Maize experienced a better trade on somewhat stiffer terms. Malt was taken off quietly, as also were Beans, Peas, and flour, and quotations were unaltered.—Average prices of corn for the week ending August 25:—Wheat, 63s. 10*d.*; Barley, 33s. 9*d.*; Oats, 28s. 4*d.* For the corresponding period last year:—Wheat, 46s. 4*d.*; Barley, 32s. 7*d.*; Oats, 28s. 1*d.*

CATTLE.

At Copenhagen Fields on Monday prices for beasts advanced a little on all descriptions, and a fair clearance was effected. The supply of sheep and lambs was unusually small; trade was active, at advanced rates, with an early clearance. The few calves on offer made a good price.—Quotations:—Beasts, 4s. 6*d.* to 5s. 4*d.*, and 5s. 8*d.* to 6s. 2*d.*; calves, 5s. to 6s. 4*d.*; sheep, 5s. 8*d.* to 6s. 2*d.*, and 6s. 8*d.* to 7s. 2*d.*; lambs, 7s. 4*d.* to 8s.; pigs, 4s. 4*d.* to 5s. 4*d.*—Trade on Thursday was steady, but not active. Beasts were in short supply, and sold quietly at the full prices of Wednesday. So also with sheep and lambs, of which about an average supply was on the stands. Calves were quiet and unaltered.

HAY.

At Whitechapel on Tuesday there was not much demand for fodder, and quotations were unchanged. Prime old Clover, 100s. to 137s.; inferior, 85s. to 95s.; good new Clover, 100s. to 126s.; prime old meadow hay, 90s. to 120s.; inferior, 70s. to 85s.; good new hay, 80s. to 100s.; and straw, 44s. to 56s. per load.—There was a moderate supply of hay and straw on sale on Thursday. Clover was scarce and dearer. With a fair trade prices for hay and straw were unchanged. Quotations:—Prime old Clover, 100s. to 140s.; inferior, 85s. to 95s.; good new, 100s. to 126s.; prime old meadow hay, 90s. to 120s.; inferior, 70s. to 85s.; good new, 80s. to 100s.; and straw, 44s. to 56s. per load.—Cumberland Market quotations:—Superior old meadow hay, 110s. to 126s.; inferior, 90s. to 98s.; new hay, 70s. to 100s.; superior old Clover, 130s. to 140s.; inferior, 100s. to 120s.; new Clover, 84s. to 120s.; and straw, 54s. to 60s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that the supplies continue on a moderate scale, and trade on the whole remains steady. Kent Regents, 100s. to 130s. per ton; Essex ditto, 100s. to 115s.; Shaws, 70s. to 100s.; Kidneys, 80s. to 120s.—The imports into London last week were confined to the receipt of 2118 bags from Hamburgh, and 1226 from Bremen.

COALS.

The trade at market on Monday showed no feature of special interest. On Wednesday a fair amount of business was done at the following quotations:—Walls End—Hetton, 20s.; Hetton Lyons, 17s. 3*d.*; Lambton, 19s. 6*d.*; Hartlepool, 19s.; East Hartlepool, 19s. 9*d.*; Hutton Henry, 19s.; Tees, 19s. 9*d.*

For the best List of Choice Hyacinths, Tulips, Crocuses, Narcissus, &c., see our Beautifully Illustrated

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For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

Other Collections, 12s. 6d., 42s., 63s., and 84s. each.

From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction, the flowers are splendid."

From R. PRONYCE, Esq., *Bathgate, N.B. February* 7, 1877.

"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

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PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

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NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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"The **'Boiler of the Future.'** I have no doubt about this."—WM. THOMSON. *Tweed Vineyards.*

From the "Gardener," July, 1877.

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ENDLESS FLAME-IMPACT BOILERS.

"The first intimation I had of the existence of these boilers, or of their inventor, was a pamphlet I received through the post. Its perusal satisfied me that Mr. Wright had a sounder theoretical knowledge of the subject of heating water than any author I had ever perused. I also liked the construction of his boiler better than any I had previously met with. Mr. Lewin, gardener, Drumpellier, was represented as having fixed one of these boilers, and as bearing testimony to its excellence; and as I knew Mr. Lewin to be not only a good gardener, but a shrewd, clever man, I felt satisfied that the boiler must be of the excellence which my own knowledge of such matters led me to conclude it was from its construction.

"Having occasion to be in the neighbourhood of Glasgow last February, I went to Airdrie and called on Mr. Wright, who took me to the foundry in Glasgow where the boilers are manufactured. There he put one together in a few minutes, and a closer examination of it only strengthened my preference for it over all boilers I had previously seen. I ordered a 4-C boiler, which I have fixed to heat 2600 feet of 4-inch pipe in two early vineries. One, a Muscat-house, 200 feet long and 16 feet wide, is built and planted, the other will not be built till autumn; so that at present the boiler is only heating 1300 feet of pipe, which it does with a very small fire and the damper nearly close in, burning little more than half the coal used in any other boiler I have—and I have some of the most approved, both of my own and other people's designs.

"The result of the trial I have had of Wright's boiler is, that I have ordered four more, and will pull out all my other boilers as opportunity occurs, and replace them by his, with a view both of saving and efficiency.

"No doubt many will ask wherein consists the cause of the efficiency of this boiler over others? To explain this, it may be well to observe that when fresh coal is added to the fire of any other boiler known to the writer, the first process that goes on is the distillation of the gas from the new coal, and its rapid discharge, in advance of the flame, up the chimney and unconsumed. This is not only a great evil in itself, but to effect it the heat is extracted from the fire that was in the furnace when the fresh coal was added, and little or no benefit is got from the fire till the gas is up the chimney and the destruction of the carbon in the coal has begun.

"Many expedients have been adopted to prevent this loss; and no doubt careful stoking can do much in the case of large boilers for generating steam, where there is a long fire, and where the fresh coal is always added to the front of the fire, compelling the gas to pass over the red fire and get ignited; but in the case of boilers used for heating hothouses, this is not practicable, and especially with ever-changing stokers, who, as a rule, think if they throw a given quantity of coal on the fire no further care is needed. Now, in the case of Wright's boilers, distillation of gas takes place as in others, but it has no possible chance of escape unconsumed—for gas and flame are compelled to meet face to face, over and over again, ere they leave the boiler; consequently all the gas is consumed, and the heat from it made to impinge directly on the flat surfaces of the various sections of the boiler on its way upwards. Here lies the great secret of this boiler's power.

"What also adds not a little to increase the power of the boiler is the method adopted for supplying a hot-blast, by passing air from the front of the cast-iron stand on which the boiler is placed through an intricate passage, till it is discharged at the back of the ash-pit under the bars. This leads to the most perfect combustion of the commonest dross-coal. There is also an arrangement by which a hot-blast is thrown into the furnace through the furnace door. Then there is a moderate supply of air entering the furnace all round, where the first section is laid on the heater-jacket of the boiler; this has the same effect on the fire as the well-known Argand burner has on the lamp, giving a clear fierce flame. These boilers are made up of a series of simple castings, jointed by means of india-rubber rings, which allow them to expand and contract; therefore they are sure to be the safest of boilers.

"WM. THOMSON.

"Tweed Vineyard, June 14, 1877."

"I think yours the most perfect **'Heat Trap'** yet invented. —DAVID THOMSON, *Drumlanrig Gardens.*"

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NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON,
THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande.*"—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10*s.* 6*d. each.*

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine.*

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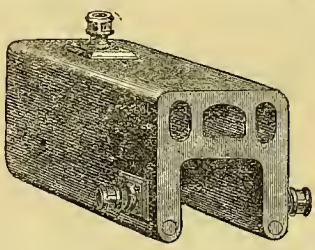

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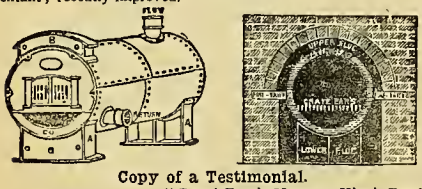

Copy of a Testimonial.

"Royal Exotic Nursery, King's Road,
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"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

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"JAMES VEITCH AND SONS."

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HOT-WATER ENGINEERS, &c., &c.
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☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

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STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
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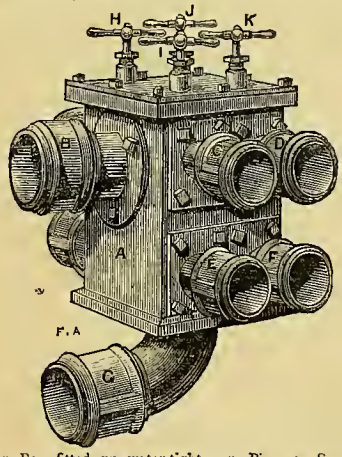
AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

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"I am, Gentlemen, yours truly, "R. H. CRONK,
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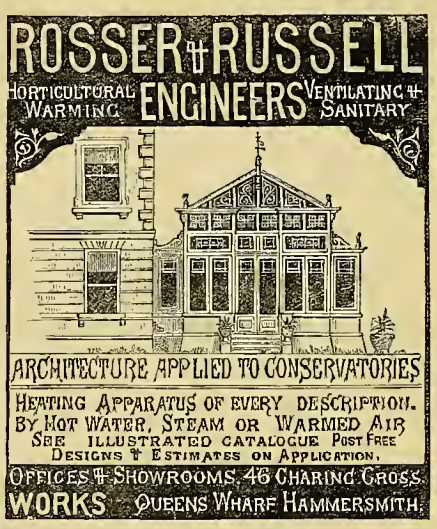

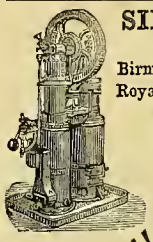

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HIGHEST HONOR
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Specially adapted for Pumping in Gentlemens' Houses and Grounds.
No Labor Required.

HAYWARD TYLER & Co.,
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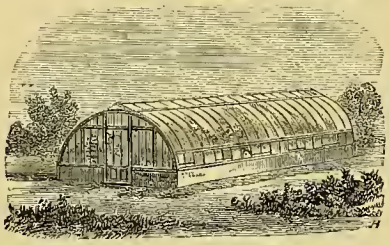

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The curved house is more durable, stronger, lighter in construction, and no bent glass is required.

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GREENHOUSES—every description,
VINERIES—all the latest improvements,
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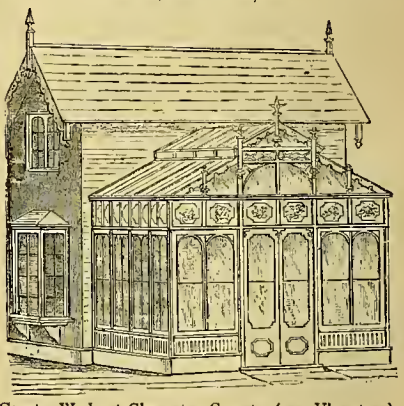

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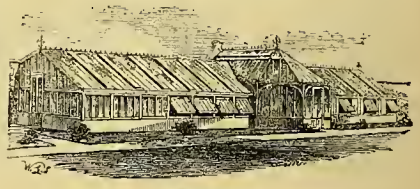

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Is requiring TWELVE PLANT-HOUSES CONSTRUCTED AND HEATED, and will be glad to receive ESTIMATES.

Particulars can be obtained at the
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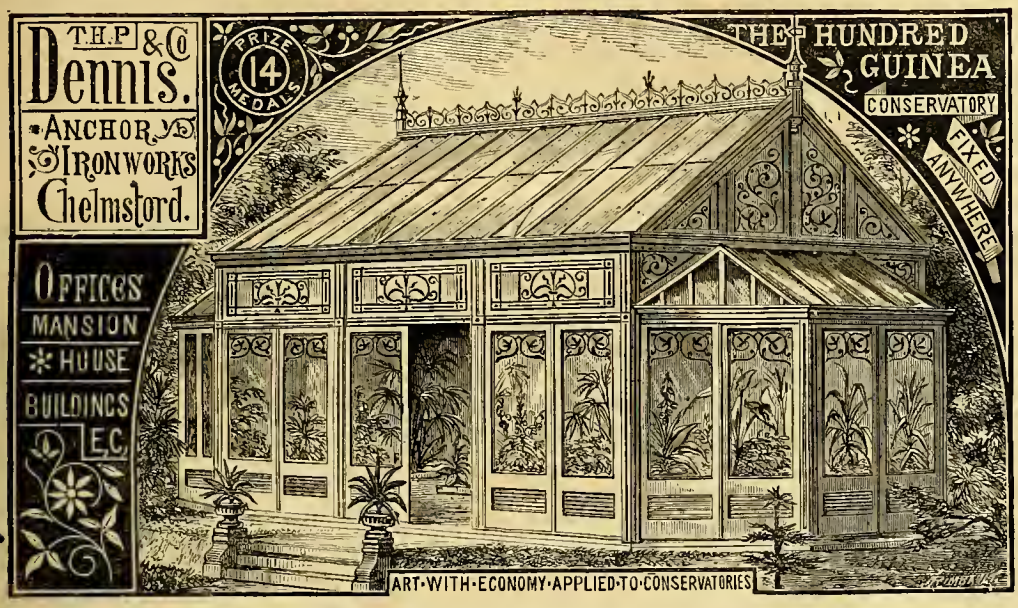

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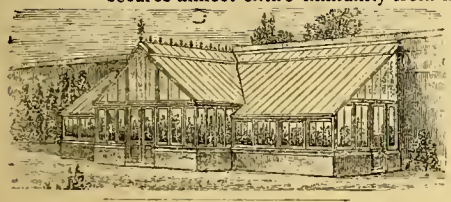
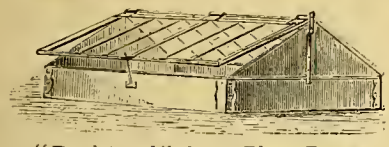
secures almost entire immunity from Breakage of Glass, extreme facility for Repairs, and absolute freedom from Drip.





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With "Truss" Hinge, and no Principals.
The Ridge always fits close, the interior is free from all obstruction, the corners are secured in iron angle plates: 21-oz. glass.

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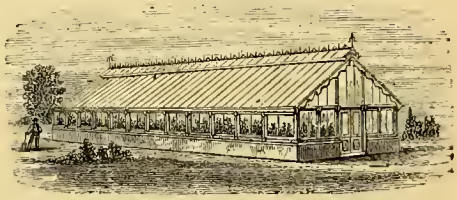

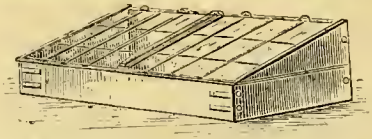

Extra Strong Cucumber or Melon Frames,
With 2-inch sashes and 1½-inch red deal frames, secured at each corner with two wrought-iron strap bolts. Glazed, without putty, with 21 oz. glass.

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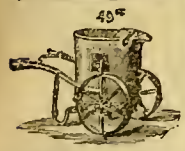

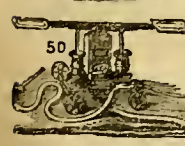

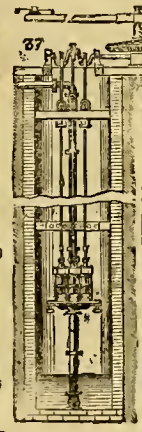

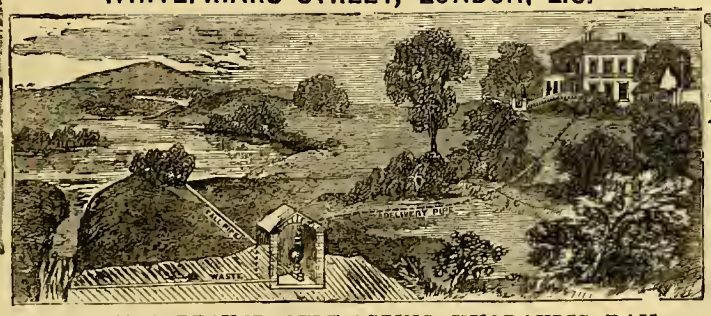

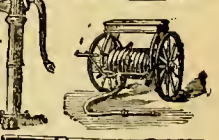

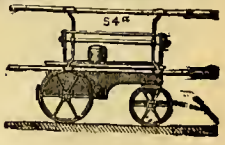

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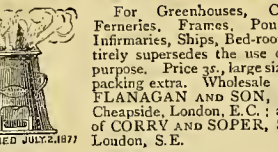

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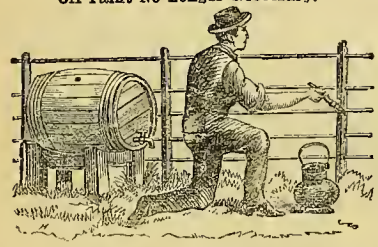

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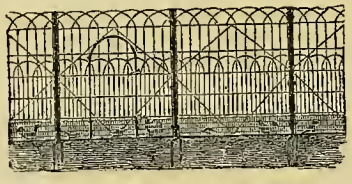

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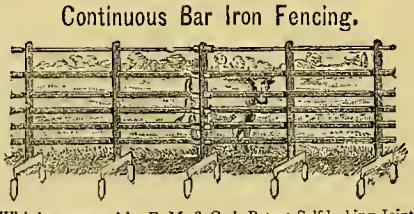

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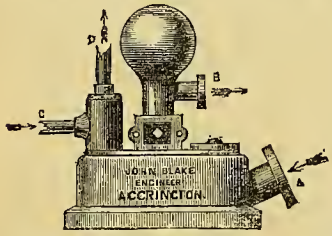

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Established 1841.

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The ROYAL HORTICULTURAL SOCIETY'S PROVINCIAL SHOW at PRESTON in 1878 will be held on TUESDAY, July 9, to SATURDAY, July 13, both days inclusive. The Schedule is in course of preparation, and will be forwarded on application.

CRYSTAL PALACE.—TWENTY-SECOND ANNUAL EXHIBITION of FRUIT and CUT FLOWERS, FRIDAY and SATURDAY, September 21 and 22. Schedules may be had on application to Secretary and Manager.

N.B. Rule 12 is cancelled.

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SALES BY AUCTION.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during September, consignments of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS arriving from well-known farms in Holland.

On view the mornings of Sale, and Catalogues had.

Dutch Flower Roots.

Important to the Trade and Others.

UNRESERVED SALE of 10,000 Selected HYACINTHS for glasses and borders; 70,000 CROCUS, of sorts; 35,000 TULIPS; also large quantities of Polyanthus Narcissus, Snowdrops, and other bulbs from Holland.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, September 10, at 11 for half-past 11 o'Clock precisely.

On view morning of Sale, and Catalogues had.

The Nurseries, Tooting, S.W.

GREAT ANNUAL TRADE SALE of many thousands of nicely-grown WINTER-BLOOMING HEATHS, promising a profusion of flowers, including 10,000 Hyemalis, 15,000 gracilis, 5000 Wilmoreana; also quantities of other varieties, such as verticillata, mammosa, melanthera, cerinthoides, Bowieana, caffra, &c.; also 8000 Epacris, 5000 Genistas, 5000 well-berried Solanums, 400 fine Pot-Vines, best kinds; 1000 Chrysanthemums, Bouvardias, 1000 choice Ferns, Palms, and Stove Plants for decorative purposes, Hardy Alpine and Herbaceous Plants, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above Stock by AUCTION on the Premises, without reserve, on TUESDAY and WEDNESDAY, September 11 and 12, at 11 for 12 o'Clock precisely each day, by order of Messrs. Rollisson & Sons, in consequence of the want of room to house so extensive a Stock.

The Stock may at any time be viewed. Catalogues may be had on the Premises, and of the Auctioneers.

Lea Bridge Road, E.

EXTENSIVE and IMPORTANT ANNUAL TRADE SALE of fine WINTER FLOWERING HEATHS, abundantly set with flower-buds; EPACRIS, CYCLAMEN, and other choice GREENHOUSE PLANTS, including 15,000 Hyemalis, 10,000 gracilis, 3000 Wilmoreana, large quantities of gracilis vernalis, Regerminans, colorans, assurgens, ventricosa, perspicua erecta, and others; 3000 Epacris of the choicest kinds, 1000 Cyclamen persicum, Tree Carnations, Tea-scented Roses, Solanum capsicastrum in berry; a large quantity of miscellaneous Greenhouse Plants, fine lot of Lapageria rosea, Daphne elegantissima, Gloxinias, Camellias, an assortment of the best kinds of Variegated Ivies, &c.; also a large quantity of young Heaths in small pots, for potting on.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Fraser to SELL the above by AUCTION, without reserve, upon the Premises known as Lea Bridge Nurseries, Lea Bridge Road, Leyton, Essex, E., on THURSDAY and FRIDAY, September 13 and 14, at 11 for 12 o'Clock precisely each day.

On view day prior to Sale. Catalogues may be had on the Premises; and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Rose Nursery, Angel Road, Edmonton.

MESSRS. PROTHEROE AND MORRIS beg to announce that they have succeeded in disposing of the Lease of this Nursery, together with the Glass Erections and Trade Buildings. The GREENHOUSE PLANTS, and about 1500 DWARF ROSES, will be SOLD by AUCTION, as announced, on the Premises as above, on MONDAY, September 17, at 12 for 1 o'Clock precisely.

Now on view and Catalogues had.

Lee, S.E.

SEVENTH ANNUAL SALE.
Highly Important to the Trade.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. B. Maller to SELL by AUCTION, without reserve, on the Premises, the Burnt Ash Nursery, Lee, S.E., adjoining the Lee Railway Station, on TUESDAY and WEDNESDAY, September 18 and 19, at 11 for 12 o'Clock precisely each day, 1300 lots of STOVE and GREENHOUSE PLANTS, including 20,000 magnificently-grown Winter-blooming HEATHS, particularly well set with flower-buds, consisting of 13,000 hyemalis, Wilmoreana, gracilis, autumnalis, colorans, and other well-known varieties; 4000 small Ericas in 60-pots, 3000 Solanum capsicastrum, beautifully berried; Tea and other Roses in pots, 600 Cyclamen persicum, 1000 Adiantum cuneatum, 1000 Bouvardia longiflora, &c.

May be viewed any day prior to the Sale.

Tottenham, N.

GREAT ANNUAL SALE of STOVE and GREENHOUSE PLANTS.—Important to the Trade and other large Private Buyers.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Maller to SELL by AUCTION, on the Premises, the Brunswick Nursery, Tottenham, opposite the White Hart Lane Station, Great Eastern Railway, on THURSDAY, September 20, at 11 o'Clock precisely, without reserve, 770 Lots of unusually well-grown STOVE and GREENHOUSE PLANTS, mostly in No. 48 and 32 pots, and fit for immediate sale, consisting of 20,000 Winter-blooming Heaths in fine thriving condition, promising a profusion of flowers, including 3500 hyemalis, 3000 gracilis, 1000 Wilmoreana, quantities of ventricosa rubra, hybrida, &c., 6000 remarkably well-berried Solanum capsicastrum, fine Camellias and Azalea indica set with bloom-buds, 3000 extra fine Tree Carnations, 2000 Bouvardias of sorts, 600 well furnished Adiantum cuneatum, Ficus elastica, 3000 Poinsettias, 300 Daphne indica rubra, 4000 remarkably fine Cyclamen, 1000 Genistas, Clematis of sorts, 300 double Primulas, 2000 Cinerarias, 1000 Dracænas, Palms, &c.

Now on view, and Catalogues had.

Exotic Nursery, Tooting, S.W.

IMPORTANT ANNUAL SALE of extra STOVE and GREENHOUSE PLANTS, ORCHIDS, PALMS, and other valuable and thriving stock.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr R. Parker to SELL the above Stock by AUCTION on TUESDAY, September 25.

More detailed particulars will appear.

Preliminary.—Castle Nursery,

opposite the Cemetery, Lower Norwood, S.E.

SECOND ANNUAL SALE of CHOICE ESTABLISHED ORCHIDS and STOVE and GREENHOUSE PLANTS for decorative purposes, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James to SELL the above Stock by AUCTION, on the Premises, the latter END of THIS MONTH.

Preliminary Notice of

FORTHCOMING SALES of NURSERY STOCK by PROTHEROE AND MORRIS, HORTICULTURAL AUCTIONEERS, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

OCTOBER 1 and every succeeding MONDAY to DECEMBER 10.—At the MART, Tokenhouse Yard, London, E.C. Extensive consignments of Dutch Bulbs.

OCTOBER 9 and 10.—The NURSERY, West Wickham, Kent. By order of Mr. Kirkcaldy.

OCTOBER 16.—HALE FARM NURSERIES, Tottenham. By order of Mr. T. Ware.

OCTOBER 16 and following days.—The NURSERIES, Exeter. By order of Messrs. Lucombe, Pince & Co.

OCTOBER 22 and 23.—EXOTIC NURSERY, Tooting. By order of Mr. R. Parker.

OCTOBER 29 and following days.—MILFORD NURSERIES, near Godalming. By order of Mr. M. Young.

OCTOBER, date not yet fixed.—The EMBER NURSERIES, Thames Ditton. By order of the Executors of the late Mr. J. Lewis.

NOVEMBER 1.—MOULSHAM NURSERIES, Chelmsford. By order of Messrs. Saltmarsh & Son.

NOVEMBER 6, 7, and 8.—AMERICAN NURSERIES Leytonstone, E. By order of M. A. Protheroe.

Preliminary Announcement.

IMPORTANT SALE of PLANTS, consisting of Azaleas, Camellias, Heaths, Palms, Tree Ferns, and a large collection of Dracænas, Crotons, Amaryllis, and other Plants suitable for stove, greenhouse and conservatory decoration.

MESSRS. P. BURN, SON AND CO., AUCTIONEERS, Glasgow, beg to intimate that they are instructed by Messrs. Thyne, Great Western Nurseries, to SELL by AUCTION, the above, for which they have no accommodation, within the City Hall, Glasgow, on WEDNESDAY and THURSDAY, September 19 and 20.

Full particulars in future advertisements and Catalogues, which will be ready shortly, and may be had on application to Messrs. J. AND R. THYNE, Buchanan Street, or at the Auctioneers' Office, 108, West Nile Street, Glasgow.

N.B. In the above Collection will be offered many Choice Plants, which have been awarded first prizes at the leading exhibitions throughout the country.

TO be SOLD, a small Suburban FLORIST'S BUSINESS, on advantageous terms (4297).—The Nursery is 2 acres in extent or thereabouts, adjoins an important station on the North London Line, twenty minutes' ride from the City, and 3 miles from Covent Garden. It occupies a commanding position, with a long line of frontage to the high road. Rich soil, in good cultivation. Good Jobbing Trade. Lease (direct from Lord Mansfield) eighteen years unexpired. Rent, £40 per annum. Incoming moderate. Stock and Glass by valuation, or a reasonable offer would be entertained.

Apply to PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

London, West End.—To Florists and Others. (4299)

In the Centre of a First-Class Neighbourhood.

TO BE DISPOSED OF, the BUSINESS of a FLORIST and SEEDSMAN. Premises comprise Dwelling-house with side cart entrance, large Cellarage and Offices, 6 Bedrooms, 3 Reception-rooms (which are at present partially let off and thus pay the rent), also a commanding Shop, 18 feet by 15 feet, with handsome Plate-glass Front. Lease nineteen years unexpired. Rent £90 per annum. Close by is a small Nursery, held at £10 per annum, with 3 Greenhouses and Sundry Frames thereon. Shop Fittings, Glass and Stock in Trade, by valuation, or a lump sum would be accepted for the whole.

Apply to PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

Ember Nursery, Thames Ditton.

By order of the Executors of the late Mr. J. Lewis.

TO BE DISPOSED OF, on easy terms, the thoroughly genuine BUSINESS connected with this old established Nursery. The Nursery comprises Dwelling House, about 9 acres of first-class Land, fully stocked, and about 11,500 feet super of modern Glass. Lease 16 years unexpired. Rent £75 per annum. Greenhouses belonging to tenant and also the indoor stock and utensils in trade to be taken by valuation.

N.B. To facilitate the disposal of the Business, it is proposed to effect an AUCTION SALE of the whole of the valuable OUTDOOR STOCK, thus giving the Purchaser the opportunity of buying at a cheap rate what stock he might require to carry on the business.

Particulars to be obtained only of PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

To Nurserymen and Others.

TO BE DISPOSED OF, one of the oldest established NURSERY BUSINESSES in the North of England, with valuable connection.

The executors of the late Mr. John Harrison, of the North of England Nurseries, Catterick Bridge and Scorton, are open to treat with a gentleman possessing capital, for the disposal of the business, which has an established connection of nearly 50 years.

The Nurseries consist of about 60 acres of Freehold Land, about 40 acres of which are stocked with a choice Collection of Roses and General Nursery Stock. There are good Residences in the Grounds, and fine Ranges of Glass, close to the Catterick Bridge Station of the North-Eastern Railway, situate between Darlington and Richmond, and offering unusual facilities for doing a large and profitable business. A large portion of the purchase money could remain on security of the property at a reasonable rate of interest. Possession could be given at any time as a going concern. Principals or their Solicitors only may apply to the undersigned,

A. E. HARRISON, Solicitor, Church Yard, Rotherham.

To Market Gardeners and Others.

DESIRABLE OCCUPATION.

TO BE LET, with Immediate Possession, if required, a SIX-ROOMED COTTAGE, with FIVE ACRES of excellent GARDEN GROUND, well stocked with the choicest Fruit Trees, Three Houses with Plants and Vines, and the necessary Out-buildings. The Property is situate at Bracebridge, within two miles of Lincoln, where there is an excellent market for all kinds of garden produce. Rent, £35. Apply to

C. WHITE, Brayford Head, Lincoln.

MESSRS. PROTHEROE AND MORRIS invite Owners of Marketable Properties who are desirous of effecting ADVANTAGEOUS SALES to forward them Plans and Particulars, which will be duly placed before such Purchasers as are likely to buy. They have at the present time a number of wealthy Capitalists on their books who are desirous of Investing in Land, and the mode of procedure they adopt avoids all publicity and expense. No charge is made unless they succeed in introducing a purchaser. The Receivership and Management of Estates undertaken upon moderate terms.

See p 304 for Properties recently Sold.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land, Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land, Loan, and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

ROYAL SCHOOL of MINES, DEPARTMENT of SCIENCE and ART.

During the Twenty-seventh Session, 1877-78, which will commence on the 1st of October, the following COURSES of LECTURES and PRACTICAL DEMONSTRATIONS will be given:—

1. Chemistry. By E. Frankland, Ph.D., F.R.S.
2. Metallurgy. By John Percy, M.D., F.R.S.
3. Natural History. By T. H. Huxley, LL.D., F.R.S.
4. Mineralogy. } By Warington W. Smyth, M.A., F.R.S.,
5. Mining. } Chairman.
6. Geology. By John W. Judd, F.R.S.
7. Applied Mechanics. By T. M. Goodeve, M.A.
8. Physics. By Frederick Guthrie, Ph.D., F.R.S.
9. Mechanical Drawing. By Rev. J. H. Edgar, M.A.

The Lecture Fees for Students desirous of becoming Associates are £30 in one sum, on entrance, or two annual payments of £20, exclusive of the Laboratories.

Tickets to separate Courses of Lectures are issued at £3 and £4 each.

Officers in the Queen's Service, Her Majesty's Consuls, Acting Mining Agents and Managers may obtain Tickets at reduced prices.

Science Teachers are also admitted to the Lectures at reduced fees.

For a Prospectus and information apply to the Registrar, Royal School of Mines, Jermyn Street, London, S.W.

TRENHAM REEKS, Registrar.

NOTICE.—ROYAL SCHOOL of MINES, Jermyn Street, London, S.W.

The 27th SESSION will BEGIN on MONDAY, OCTOBER 1. Prospectuses may be had on application.

TRENHAM REEKS, Registrar.

To Nurserymen and Others.

TENDERS for PLANTING a portion of the Cemetery at Hemel Hempsted (about 1 a. 3r.), with about

1200 TREES and SHRUBS

—the description of which may be obtained on application to the undersigned—are invited for consideration of the Board at their Meeting on October 1 next.—By order,

GEORGE DANIELS, Clerk.

George Street, Hemel Hempsted, Sept. 3.

To Nurserymen and Others.

GYMNOGRAMMA DECOMPOSITA FERNS—a few hundreds to be disposed of, cheap; 1 to 1½ foot. Price and Sample on application.

Also a quantity of large SHRUBS, from 4 to 8 feet high, will move well, with good balls of earth.

W. KENNETT AND SONS, Nurserymen, Canterbury.

Cabbage Plants.

H. J. HARDY begs to offer fine strong Plants of—

ROBINSON'S DRUMHEAD, } 3s. per 1000.
ENFIELD MARKET, }

Carriage and package free. Terms cash.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

STRAWBERRY PLANTS, STRAWBERRY PLANTS.—Purchasers' selection from Fifty-five of the best sorts known. For LIST see large Advertisement in last week's *Gardeners' Chronicle*. 3s. 6d. per 100, our selection; 2s. 6d. per 100, 20s. per 1000, all true to name.
HARRISON'S MUSK, 2 plants 1s., 12 for 3s. 6d.
PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2s. per dozen.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

FOR SALE, 21 AZALEAS of sorts, trained, from 1½ to 4 feet high; 5 do., smaller, not trained; 6 do., Standards, from 2½ to 4 feet high
1 GARDENIA FLORIDA, trained, 4 feet high.
9 CALADIUMS, of sorts.
4 LOMARIA GIBBA, &c.
Also 37 FRUITING PINES, of sorts.
Mr. A. GRANT, Gardener, at Sunnyside, Reigate, where they can be seen.

JAPERS, NURSERYMAN, Loochristy, near Ghent, Belgium—Great special Culture of CAMELLIAS, AZALEA INDICA, RHODODENDRONS, AZALEA MOLLIS, KALMIAS, AZALEA PONTICA, GLOXINIAS, Bulbous BEGONIAS, &c. CATALOGUES may be had of Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Lilliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.
Hale Farm Nurseries, Tottenham, London.

Notice to Amateurs.

BULBOUS ROOTS.—The following may be had from V. LANGLOIS, Nurseryman, Jersey, at the following prices:—
HYACINTHS, Roman, white, 19s. 6d. per 100, 2s. 6d. per doz.
" blue, 10s. 6d. per 100, 1s. 3d. per doz.
BEGONIAS and TUBEROSES, tuberous-rooted.
CATALOGUES on application.

FOUR THOUSAND VARIEGATED HOLLIES.
GOLDEN QUEEN, 1 foot to 3½ feet high.
SILVER VARIEGATED, 2 feet to 4 feet high.
CEDRUS DEODARA, 3 feet to 6 feet high.
All well grown and well rooted.
D. WOOD, Norwood Nursery, Beulah Hill, S.E.

F. AND A. SMITH beg to offer the FOLLOWING SPECIALITIES, which are grown in large quantities, in fine condition and at moderate prices. Quotations on application.

Acacias	Epiphyllums
Azaleas	Epacris
Bouvardias	Ericas
Camellias	Ferns
Cinerarias	Gardenias
Clematis	Grevillea robusta
Cyclamen persicum	Pelargoniums
Cytisus	Statice Holfordii
Daphne indica rubra	Solanums
Dracænas, various	Vines, &c.

The Nurseries, West Dulwich, S.E.

Vines and Strawberries.

"Plant now to ensure a full crop of fruit next season."

FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3s. 6d. to 5s. each; strong Fruiting ditto, 7s. 6d. to 10s. 6d. each.
Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16s. to 20s. per 100; from the open ground, 3s. to 5s. per 100.
Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.
Sheen Nursery, Richmond, Surrey.

Bedding Violas and Pansies.

DICKSONS AND CO. invite inspection of their celebrated BEDDING VIOLAS and PANSIES, which for some months have been, and are now, in great beauty. The collection in their Pilrig Park Nursery numbers upwards of 130 sorts, so that intending purchasers have an opportunity rarely offered of making the best possible selection. Blooms can be sent by post on receipt of six stamps.
D. & Co. also call attention to their SEEDLING FANCY PANSIES, which are remarkably fine this season.
Seed Warehouse, 1, Waterloo Place, Edinburgh.
(Established upwards of a Century.)

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.
Priced CATALOGUE sent post-free.
Address, HENRY SHEPHERD, Manager.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.
" extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.
" extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.
" Half Specimens, 5s. to 7s. 6d. each.
NEW FRENCH ROSES of 1877, 30s. per dozen.
HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.
Address—CRANSTON & CO.

For the best List of Choice Hyacinths, Tulips, Crocuses, Narcissus, &c., see our Beautifully Illustrated

CATALOGUE
OF
DUTCH FLOWER ROOTS
FOR
Autumn, 1877,

Containing numerous fine Engravings and much Valuable and Original Information on the successful Culture of Bulbous-rooted Plants. Should be read by all intending purchasers before ordering. Post-free on application.

Our 21s. Collection (No. 7),

For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 " double white
6 Campernelle Jonquils
25 Anemones, fine double
25 " fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 " Cottage Maid
12 " Yellow Prince
25 " double, mixed
12 " Rex Rubrorum
12 " late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

Other Collections, 12s 6d, 42s., 63s., and 84s. each.

From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.
"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction: the flowers are splendid."

From R. PRINYCE, Esq., *Bathgate, N.B. February* 7, 1877.
"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

DANIELS BROS.,
THE QUEEN'S SEEDSMEN, NORWICH.

CHARLES VUYLSTEKE, NURSERYMAN, Loochristy, near Ghent, Belgium.
Our ENGLISH CATALOGUE for 1877-78 is now ready, and may be had gratis on application. It contains description and price of Azalea indica, Azalea mollis, hardy Ghent Azaleas, Camellias, Kalmia latifolia, Rhododendrons, Stove and Greenhouse Plants, Bulbous Begonias, Dutch Flower Roots, &c. Upwards of 200,000 plants, of unusual beauty and strength, and disposable at very advantageous prices.
Agents: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Strawberries.

CHARLES TURNER recommends the following for a continuous supply of fine flavoured fruit. Prepared Runners are now ready.
Those best adapted for forcing are marked with an asterisk.

Aromatic	*Auguste Nicaise
Beauty	British Queen
Dr. Hogg	Duc de Magenta
Eleanor	Elton Pine
Frogmore Late Pine	James Veitch
*Keens' Seedling	*La Grosse Sucrée
Lucas	*President
Royalty	*Sir C. Napier
Sir Jos. Paxton	*Vicomtesse H. de Thury

Descriptive CATALOGUE on application.
The Royal Nurseries, Slough.

To the Trade.

SCHIZOSTYLIS COCCINEA, fine clumps for potting, 9s. per dozen, 60s. per 100.
CZAR VIOLETS, fine clumps for potting, 3s. per dozen, 20s. per 100.
HELLEBORUS NIGER, fine flowering clumps, 9s. per dozen, 50s. per 100.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

English Yews.

SANDY AND SON beg to call attention to their superb stock of the above, ranging in height from 2 to 7 feet. All are perfect specimens, pyramids, and lift with splendid roots. The sizes of which they hold the largest quantity are from 2 to 5 feet. Any person requiring a considerable number would find it advantageous to inspect the stock. All other Nursery Stock in quantities.
Special offers made of AUSTRIAN PINES, PORTUGAL and COMMON LAURELS, TREE BOX, &c.
The Nurseries, Stafford.

TO GENTLEMEN INTENDING TO PLANT.—In consequence of the decease of the late Mr. R. WEBB, of Calcot Gardens, near Reading, his valuable Collection of Young Prize NUT TREES, of named sorts, are offered at half the usual selling prices. Printed LISTS will be forwarded on application.
Immediate Orders are solicited, as the Trees will be supplied in the rotation in which the orders are received; delivery commencing on October 1. Apply to
The MANAGER, Calcot Gardens, near Reading, Berks.

ROSES.
CRANSTON'S NURSERIES,
KING'S ACRE, HEREFORD.

(ESTABLISHED 1785.)

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This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of CLIVE HOUSE SEEDLING, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee :—" It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante."

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„ FUSCATUM
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None but first-rate varieties, all to name.

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HYACINTHS, TULIPS, CROCUS, &c.

FOR OPEN GROUND CULTIVATION			
42s.*	21s.*	10 6	5s.

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*Carriage free to any Railway Station in England.

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Complete Cultural Instructions and Descriptive Catalogues gratis.

How to Grow Flower Roots successfully, see

SUTTON'S AUTUMN CATALOGUE OF SPRING FLOWERING BULBS.

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PROFUSELY ILLUSTRATED.

Price 6d. post-free, or gratis to Customers.

From the COURT CIRCULAR, *September* 1, 1877.—"Sutton's Autumn Catalogue of Flowering Bulbs is one of the neatest and prettiest books of the kind yet published, and contains a vast amount of valuable information on the cultivation of bulbous flower roots, which is sufficient to commend it to the notice of all who are fond of floral beauties. Messrs. Sutton & Sons, the Queen's Seedsmen, have long enjoyed the enviable reputation of standing in the foremost rank of floriculturists, and the painstaking care evidenced in the production of this year's catalogue deserves the warmest commendation."

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

SATURDAY, SEPTEMBER 8, 1877.

FRUIT.

THE English are often said to be the beef-eating nation—more disposed to animal than fruit diet. This in a great measure is no doubt correct, and there are a combination of circumstances to which collectively it is attributable. Climate in all cases has a potent influence in rendering particular descriptions of food not only more palatable in one part of the world than another, but also more necessary to support and nourish the human frame. A native of the frozen regions will swallow with avidity an enormous amount of fat, the sight and idea of which would disgust an inhabitant of the tropics. Our changeable climate, with its moisture-charged, chilling winds through a great portion of the year, quickly extracts the warmth from our bodies, and requires suitable food to keep up animal heat. This the long prosperous condition of the country, consequent upon the industrious hard-working disposition of the people, enables them to procure, and when those of other nations taunt us with our beef-eating propensities we may retort by the old rejoinder that "those who lose may laugh, for those who win are sure to," and it is generally noticed that, when foreigners come to reside amongst us, somehow or other they usually experience remarkably little difficulty in getting used to "the roast beef of Old England." Again, our climate (we are always finding fault with it, although by no means deserving of all the blame laid to its charge) is not the best adapted for the growth of many kinds of edible fruits, the greater portion of which, although their origin rests in obscurity, have evidently sprung from species indigenous to countries where the mean temperature is higher than in ours, or the summers longer, with an absence of the spring frosts so disastrous to most of the fruits we grow. Yet, nevertheless, with these difficulties, fruit culture, if even to a limited extent, has long been pursued in this country, as evidenced by the Vine alone, of which there are proofs innumerable of its being grown at a remote period. The records of the old monasteries show that the monks, when located in any part of the kingdom where the climate and soil was such that it could be induced to bear fruit, never failed to take it in hand. From their habits of patient industry and observation, there can be little doubt that they would accomplish all that was possible with it in the conditions under which they laboured, but what their success really amounted to, measured by our ideas of Grape growing at the present day, is likely to remain a conjecture. Their principal object no doubt was to grow Grapes for the wine-press, and there are few who have any knowledge in these matters who are not aware that wine of fair quality can be made from Grapes that would not be very agreeable to eat.

Some twenty-five years ago there was a good deal of stir made about growing Grapes on what were called Hoare's Vine pillars, but the system, as was predicted by most of those who studied the subject, never came to much; and such I fear will be the result of the attempt now being made to grow Grapes in an open-air vineyard, by the Marquis of Bute, at Castle Coch, near Cardiff. Although far from being disposed to throw cold water on the project, I should be

much pleased if my mistake was proved by the success of the undertaking. In this, as in the cultivation of many other things, there is a wide difference betwixt what it is possible to accomplish where no account is taken of the cost, and that which accrues from a reasonable expenditure in labour and appliances. In the production of Apples and Pears it is doubtful if there has been very much increase in recent times, at least for market supply; at all events if there has it bears no comparison with the increased consumption, as evidenced by the immense importations of these fruits; neither is there likely to be under the uncertainty of seasons, of which we continuously have unwelcome evidence—at any rate, market growers are the most likely people to know if further extension in this branch would have a fair chance of being remunerative, although, if the ideas entertained by some who write on this subject were correct, and the advice they give deserving of being acted upon, it would follow that the market growers were the most ignorant set of individuals as to their own interests in existence. It must ever be borne in mind that the land which will grow these fruits must be good in quality, and not of the miserable character sometimes spoken of as suitable, and all who treat upon this subject should never lose sight of the fact that in this country land and labour—the two most important elements involved—are both dear, and that the countries that send us these fruits are immeasurably less under the influence of seasons that result in failure, and land and labour with them conjointly does not cost more than one-half what it does with us. To set against this the foreign cultivator only labours under the disadvantage of extra cost in carriage. In numbers of private gardens, especially of the smaller class, no doubt much might be done by a better system of cultivation, and in all the one great desideratum is a discarding of the many varieties which do not bear freely, and the substitution of the comparatively few which may generally be relied on. The fatal and unaccountable mistake—a mistake that is all but general amongst private growers in the cultivation of Apples and Pears in this country—is the planting of uncertain bearing kinds.

In the cultivation of small fruits there has evidently been a great increase in recent years, particularly for the supply of large towns, where these, as well as Apples, Pears, and Plums, are consumed by the working portion of the community to a much greater extent than they once were. This cannot fail to be an advantage in every way, as a reasonable quantity of wholesome fruit is no doubt more conducive to health than otherwise, and its cultivation affords employment to large numbers of people in the districts where it is grown, in addition to the land making a far greater return than what it would do under agricultural crops. There can be no doubt the consumption in the principal towns, especially London, would be double what it now is, were it not for one serious obstacle—namely, the unreasonable disproportion that exists between the price the grower realises, and that which the consumer has to pay—a difference frequently of from 100 to 200 per cent., and sometimes more, as in the present summer, when during the height of the Strawberry season the best fruit in the London markets was not making to the growers more than from 4*s.* 6*d.* to 6*s.* per dozen punnets, and the same fruit was charged in the shops from 1*s.* 3*d.* to 1*s.* 6*d.* each punnet.

This is only a simple instance of what is continually going on. The mass of the people in London never get fruit at a reasonable price until there is a glut, and it reaches the costermongers' carts and barrows, and then the grower scarcely receives enough to pay the cost of picking and marketing, leaving him minus anything for rent and taxes; and the disparity, only to a somewhat less extent, exists in English-grown fruits of a character that will keep several weeks. *T. Baines.*

NOTES FROM A LANCASHIRE GARDEN.

SEPT. 1.—This summer is certainly, so far as I am concerned, "the winter of my discontent." Everything since last I wrote these notes (in February) has been going wrong. My first grievance I share with all the world—was such a cruel spring ever known before? Pears, Plums, and Peaches, were all a mass of blossom, and nothing could look more promising. Then came frost after frost, cold winds pierced through every screen of defence, and down fell unset bloom or half-set fruit. Only eight Peaches remain on all my trees, and not one single Nectarine; the Apricots grew to the size of Walnuts and then tumbled one by one, and the Plums never grew at all. Cherries were the merest handful; Pears seemed to have set, but the young fruit turned yellow, and many trees are entirely bare; even of Apples our crop is but a short one.

But this was not the worst, and I am going to tell my further troubles as a lesson and a warning to others. I have never been very fortunate in my gardeners. My first gardener was so sulky that I had to part with him; my next gardener was good in his way, but he often drank and neglected his work; then I had a man who was so lazy that he scarcely did any work at all. At last three years ago, I got (apparently) an excellent gardener. He worked with a will, and he was an intelligent, sober, and rather well-read man. For some time nothing could be more satisfactory, but the second year there seemed a falling off, the houses were not so well kept, everything appeared to be a failure. If I found fault there was always some capital excuse, and I tried to be satisfied and hope for better times. Meanwhile, my bills became increasingly heavy, and, besides what the stable supplied, we were for ever buying manure. Still, whenever I made a particular point of anything it was done, and sometimes well done, and though I was feeling more and more discontented there was nothing tangible for me to seize hold upon. But this last spring my uneasy feelings grew more uneasy still. On the other hand the excuses were stronger than ever: such a bad spring had never been known; the under gardener had been ill, and work had been thrown back; there was more lawn to mow; the old-fashioned flues in the vineries had been out of order; thrushes had been more destructive than ever, and yet I did not like them shot; the children would keep pigeons, and the pigeons devoured everything. However, I did not see that all these excuses together accounted for many things that were going wrong. The Rose trees were covered with greenfly, and the Orange trees with scale. Our forced Strawberries were good, but forced French Beans and Tomatos were complete failures. Many favourite old herbaceous plants seemed to have disappeared, and my new cuttings were neglected. We had scarcely any Cucumbers, and Vegetable Marrows had not been planted. The Peach trees, nipped by the frost, were half destroyed with aphis. The spring bedding was only partially successful, and the summer bedding was kept back too late. It was clear this could go on no longer. I spoke sharply to the man: he was insolent, and I told him he must go. Just then most fortunately the half-yearly bills came in, and I analysed them with an attention which I had never given to the garden bills before. I found that I was patronising three different nurserymen, and each had been good enough to supply me with a very select assortment of seeds and plants. For years past I had had some fine Lilium auratums, which I took in each winter and planted out in summer; but this year they appeared all to have died without giving any notice (!), and one nurseryman had replaced twelve at 2*s.* 6*d.* each, and another three for 15*s.* Hepaticas and double Primroses had not been very successful with me, and my gardener had been buying new plants in pots, and then allowed them to perish from neglect. Nineteen quarts of garden Peas had been requisite during the six months, and a row of Sweet Peas had taken a gallon of seed. One nurseryman had within the half-year supplied four pruning knives, and within two months three pair of pruning gloves. Many plants, which I cannot find at all, appear in these bills, and the variety of seeds which have never come up is quite astonishing.

Of course the nurserymen all say they supposed my gardener was getting all these things (pruning gloves and all) with my knowledge and consent, and deny that they are in any way to blame. I can only consider them a singularly unsuspicious class of people, and in one case at least I am very far from being satisfied. However, it will be my own fault if I have any further cause of complaint, for I shall not allow a single packet of seed to be purchased without a written order from myself.

But now let me turn away from these troubles to the pleasures, of which even the worst season and the worst gardener could not deprive me. As I have already said, the spring garden was a failure, but we had nevertheless three beautiful beds. One was of Anemones, the delightful old flowers—"pied windflowers" Shelley calls them—which first sprang to birth when Venus wept Adonis. The two other successful beds were of Ranunculus, one of the finest scarlets, so deep and intense that they seemed to be almost black in the inner shadows of the petals. And this reminds me of what a gifted American lady once said to me—"Does not black seem to underlie all bright scarlet?" I thought of this when I saw this bed of Ranunculus, and I think of it often when I see the red coats of our soldiers passing by. I have often noticed, too, that in an evening, when there is still light enough to see flowers that are yellow or blue or pink, the blossoms of a scarlet Pelargonium give forth no colour, but look as if cut out of some soft black velvet. The other bed of Ranunculus was of various sorts, most prettily and fancifully mottled. One bed, from which I had hoped much, was a disappointment, for hardly one half of the Crown Imperials of which it was composed flowered at all. Why this was I cannot tell, for the bulbs were fine enough, and the flowers of some of them were magnificent. I had never examined a Crown Imperial properly till this spring, and never knew that its great beauty lay in the little circlet of pearls—nectaries, I suppose they are—which lie at the bottom of each orange bell. They are quite exquisite in their grey and white glittering movement as the light plays upon them, and are more like pearls than anything else in Nature.

But if the spring garden was not what it should have been, the flowering shrubs on the lawn were simply wonderful. Everything seemed to blossom, and every blossom seemed finer than I had ever known it. All the more ordinary shrubs were in fullest splendour, and I had several which were comparatively new to me. Among them were the large-flowered Philadelphus, and the lovely little Diplopappus, while the very Hollies became (as I never saw them before) ornamental flowering shrubs. The one exception was the Rose des Alpes, though the Kalmias in the same bed did capitally.

But I must now speak of our summer flowers. Roses have never blossomed so abundantly with me, in spite of the geeenfly. A bed of Sweet Williams was effective in its way, but the strain was not a good one. Some of my favourite beds, which I have mentioned in previous years, have done well this year also. Here is the blue Agapanthus with the Lobelia cardinalis. Here are the Lilium auratums for which I paid so dearly, with Heliotrope between. Here are the hybrid Begonias set in a mass of Sedums. Here is the long row of Sweet Peas; here are the Canna indicas and Yuccas, with the Thamnocalamus Falconeri (Arundinaria falcata), which has unluckily taken to flowering, and will, I suppose, die away. Other successful beds are the Bijou Pelargonium surrounded by a belt of Viola cornuta and a bed of Zinnias, through which pierce the scarlet swords of the Gladiolus. A row of Cuphea in a ribbon border is new, but not particularly striking, and the Carnation bed is spoilt by the number of single flowers which it contains.

But really I sometimes wonder that any beds are good. The spring was ungenial, but what has the summer been? It poured on St. Swithin's Day, and, ever since, the weather has done its very best to keep up the reputation of the Saint.

One of the many evils of a wet summer is the difficulty of keeping the lawn in order. The mowing-machine is of comparatively little use, and yet we can hardly fall back upon the scythe—I sometimes wish we could. Who does not remember Andrew Marvell's delightful poems about mowers—and he wrote at least five of them. There is "Damon the Mower," "The Mower to the Glow-worm," "The Mower's Song," "The Mower Against Gardens," and

"Ametas and Thestylis Making Hay-ropes;" and again, in his fine poem on "Appleton House," he describes the "tawny mowers" dividing the "grassy deeps"—

"With whistling scythe and elbow strong."

One of our latest poets, Mr. Allingham, too, has a delicious little mower's song with a quite perfect refrain of—

"A scythe-sweep and a scythe-sweep,
We mow the grass together."

And surely no sound has such poetry in it as the strong sharp sweep of the scythe when it whistles through the falling grass, or the shrill murmur of the blade upon the whetstone.

Fig. 59.—Peach and Nectarine on the same shoot.

But there are, nevertheless, other sounds that haunt a garden and make it full of life, and I half wonder that I have said so little of the birds that give almost as much pleasure as do the flowers themselves. When I last wrote I spoke of the swallows that build in our porch. This year a second nest has been hung there, and the birds dart in and out with a swiftness and a grace which nothing I know of can pretend to rival.

Mr. Courthope in his "Paradise of Birds" makes a a nightingale boast that a bird is better than a man, for—

"He never will mount as the swallows,
Who dashed round his steeples to pair,
Or hawked the bright flies in the hollows
Of delicate air."

Few modern poets have written four lines so exquisite as these, and yet there are some, scarcely less good, by Browning about a thrush; and, after all, it is the thrush and not the swallow to whom we owe the best voice that spring can give us. The nightingale may be stronger and sweeter of note, but the nightingale only sings in certain districts, and the thrush seems to be everywhere. The nightingale sings later in the night, but the thrush will go on till nine and begin again at four, and surely that is all we need. But now for Browning's lines—

"Hark! where my blossomed Pear tree in the hedge
Leans to the field, and scatters on the clover
Blossoms and dewdrops—at the bent spray's edge—
That's the wise thrush—he sings each song twice over,
Lest you should think he never recapture
The first fine careless rapture!"

Nothing can be truer, nothing better said, nor can anything close more pleasantly these garden notes of to-day. *H.*

PEACH AND NECTARINE ON THE SAME BRANCH.

Not long since we received from Mr. Blair, of Shrubland Gardens, a branch bearing a Barrington Peach and a Nectarine, a representation of which is given at fig. 59. Peter Collinson, in 1741, was the first to record a Peach tree producing a Nectarine. Sir James Smith described the more remarkable case of a tree in Norfolk which usually bore both perfect Nectarines and perfect Peaches, but during two seasons some of the fruits were half-in-half in nature. "The large Peach," says Mr. Rivers, "which I have named Prince of Wales, was raised from a stone of a Pitmaston Orange Nectarine. Out of ten seedlings of the second generation—*i.e.*, stones of the Prince of Wales Peach—five are Peaches, three are Orange Nectarines, and two are white-fleshed Nectarines." It is not necessary to cite more illustrations of the fact that Peaches and Nectarines are varieties of one and the same stock. Numerous confirmatory cases have been cited in our columns, and a short *resumé* of the subject is given in the first volume of Mr Darwin's *Variations of Animals and Plants under Domestication.* Mr. Darwin thus sums up—"We have excellent evidence of Peach stones producing Nectarine trees, and of Nectarine stones producing Peach trees—of the same tree bearing Peaches and Nectarines (such Nectarines reproducing Nectarines by seed), as well as fruit in part Nectarine and in part Peach; and, lastly, of one Nectarine tree bearing half-in-half fruit, and subsequently true Peaches. "From these facts it has been concluded that the Nectarine is a variety of the Peach, which may be produced either by bud variation or from seed."

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

The Camellia.—Amongst the immense number of flowering plants that have been introduced into this country, it would be difficult to point to one that surpasses the Camellia either in the general estimation in which it is held, or in its adaptation to the various purposes for which flowers are required. True, neither the plant, taken as a whole, nor its individual flowers, can lay claim to the graceful elegance possessed by many things in cultivation; yet, in a well-grown example of Camellia, especially a white variety, clothed with its chaste flowers, backed by ample, glossy, deep-green foliage, there is a massive grandeur that has few equals. Neither do the flowers individually, when fully blown, and grouped with the choicest productions of the stove or Orchid-house in a vase or epergne, or the half-open buds that grace a bridal bouquet, lose by comparison with the fairest of flowers grown. When we add that, if desirable, the flowers may be had the whole year round, and that the plant is easily grown, and with fair treatment will last individually half a century, we have an assemblage of good properties that place it in the front rank of flowering subjects.

The first of the species that found its way to this country came before the middle of the last century; but it was about 1824 when the double white (alba plena), and the red semi-double reticulata, made their appearance, that their value was fairly understood. These were followed by numerous others, of more or less merit, and from which collectively have sprung the numbers of grand varieties we now possess, and which have so well rewarded the care and patience of the seedling-raiser. Some of the semi-double varieties seed tolerably freely, and the seeds can be induced to vegetate without difficulty; but this raising of new varieties may be safely left in the hands of those who interest themselves in this kind of work, and it will be better to confine these remarks to the general details of cultivation.

Camellias strike readily from cuttings made of the half ripened shoots, but the more usual and also more satisfactory method of increase is by grafting on some of the free-growing single kinds; but this work, also looked at from an economical point of view, either as regards time or cost, will be generally better left to those who make the propagation of this and kindred subjects their business. In the selection of young stocks to grow on, there are two things to be kept in view, first that the plants are in a free vigorous state, not pot-bound, and that they are of the right shape. Quantities of the young plants sold are wrong in respect to the latter essential. They usually consist of a single shoot, inserted in the stock some 6 inches above the collar, and allowed to grow on with a leading stem, from which, at 10 or 12 inches above the pot, procced several weaker shoots, that seldom get a chance of attaining their wonted strength through the leading shoot being allowed to run away with more than its share of sap; the result of which is that in after years these side branches die off, and leave the plants naked and bare at the bottom, whereas, if at the proper time the leader had been stopped, so as to induce the production of three or four shoots of

equal strength, and these in their turn were again timely shortened to cause them to breakback, the foundation for a well-shaped specimen in the future would be laid. Half the Camellias we meet with are spoilt in the early stages of their existence for want of sufficient use of the knife, traceable to a reluctance to sacrifice any growth that has been made, unmindful of its being rightly placed, or otherwise, with a view to the subsequent shape of the plants. The Camellia is naturally of a bushy habit, and for general purposes is much best grown in this bush form.

If young plants are procured early in the spring, just before they begin to grow, they may at once be placed in a night temperature of 55°, allowing the heat to rise 10° or 15° in the day time, keeping the soil well moistened, and syringing overhead once or twice a-day, as the Camellia requires to be kept, especially during the growing season, moister at the roots as well as in a more humid atmosphere than most hard-wooded plants. Previous to the commencement of growth the branches should be tied out, so as to admit light to the centre of the plants, and to give them the required shape; but in this training the shoots must not be bent down to a horizontal position in the way advised with most hard-wooded subjects, or it will most likely have the effect of stopping the points of the branches from extending further, causing them to break back in a way neither requisite nor desirable with plants that from the first have had their growth properly regulated. In the case of any branch that is stronger than the others, it will be well to tie such down a little lower, which will tend to strengthen the rest, and when growth has fairly commenced any shoots that show a disposition to take an undue lead should be pinched out, which is much better than letting them grow on to the end of the season, and afterwards cutting them back, as it is a waste of strength, as well as a sacrifice of time, in getting the plants up to a useful size.

During the growing season they will need a thin shade, to protect them from the direct influence of the sun; but, nevertheless, they must have plenty of light, and not be stood too close together. To overshading and overcrowding through the growing season may be attributed the unsatisfactory condition that these plants are often met with in. Give a moderate amount of air in the early part of the day, shutting up soon enough to secure, by the help of the sun, a warm, close atmosphere in the evening. When the shoots have ceased to extend further, the flower-buds will form in the points. As soon as these are fairly distinguishable pot such as require it; for although the Camellia is a plant that does not need or will not bear so much root-room as many things, they must not be allowed to get pot-bound. Supposing the plants are in 6 or 8-inch pots, a 2-inch shift will be enough. They will thrive in either loam or peat; the latter induces more luxuriant foliage, with a greater disposition to growth; but good turfy loam is preferable, as it does not so soon get exhausted, and the plants usually flower freer in it. The turf, cut about 2½ inches thick, should be stacked before use sufficiently long, but not more than necessary to allow of the roots of the grass dying, for if these are further decomposed the plants do not grow so freely in it, and the soil is more liable to get into an adhesive state before fully occupied by their roots. It should be broken by hand, into pieces about the size of small Walnuts for young stock, and larger for such as are older; add sand in proportion to the more or less sandy nature of the loam, bearing in mind that it is a plant that should never need shaking out, or any considerable portion of the soil removing, consequently enough sand should be mixed with it to insure continued porosity.

Before moving the plants from the pots they occupy, see that the balls are quite moist. If in good condition the roots will be closely interlaced round the ball, often enveloping the drainage material, which should be removed completely; disentangle a portion of the outside roots, so far as can be done without much breakage—they are very brittle; drain well with clean crocks, covered with some of the turfy matter selected from the soil, so as to effectually prevent the finer portion from getting down amongst them. In potting, ram the new soil to make it quite close and as solid as the ball. If this is not done, when water is given it will pass off through the new material, leaving the old quite dry, in which case a sickly condition of the plants will follow. *T. Baines.*

(*To be continued.*)

A SHADY ROCKERY.

Last year we had a piece of wild uncared-for land underneath the shade of large trees, and which we wanted to convert from a wilderness to a garden, so we made a rockery there. It is neither a "natural" nor a Battersea ornamental one, but a useful and true home for many of our wild wood plants; in fact, we built the house for the inmates' comfort, and not for the beauty of its architecture. We meant it for shade-loving plants and early-blooming ones that come into flower before the tree leafage is developed, and so far our work has been a decided success, judging from the increased strength and luxuriance of the plants therein planted. Of course there are are a few sunny places where are growing those subjects that prefer such a location. This rockery covers a space of 860 square feet, is in mound fashion, traversed by stone-edged narrow walks, from which we can conveniently reach every plant, and has a maximum earth height of 4 feet.

The soil is all odds and ends of rubbish earth—muck, old potting soil, vegetable rot-heap stuff, and, in fact, whatever we could scrape together to make up the heap. The stones are rough and shaggy lumps and slabs, the heaviest of which two men carried on a hand-barrow. They are arranged in pocket-fashion, firmly bedded in the earth, and the joints closely fitted. The pockets are 9 inches to 2 feet 6 inches square, as we prefer clumps to single plants irregularly formed and disposed, and the soil in them is level instead of sloping, thus preventing the escape of rain-water, and to a great extent the miseries of a dry summer.

In addition to the value of my own time, the cost of construction of this rockery was as follows:—Thirty loads of stones at 1 dol., 30 dol.; one team three days carting soil at 3 dol., 9 dol.; two men five days at 1½ dol., 15 dol.; total, 54 dollars.

The following is a list of our native (U.S.) hardy plants now growing in this rockery, and all of them are in the most flourishing condition. We have many others equally suitable, as our Ericaceous gems, but their absence is simply because they have quarters in another and more favoured location; besides, we have also quite a number of Old World plants:—

Cystopteris fragilis
,, bulbifera
Woodsia ilvensis
Adiantum pedatum
Aspidium cristatum var. Clintonianum
Asplenium Trichomanes
,, ebenum
,, thelypteroides
Lycopodium lucidulum
Asarum canadense
,, caudatum var. hirtum
,, arifolium
,, virginicum
Arisæma Dracontium
,, triphyllum
Potentilla canadensis
,, ,, var. simplex
,, tridentata
Viola blanda
,, rostrata
,, canina var. sylvestris
,, Patrinii
,, pubescens
,, cucullata
,, ,, palmata
,, rotundifolia
,, canadensis
Galax aphylla
Commelyna virginica
,, erecta
Jeffersonia diphylla
Trilliums, several species
Dicentra cucullaria
Corydalis aurea
Helonias bullata
Cyperus esculentus
Sanguinaria canadensis
Trautvetteria palmata
Epigæa repens
Smilacina bifolia
Convallaria majalis
Polygonatum giganteum
,, biflorum
Diphylleia cymosa
Caulophyllum thalictroides
Hedysarum boreale
Streptopus roseus
,, amplexifolius
Mitella diphylla
,, Brewerii
Houstonia cœrulea
,, purpurea
,, ,, longifolia
Polemonium reptans
Allium Douglasii
,, tricoccum
Gratiola
Actæa spicata var. rubra
Veronica officinalis
Malvastrum coccineum
Berberis repens
Cedronella cordata
Tiarella cordifolia
Uvularia perfoliata
,, flava
,, grandiflora
,, puberula
Pachysandra procumbens
Clematis ochroleuca
Senecio millefolium
Lithospermum longiflorum
Hepatica acutiloba
,, triloba, six vars.
Claytonia virginica
Clintonia borealis
,, umbellata
Anemone nemorosa
Tradescantia virginica
Tolmiea Menziesii
Oxalis violacea
,, ,, var. alba
Mertensia virginica
Mitchella repens
Synthyris Houghtoniana
Onosmodium Thurberii
Hydrastis canadensis
Chelone Lyoni
Harpelia parviflora

F.

FOREST TREES OF CANADA.

[The following notes are extracted from Mr. Rowan's excellent little book, entitled the *Emigrant and Sportsman in Canada* (Stanford):—

Coniferæ.—White or Prince's Pine (Pinus Strobus). This is the Pine of the lumber markets. It grows everywhere in Canada, but owing to its value the best Pine has been long since cut away in the more accessible portions of the Dominion. Most of the lumber that now finds its way to other countries comes from the heads of those great rivers that flow into the St. Lawrence from the northward, such as the Ottowa and its tributaries. The best of the Pine is squared in the woods, and exported in that shape under the name of "square timber." The smaller trees are merely cut in lengths, and called logs; they are generally manufactured in the sawmills into deals. This tree is the most valuable of Canadian timber. It finds its way into every carpentering establishment in Great Britain, is easily wrought, durable, and free from knots. The best shingles for roofing purposes are made out of split Pine, and the log canoes used by the lumberers are hewn out of Pine trees.

There are two other Pines in the Canadian forest, the Yellow Pine (P. mitis) and the Red Pine (P. resinosa). The latter is the most resinous of the Fir tribe, and is consequently very durable, the resin acting like paint in preserving the timber from decay. Neither of these trees are much lumbered at present, owing to the superior size and excellence of the White Pine. The old roots and knots of the Red Pine, which are of great weight and completely saturated with resin, are called "Pitch Pine;" they burn fiercely, give a brilliant light, and are much used for torches.

The Hemlock (Abies canadensis). This tree grows to a great size, second only to the White Pine among the Coniferæ. Although considered an inferior wood for general purposes, and not known in the lumber markets, it is a valuable tree. In the first place the bark, which is thick and heavy, forms the chief ingredient used by the tanner in preparing hides. It is collected in great quantities by the back settlers, hauled into market when sleighing is good, and sold like firewood by the "cord" measure. The timber, though soft and inferior for general carpentering purposes, is the most durable of all wood when immersed in water; it is therefore used in building wharfs. Hemlock generally grows on undulating land, mixed up with Birch, Beech, Maple, and other hard wood; and the settler looks upon it as an indication of good soil.

There are two species of Spruce in the Canadian forest, the White Spruce (A. alba) and the Black (A. nigra); also a variety of the latter, called by the Indians "skunk Spruce," from its smell. The Spruce is excellent wood, and grows in immense quantities all over Canada. It constitutes the main article of lumber in certain districts out of which the Pine has all been culled. The lumberers raft it down to the sawmills in logs, where it is manufactured into deals, boards, clap-boards for walls of houses, laths, and twenty other things. The Black Spruce grows on rough and rocky places, and is in general a mark of bad or indifferent land; the White Spruce grows mixed up with hard wood and Pine on a better description of land. The bark of the White Spruce can be peeled off in the month of June with the greatest ease, and is used by the back settlers for roofing barns and shanties. The sportsman camping out in the summer knows the value of this bark in wet weather. From the young twigs of the Black Spruce Spruce beer is made—an abominable concoction, said, however, to be wholesome. The roots of this species are tough and supple; they make excellent ties, and are used by the Indians for sewing their bark canoes. Spruce sparks and crackles too much for firewood, but it answers very well in close stoves.

The Tamarac, called also Hachmatac and Juniper (Larix americana). A deciduous tree, almost identical with the English Larch. It grows in clumps in low-lying ground, generally in the vicinity of lakes, swamps, and beaver meadows. It indicates inferior land. A very hard, durable, resinous, and valuable timber; in great demand for ship timbers, knees, and so on. It also makes admirable railway sleepers. When dry it is capital firewood. Pendent from the boughs of this tree and of the Black Spruce hangs in festoons the moss on which the Cariboo feed in winter. It comes next to Cedar for fencing purposes, and the young trees run up straight and free from knots, and make the toughest of poles for canoeing and other purposes.

The Fir (Abies balsamea), called "var" by the settlers, is a pretty tree, but the wood is not much valued. In fact Canada is so rich in valuable woods, and there are so many kinds to choose from, that Canadians can afford to be particular and only use the best; however, it is used for making tubs, butter dishes, milk pails, and so on; it is a soft, easily-worked wood, and tasteless. The Fir, as we have seen before, grows everywhere, sometimes in clumps by itself, more often mixed with Spruce and hard wood. It grows very rapidly, but does not attain a

great age. Fir trees left in isolated positions by themselves generally blow down or decay. The smell of this tree is delicious; it scents the forest. The tender boughs form the most elastic, fragrant, and sleep-provoking of couches for the camper-out; and the balsam, which is found in large bubbles under the bark, is the best and quickest cure that I know of for cuts, scratches, and bruises, and it possesses the great advantage of being always at hand when required in the woods. Of the sixty or seventy varieties of trees in the Canadian forest, there is not one without its use; it may be said of them, in the words of the Psalmist, "In wisdom hast Thou made them all."

The Cedar or Arbor-vitæ (Thuja occidentalis) is the most remarkable wood in the Canadian forest, the most useful one to the settler, and, next to the White Birch, the most valuable to the Indian and the backwoodsman. It grows generally in wet places, and on the banks of lakes and rivers, and is by no means a sign of bad land. There are hundreds of square miles of Cedar forests in Lower Canada and New Brunswick, but, strange to say, it does not grow in Nova Scotia. This is the lightest and the most durable of Canadian woods. A bridge made of it lasts for fifty years without repairs, and a fence for seventy or eighty. Cedar, exposed to the air and clear of the ground, as fence rails, actually wears out before it rots. It is largely used for making shingles, also for telegraph-posts, gate-posts, sills of houses, &c. I think if its wonderful durability were better koown in England it would he largely imported. A good woodman can split a Cedar log into boards of a uniform size, using no tool but his axe. It is very useful in the backwoods for roofing sheds, barns, and camps. The bark peels off in long strips, and when green is as tough as leather, and makes excellent ropes. The Cedar is a very pretty tree, and grows to a large size. I have seen it in the Bay of Chaleur from 3 to 4 feet in diameter at the butt. The scent of the timber is delicious.

Betulaceæ.—Black Birch (Betula lenta) grows in dry undulating land, and is a very common forest tree in Lower Canada and the maritime provinces. It indicates good soil, and is generally found in company with the Yellow Birch, with the Maple, the Beech, the Hemlock, or the Pine. It is valuable, but, owing to its great weight, hard to bring to market. Birch timber will not float down the streams when green, and consequently has to be cut a year before it is rafted. The wood is dark in colour, pretty in the grain, and much used for furniture. It is used to make keels for wooden ships, and for other purposes in shipbuilding and machinery, where strength, hardness, and durability are required. A great deal of Birch timber is exported to Europe; it makes capital fuel.

Yellow Birch (B. excelsa). This is like the Black Birch, both in foliage and quality of timber, but smaller. It is abundant in Canada, and is chiefly used for firewood. When bled in the spring the sap makes good vinegar.

White Birch (B. alba). The general character of a North American forest is dark and sombre, but wherever this tree occurs it helps to light it up. Its tall, graceful stem of pure white forms a charming contrast to the Spruce and other trees it grows amongst. It is very hardy, and is found the farthest north of the deciduous trees. The wood is inferior, and not much used even for fuel; but the bark is a treasure to the Indian and the backwoodsman. The former makes his canoe of Birch bark, his wigwam, his troughs for holding water and collecting the sap of the Sugar Maple, his torches for spearing fish, and the numerous little ornamental wares he brings into market. Formerly the squaws cooked their food in bark cauldrons, in which water was brought to the boiling point by putting in a series of red-hot stones. The back settler uses Birch bark for roofing purposes, and it is highly prized in house-building; a layer of bark under the clap-boards makes a very warm and comfortable house. The Indian wigwams, made entirely of Birch bark, are perfectly tight in all weathers, and very warm. But perhaps it is in kindling fires and making torches that Birch bark is most valuable. Without bark it is very hard to kindle a fire in the woods in wet weather; but the bark is always dry and always inflammable. Often and often the backwoodsman would have to spend the night in the woods were it not for the Birch bark torch, which serves to light him home to his camp. Out of it he makes his plates and his drinking cups.

(*To be continued.*)

Natural History.

The Cuckoo.—It may be interesting to some of your correspondents to know that here, in a pied wagtail's nest, was reared a fine young cuckoo. At the end of the fruit-room the wall is clothed with Ivy, in which a nest of young thrushes was reared, and after the thrushes had flown a pair of wagtails took possession of the old thrushes' nest, and built their own nest inside the larger nest, and in this nest was the young cuckoo hatched. As soon as it was nicely fledged I removed it into a box, and placed a piece of wire netting over the front to make it answer the purpose of a cage; the meshes of the wire admitted the wagtails into the cage, which they kept quite clean. Here they continued to feed the young cuckoo for more than a fortnight, taking scarcely any notice of men working within a few yards of the cage. Whilst in the cage it had many admirers, and would peck any one's fingers put to it. Towards the middle of the month of August it seemed to be impatient of confinement, and so on the 18th we opened the cage, and it flew to some high Elm trees, and here the old wagtails soon found it, and they continued to feed it till the 29th, which was the last day I saw it. For the first day or so after it was liberated it seemed to be rather shy, but after that time it would allow of a very near approach. Your correspondent (p. 270) seems to say that cuckoos are known everywhere in England at least to be very fond of sucking other birds' eggs. I myself have very great doubts on the subject. I have never been able to ascertain any one instance of any one catching the birds in the act. After long observation I come to the conclusion that insects form their chief food, as I have seen both old and young ones busily engaged catching them. That the young cuckoos are always reared in soft-billed birds' nests goes, I think, a long way to confirm that conviction. Is not the cuckoo often blamed for what jays, squirrels, snakes, &c., do? I this season knew a hedge-sparrow's nest which contained, in addition to three of its own eggs, a cuckoo's egg, which I watched with great interest, and I was much vexed to find soon after they were hatched that the jays had destroyed them. The young cuckoo perished with the rest. The most mysterious part is, what becomes of the young birds that are hatched with the cuckoo? We read of the young cuckoo being provided with a hollow in its back, in which it gets the other occupants of the nest, and then turns them over the side of the nest. Whether it is so or not I cannot say positively; but this much I do know—you may look in vain for the young birds hatched with or about the same time as the cuckoo, either inside or outside the nest. In conclusion, I may add that I have reasons for believing that the old cuckoo visits the nest in which she has deposited her egg. *W. E. T., Stanmore, N.W.*

Foreign Correspondence.

Salt Lake City, Utah: *August* 7.—As for me, I never worked harder in my life, and the incessant travelling, collecting and packing adds enormously to the drudgery. I am very pleased to have seen what I have of the trees, and especially of the Pines, of Colorado. The association of so many species is a feature quite new to me, and such as exists nowhere else. To find eight or ten Coniferæ on one mountain is a marvellous feature in vegetation. Thus, in Colorado, we have, between 5000 feet and 10,000 feet, Pinus edulis, ponderosa, aristata and flexilis, Abies Douglasii, Menziesii and Engelmanni (varieties of one), Picea concolor and Juniperus virginiana, occidentalis and communis, all abundant. Of these, except two of the Junipers, none are found east of the Rocky Mountains. Of other plants I have collected as diligently and largely as I can, and have some 500 species from all elevations of 4000 feet up to 14,000 feet. Hence we are going into the mountains east of us (the Wahsatch, east of Salt Lake), which will give us a glimpse of West Colorado vegetation, and perhaps we shall find Pinus monophylla, which replaces edulis and extends west to Nevada, getting to the Taxodium Grove by the rear by Carson and Silver City (off the line of rail), and so by Calaveras and Monterey to San Francisco. Thence I hope to visit the Red-wood (Taxodium, &c.) district to the north and Monterey to the south, and then home by the end of September.

I am pulling through pretty well, though completely covered with bruises chiefly from tearing on mule or horseback through the Aspen brakes on the mountains and slipping on stones. I got up to 14,300 feet on Gray's Peak without difficulty on my legs, but I have not the wind and muscle I had, and, indeed, the mountain climbing is pretty severe work. When near the top of Gray's Peak in a severe hailstorm, the electric fluid fizzed out of the side of my head like the fizz out of a half-drawn soda-water bottle, followed by a loud clap of thunder. Soon after I had a shock in my arm, followed by another clap. The fluid also fizzed from the horses' ears, and one of my companions had so severe a shock that he did not recover for two hours. *H.*

Botanic Gardens, Cambridge, Mass., U.S.A.—*The Colorado Beetle.*—The likes and dislikes of this voracious pest, as proved and noted in the gardens here, may be of interest to some of your readers. So far as I have observed the beetles confine their attacks to Solanaceous plants only, and they seem to have a decided partiality for the genus Solanum. S. Xantii, a somewhat shrubby and ornamental species, from Southern California, is their most appetising food, for notwithstanding rigid vigilance they keep these plants almost denuded. Then come in equal order the Potato—S. tuberosum and S. capense. Next is Atropa Belladonna, and in almost equal degree Solanum Dulcamara, but neither of these last two are much infested. The Atropa, however, suffered considerably for a month after being planted out, but now it is growing so luxuriantly as to appear less tasteful to the beetles. I find a few of the insects on the Tomato plants, but not enough to injure them, and I believe were the Tomato plants not in proximity to other infested Solanaceæ they might have escaped untouched, and I am confirmed in this belief by having a few Tomato plants in another part of the garden, and on which I have been unable to find one beetle. I may remark, however, that last year, when these insects were fewer, and in the absence of S. Xantii and tuberosum, they preyed heavily and exclusively on S. capense. Nor is their distribution this year owing to the presence of the Potato, as there is not a Potato plant within 400 yards of the other plants referred to.

Several species of Solanum, such as robustum, atropurpureum, nigrum, aculeatissimum, Pseudo-Capsicum, Torreyii, jasminoides, and others, growing alongside of the infested plants are untouched, as are also the following genera:—Physalis, Nicandra, Capsicum, Datura, Nolana, Cestrum, Lycium, Nierembergia, Nicotiana, &c. *F.*

Notices of Books.

Ferns: British and Foreign. By John Smith, A.L.S. New and Enlarged Edition. London: Hardwicke & Bogue, 192, Piccadilly.

This is a new edition of a useful reference book, giving the names, according to Mr. Smith's views, of the Ferns cultivated in gardens. There is a history of the introduction of exotic Ferns, and remarks on organography and classification; but the principal part of the 450 pages is occupied by the list of garden Ferns, which is accompanied by generic characters and woodcut illustrations of each genus. Some thirty-three pages of appendix devoted to Ferns introduced since the work was first published form the difference between this edition and the last.

Practical Dairy Farming. By G. Seaward Whitcombe. "*The Bazaar*" Office, 32, Wellington Street, Strand, London, W.C.

This is a handybook, of small cost, by a writer who has been among dairy cattle all his life, at all seasons early and late, and practically engaged in the details of their management. He treats the subject of dairy farming in the following order:—First, the farm; secondly, the management of dairy cattle; thirdly, the rearing of young stock; fourthly, the manner of letting dairies, as practised in Somersetshire and other southern counties; fifthly, the making of butter and cheese; sixthly, the breeding and feeding of pigs, which are the necessary scavengers of dairy farms.

A dairy farm, the author says, may be entirely in grass, or it may be arable land managed on "the soiling system." No practical man would plough up

rich pastures, but Mr. Witcombe very properly points out that a large proportion of the old cow pastures are poor and would produce more under the plough. We entirely agree with him that, so far as the economy of land is concerned, all poor pasture should be converted into arable; there is, however, the economy of labour as well as land to be considered, and that is a serious consideration just now. We should prefer ploughing up a portion of the grass land, and enriching the remainder; and, in point of fact, the most profitable dairy farms are of this class. During the summer, Tares, Trifolium, Clover, and Cabbages, are eaten upon the grass land, very much to its advantage, and the arable is enriched with artificial and "town" manures. The other crops recommended for soiling are Lucern, Sainfoin, Rye, and Comfrey. The crops for winter use are Parsnips, Swedes, Carrots, and Mangels. We think that in a future edition of the work a chapter should be added on the cultivation of these crops, and on the kind of soil they each require. On deep, rich land, the Parsnip is the mainstay of the dairy farmer; the Carrot has its special soil, and the Mangel—a less nutritious crop—is less particular as to soil, and only asks for as much manure as possible. The Cabbage, too, must be heavily manured. In fact, the quantity of manure required to produce heavy crops for "soiling" must alone render the mixed system preferable, except in the neighbourhood of towns, whence an *ad libitum* supply of manure can be obtained. Cows yield the least amount of manure in proportion to the food they consume, and light forage crops are the least profitable of any, their cost per ton being in proportion to their yield per acre; hence it follows that all the land under the soiling system should be very highly farmed, and how is this to be accomplished when all the land is in arable, unless manure can be imported, or made upon the spot by means of fatting stock?

The chapters on buildings are illustrated, and the plans appear to us to be excellent, and the dimensions of the sheds and stalls arranged by an experienced hand. There is good advice as to the breeds of cows which are best adapted for the dairy. The chapters on the management of cows and the rearing of young stock are altogether trustworthy. A page and a half is given to the subject of "utensils," and three and a half pages to that of "butter and cheese making." We have seen more space occupied and less information given, still we think that, considering the nature of the subject, the pig, with his dozen pages, seems to have been exalted beyond his legitimate deserts. We have, however, 90 pages in all, closely printed, and full of valuable information.

PUBLICATIONS RECEIVED.—Science Gossip.—Grevillea.—The Florist and Pomologist—The Gardener.—Descriptive Catalogue of the Timbers and Economic Woods of Victoria.—Descriptiones Plantarum Novarum, &c., auctore E. Regel.—Teratological Extracts, P. Magnus.—Catalogus Plantarum Serbiæ, Bosniæ, Hercegovinæ, Montis Scodri (Montenegro) et Albaniæ.—Claudiopoli (Klausenburg).—Le Moniteur Horticole Belge.—Hamburger Garten Zeitung.—Relazione sui Cotoni Coltivati nel orto Botanico di Palermo, per Agostino Todaro, with coloured plate of Gossypium microcarpum.—Floral Magazine.—Botanical Magazine.—Journal de la Société d'Horticulture de France.—Revue de l'Horticulture Belge.—Monatsschrift des Vereines zur beförderung des Gartenbaues.—Synopsis Ruborum Germaniæ, von Dr. W. O. Focke (Williams & Norgate)—A Critical Study of German Brambles. The author admits about 130 species and sub-species. In accordance with his principles there is surely no reason why this should not be multiplied by 100 or 1000. Certainly he will not find two plants exactly alike.—State Forestry: its climatic and financial aspect. By Captain Campbell Walker.—Mr. Darwin on the Fertilisation of Flowers, by Thomas Meehan.—The Clematis as a Garden Flower, by T. Moore and G. Jackman, new edition.

The Villa Garden.

LAYERING CARNATIONS AND PICOTEES.—This work may be done up to the middle of September, but a nurseryman who grows a large quantity of plants in pots sets about it early in the season, in order to have plants for sale as soon in the autumn as possible. We have been growing a collection of choice Clove Carnations, and very useful they have proved as border flowers for cutting from; and the supply of blooms is by no means exhausted yet. But we are layering some of the best grass at favourable opportunities. The layers of vigorous growing Cloves will soon strike root; but it is very different with delicate-growing Carnations and Picotees, some of which are very slow to take root.

When we proceed to layer it is not uncommon to notice that the growth of some of the plants has become so erect, and thrust up from the ground, that there is danger of breaking off the growths when they are bent down for layering. The best thing to do is to build up a bed of soil around the plant, using some pieces of brick to form the basin of the bed, till it is sufficiently high to enable the shoots to be layered. The act of doing this will probably kill the plant, but the layers will be saved.

Really there is very little difficulty about layering Carnations, Picotees, and Cloves. A sharp knife is necessary, and if the shoot (at the point at which it is to be layered) be cut through about half-way, a third or half an inch below a joint, and then be cut upwards a little way towards the joint, and then pegged down in the fine soil, it will scarcely fail to root. What unskilful layerers have to do, is to avoid snapping off the layer when it is brought down to the soil and pegged into position. A little practice, however, is of great advantage; and the art of doing it nicely and cleverly is soon acquired.

But there are often some shoots that cannot be layered, and as they encumber the plants the question is what is best to do with them. Last October we found ourselves with a number of these shoots, and being desirous of making plants of them, if there was any possibility of doing so, they were planted out in a bed with a quantity of rough red sand placed about the base of each, some two inches in the soil. During the winter these shoots began to make roots, and by the early part of the spring they put forth a vigorous growth, and eventually made good plants, and bloomed profusely during the summer. There was scarcely a failure. The shoots were from a strong growing variety, it is true, but many may be rooted in this way.

Any rooted layers of choice Carnations and Picotees should be potted off singly into large 60-pots, or a pair of plants in a 48-pot, as soon as they are ready for removal. A good yellow loam, some loam and leaf-mould makes a suitable compost, and the plants should be potted hard. Nurserymen who winter Carnations and Picotees in pots, pot very hard—the plants do best when so potted—and winter them in a cold frame on a dry bottom. If the plants stand on a wet bottom during the winter, the foliage is apt to be affected injuriously.

LARGE-FLOWERED PELARGONIUMS.—Owing probably to the moist, cool weather that has so long prevailed the duration of the blooming time has been unusually long, and such free-blooming varieties as Triomphe de St. Maude, Rob Roy, Heroine, Duchess of Cambridge, and Empress are still flowering, and appear likely to bloom for some time to come. A month ago a few of the earliest plants were cut down, leaving only a framework of the main branches cut back hard. They were then put by on a shelf of the greenhouse, and kept dry for a time. They have now commenced to break into growth, and in a few days they will be ready for repotting. The plants should be growing before they are shifted into other pots. When this is done the plants should be turned out of pots, the soil shaken from the roots, and the roots trimmed, cutting away the long stout roots, and then repotted in smaller pots than those in which they have been previously growing. This is the usual practice of all cultivators. Then another shift into the blooming pots will be given at the end of October, and the plants will be kept in a light, airy place near the glass all the winter.

The branches that are cut off at cutting-down time make excellent cuttings. We put them singly or in couples in small 60-pots, or small Tom's as they are termed, using a light free sandy soil. The pots are then stood by themselves on a shelf of the greenhouse, and kept sprinkled till they begin to root. Then a little water can be given, to keep the soil nicely moist about the young roots. We winter these young rooted plants in the cutting pots without a shift, and then by potting off the forwardest in early spring some nice free-branching, blooming plants can be had to flower during the summer. In early spring the leading shoot is pinched back, so as to induce the young plants to break into a bushy growth. When once the growing plants are shifted into 48-pots they make rapid headway, and excellent cut-back specimens for the following year.

The fancy varieties, or the ladies' Pelargoniums as they used to be termed, are very pretty indeed, but being of a more delicate nature than the more robust growing large-flowering varieties cannot be so easily managed. The fact is, artificial heat is necessary at certain seasons of the year to keep them in robust health. The Villa gardener who has no heating apparatus had better let them alone, and confine himself to the large-flowering sorts. A selection of free-blooming varieties will yield an abundance of fine and continuous bloom.

PLANT PORTRAITS.

MASDEVALLIA TROGLODYTES, Ed. Morr., sp. n., *Belg. Horticole*, 1877, t. 5.—A singular small-flowered species, with a cup-shaped perianth, whitish on the outside, reddish within, and prolonged into three long filiform spreading tails. The species belongs to the same group as M. nycterinia and M. chimæra. The column and the lip have a resemblance to a grotesque figure concealed in the cavity of the perianth, hence the name troglodyte. The plant flowered in the collection of M. Oscar Lamarche at Liège in December, 1876, and subsequently. It is a native of New Granada.

MESEMBRYANTHEMUM COOPERI, Hook. fil., *Bot. Mag.*, t. 6312.—A very handsome and free-growing species, with terete fleshy pointed glaucous leaves studded with pimples, and bearing a handsome purple flower 2 inches in diameter. It was collected in South Africa by Cooper, and flowers at Kew in June.

NOTYLIA ALBIDA, Klotzsch, *Bot. Mag.*, t. 6311.—This is not likely to be a great favourite with Orchid growers, but is, nevertheless, not devoid of elegance. The habit is that of an Eria or a small Angræcum, the small greenish yellow flowers being borne in dense pendulous racemes 6 inches in length. It was discovered in Central America by Warscewicz, and sent by him to Chiswick, since which time it has been reimported by Messrs. Veitch, from whose specimen the present figure was taken in April, 1872.

ODONTOGLOSSUM ALEXANDRÆ VAR. ROSEUM, *Floral Mag.*, t. 269.—A very handsome variety, with the sepals and petals flushed with rosy lilac. The plant figured is that shown not long since by Sir H. W. Peek at the Royal Horticultural Society.

ODONTOGLOSSUM KEGELJANI, Ed. Morr., sp. nov., *Belg. Hortic.*, 1877, t. 10.—A species in the way of O. triumphans, with flowers 2 inches in diameter, with lanceolate yellow segments blotched with brown. The lip is oblong, abruptly acuminate, whitish, with a yellowish brown edge. The species is dedicated to M. Kegeljan, of Namur.

ONCIDIUM MASSANGEI, Ed. Morr., sp. nov., *Belg. Horticole*, 1877, t. 6.—One of the paniculate yellow-flowered group; the flowers of medium size, the sepals and petals marked with brown blotches, the lip panduriform. The column is destitute of wings. It is allied to O. fasciferum; but, according to M. Morren, presents some differences from that species.

ORYTHIA UNIFLORA, Don, *Gartenflora*, t. 906.—The old yellow-flowered Ornithogalum or Gagea uniflora.

PEACH, GOLDEN RATHRIPE, *Bulletin d'Arboriculture*, June, 1877.—A Peach which our Belgian friends, mis-reading an ill-written label, at first took for Golden Catherine! The fruit is large, melting, highly flavoured, the earliest of the yellow Peaches, ripe in the middle of August. By some it is supposed to be the same as Yellow Admirable, but it ripens earlier.

PEAR, BELLE D'ECULLY, *Bulletin d'Arboriculture*, July, 1877.—A coloured figure of an early Pear, ripening in August and September. It is of large size, yellowish in colour, regular in form, with a shallow eye, and a short stout stalk. The flesh is white, melting, sugary, and with a vinous flavour. Does well on the Pear stock or on the Quince.

PENTSTEMON GRANDIFLORUS, Nutt., *Gartenflora*, t. 900.—A tall-growing, pink-flowered species, to which the figure gives but scanty justice.

TRICHOCENTRUM TIGRINUM, *Ill. Hort.*, 282.—An Orchid, with the appearance of a Miltonia described in our columns in 1869, p. 892. The sepals and petals are strap-shaped, green barred with purple, lanceolate-acute, the lip deltoid, two-lobed, white, with a purplish spot at the base. It is a native of Ecuador.

BRITISH GARDENERS.

William J. Cross.

In the pretty little village of Whitechurch, on the banks of the Thames near Reading, the subject of our present memoir was born, September 10, 1832. His father, a poor but honest tradesman, strove hard to bring up a large family respectably, and to give them all the best education the neighbourhood afforded. "My own, however," writes Mr. Cross, "was poor indeed; for in the National School, to which I was sent, there was no grammar, geography, history—in short, nothing taught but the common rules of arithmetic, reading and writing. Our only two books were the New Testament and the five books of Moses, excepting a "Dialogue" between William Walker and Thomas Brown on the subject of getting a boy christened—the one asking the favour of the other to stand godfather. A better school was looked out for me, but one morning, when on my way to read this silly story in my fourteenth year, I met a man looking for boys to hold up little forest-trees for the planters. I went, and, having spent a season at that work, my master and father made arrangements for me to go into the gardens of S. W. Gardiner, Esq., Coomb Lodge, in the same parish. A premium was paid, and my wages were to start at 2*s.* per week. The gardener, Mr. J. Piggott, was what is known as a good old-fashioned gardener, and the gardens, although small, were under his management productive. Good Pines, Melons, Cucumbers, excellent Grapes, and plenty of forced and common vegetables, formed the usual supply to the house. He used hot dung properly prepared with good effect, and, I believe, sent away all his young men ignorant of thrips and mealy-bug. My scanty income was in due time raised to 4*s.* per week, and, having the apprentice's privilege—that of killing the rats of the place at 1*d.* each—I began to lay out plans for myself. My fancy for gardening soon grew into an intense love for it, and my duties by night and day gave me the greatest pleasure. A sharp frosty night compelled one or the other to remain on duty nearly or quite all night, but my lodging a mile from the gardens made this duty hard and wearying, so that it can hardly be wondered at, that on one cold November night I found myself floundering about in an open tank in the centre of the gardens, containing several feet deep of water, having walked in asleep on my way to the Pine-house fire.

"My first spark of garden literature, in the shape of McIntosh's *Practical Gardener*, I bought with my rat-tail pence. A description in the *Floricultural Cabinet* of some wonderful Fuchsia or other plant, and an occasional peep into the *Gardeners' Chronicle*, increased my strong desire to progress. I owe a deep debt of gratitude to Mrs. Piggott, a very ladylike person, and sister to Mr. T. Webster the artist; her many kindnesses and advice to me at a time when my troubles ran high, will ever be remembered and appreciated by me.

"Having spent one season weeding and several in the stokehole and houses, and in serving the kitchen and kitchen gardening, I was considered a fit subject for a London nursery. Accordingly in the spring of 1851 I was placed in the Pine-apple Nursery under that best of all propagators, the good old Mr. Fancourt—a man hardly to be equalled in the art of increasing hard-wooded plants. One day I asked him to what did he consider his great success mostly due? He replied, 'close observation.' 'Observation,' he continued, 'will enable a man to propagate and grow any plant living.' Although his work lay principally under bell-glasses, yet for the principles of plant-growing there is no man to whom I owe so much as to him. My wages at that time being but 8*s.* per week I could not do much in what I so much desired—self-improvement. My handwriting being considered suitable for seed-packets I was ordered, with four or five others, to write each evening till 8 o'clock, but no extra pay was allowed for it. Being already a member of a Mechanics' Institute, I begged off on certain evenings weekly to attend it, and this was readily granted. From one department to another I went with a small increase of wages, till I was made foreman of the soft-wooded propagating department, including choice hardy shrubs and Tea Roses, with the assistance of one little boy, and pay 15*s.* per week. My staff soon increased to six or eight men. This position enabled me to satisfy myself as to the value of large pots for soft-wooded specimen plants applied in the early stages of growth—what is known as the one-shift system—which I am convinced is the true principle for the production of handsome plants. My evenings now were my own, and were devoted to education—practical geometry and music forming part. I attended all the lectures possible on a variety of subjects. Before leaving London I must have heard some hundreds by clever men, but, I regret to say, not one did I hear, or hear of, on botany or any branch of it. My lessons on geometry were taken in a class; then at my lodgings, when all the inmates of the house had gone to bed, I worked out the problems, and copied them, with definitions, into a large book, and carefully lettered and described all through the course, in the hope my book would be a useful one some day. This work generally brought me into the small hours of the morning. I may mention that the tens of thousands of plants I had to produce were obtained principally by means of well-prepared hot-beds, which for speed, and for securing health and strength, I think

cannot be equalled by any other kind of heat. In search of further information I decided to leave London for the country, and was engaged to serve Mr. Scott at Leigh Park, Havant, Hants, in the houses, leaving one guinea a-week, with the promise of a rapid advance, to accept 14*s.* This engagement did not turn out a happy one, for in a month or two I was discharged at a moment's notice—to leave the place the same night—for stopping a few Calceolarias, some of which were being stopped daily as they grew long enough. This sudden change drove me to lodge at a dirty public-house till it could be settled what my next step was to be. But for the kindness of Mr. Arthur Henderson my gardening career might have been sadly interrupted, and perhaps, as is the case with many young men, cut short. I think head gardeners have a duty to perform, and a responsibility in the management of young men, which should be seriously felt. I do not believe in the degeneracy of the rising generation of gardeners, but I think there is evidence enough to prove that even better results will be obtained by them when the present head gardeners have passed away. Suppose only one young man in ten is promising: is he not sufficient to carry away one's best practice, and add that to the practice of the other good men? What are the best head gardeners of the present day but the finished foremen of a few years back, who needed all the assistance and encouragement their masters could give them? Every one of such will remember with pleasure the man who gave him valuable instruction and encouragement as contrasted with those who practised a tyrannical authority discharging men by the dozen on the simplest fault, or with no fault at all, regardless of consequences.

"It was soon settled for me to go to Kinmel Park, North Wales, as foreman to the late Mr. Mountford, gr. to H. R. Hughes, Esq., where I remained two years. Soon after arriving there I found, to my great sorrow, my book of practical geometry was missing, never to be recovered. I hoped a letter to my last place would recover it, but it did not. At this place I grew a dozen tree Mignonettes 4 feet 6 inches high, with heads as much through; the leaves had almost the substance of Cabbage leaves all up the stem. Some plants were very graceful, and bore flower-spikes 13 inches in length. I had some little difficulty to convince Mr. Mountford that they were from an ordinary packet of seed. Mr. Barron had some men at Kinmel Park lifting large trees, and his simple method of lifting a heavy ball with the tree perfectly upright was I thought worth remembering.

"During my stay here I began to form my little library, and learnt the art of entertaining myself in the long winter evenings. My duties at other seasons were hard, as often, while the Vines required so much attention, we worked from 4 in the morning till 9 at night. In fact the work went with but one change—from work to sleep, and from sleep to work. In the spring of 1858 I left Kinmel for London, to seek a situation as head gardener, and the following summer was sent by Mr. Arthur Henderson to manage a small garden for Mr. Nicholl, Cowley Grove, near Uxbridge, Middlesex. This gentleman was an ardent lover of his garden, and I spent two very pleasant years with him. While there I wished to try an experiment with some plants of free growth, to test the principle of raising the temperature about mid-day to the highest degree possible by sun-heat. Accordingly I selected some young Fuchsias struck the previous autumn, and by this time in 6-inch pots. I shifted them into 16 or 18-inch pots, using rough rich soil and free drainage, and placed them on a bed of warm tan some time in March. Ventilation was given as usual in the morning when the temperature rose high enough, but at about half-past 12 o'clock I shut all up as tight as possible, and syringed away pot after pot of warm water all over plants, pots, glass, walls, and all surfaces till the house in the full blaze of the sun rose to 120° or more, and was charged with all the vapour possible. I locked it up to make sure no one could open the door by any chance. At about 6 o'clock I gave an inch of top air to every sash, and during the evening increased it so that the temperature would stand through the night at about 60°. This treatment was followed up for two or three months, when the plants were taken out for conservatory decoration. Their growth was remarkable for thickness of wood and leaves. The leafstalks on the main stem were much shortened by the wood burying them in; they broke at every joint, these being extremely short, and branched again and again till without stopping a shoot they became a thick pyramid, and during the summer and autumn flowered abundantly at every point. When carried out of the conservatory to let in Chrysanthemums they measured from 6 to 14 feet high according to habit. I was much pleased with the result.

"In the year 1860 I went again to Messrs. A. Henderson & Co.'s nursery to wait a better situation, and in the autumn of the same year was engaged as head gardener to A. J. R. Stewart, Esq., Ards, Co. Donegal, Ireland. Here I had a good staff of excellent men and a good garden, and was much pleased with the wildness and natural beauty of the place. Five or six vineries were still holding their crops, but not one bunch of Grapes was fit for table. The roots of the Vines ran outside. The next season, having all ready for a good start, I loaded the borders with 18 or 20 inches of stable dung, which was well attended during the season, and the inside properly

cared for as to ventilation, &c. The result was five houses of good black Grapes and one of Muscats. The next season the bunches came much larger, without disturbing a root. This garden was remarkable for a very fine collection of Pears planted by Mr. McLachlan, a good gardener, once at Ards. The climate of the North of Ireland seems most suitable to a clean healthy growth and large well-finished fruit.

"In 1862 I left Ards for London once more, and was destined the same autumn to come to Melchet, being engaged by the late Lord and present Louisa Lady Ashburton. Besides the management of the garden much more important duties fell to me about the new mansion, which was begun the following spring by H. Clutton, Esq., architect. Under him I carried out extensive ground-works during several years, such as the terraces, carriage road, &c. Having a love for trees, and a dislike to destroy any, Lady Louisa ordered me to transplant. Now the recollection of Mr. Barron and his excellent plan became of use to me. I was allowed to purchase one of his machines, and transplanted many trees weighing from 1 to 6 tons without a single death; they are all, in fact, at this time more vigorous than ever. I found some little difficulty in removing smaller trees and shrubs of from 10 to 15 cwt.; and consequently for this purpose I had a truck made which when attached to the ball, the young tree is lifted by the horse pulling down the shaft, causing the tree to swing up on to the bed of the truck in a perpendicular position. When drawn to its destination, the operation of lifting is reversed with much ease and speed, the tree being readily planted without the slightest risk. About this time the valuable and interesting collection of plants was began to be formed, and many soon grew into size. Among the plants I have raised may be mentioned Actiniopteris radiata from spores, for which the Royal Horticultural Society awarded me the Silver Flora Medal; hybrid Cypripedium Ashburtonæ and Crossianum, also Harrisianum, but in this last Mr. Dominy was before me. [Good Grape and other fruit growing was not lost sight of.

"In 1869 I left Melchet and was engaged as gardener to the Rev. S. Phillpotts, Porthgwidden, Cornwall, a gentleman possessing much horticultural knowledge, and a profound lover of his garden, in which there is a great deal of glass, a nice collection of plants, and good fruits. Here I applied my usual remedy to exhausted Vines, namely, a heavy coat of stable dung and due attention to the inside of the house, with excellent effect. On the walls are two Pear trees remarkable for their large size—Glou Morçeau and Beurré Rance. The estate is exceedingly pretty, and situated on the banks of Falmouth harbour. I remained at this place very comfortably for two years, when arrangements were made for me to return to Melchet to my former post. Here I found most of the garden buildings swept away and new ones erected, besides a new kitchen garden formed. During my absence the big Lily and Phalænopsis had been awarded each the Lindley Medal when exhibited at South Kensington.

"Through the kindness of lady Louisa I have exhibited plants and fruits successfully. The last time I exhibited plants I won at Southampton the cup I prize more than all I ever was awarded, inasmuch as we carried off the laurels, beating a large collection brought from Leigh Park, the only place (I must own it) I ever owed a grudge to."

PLANT GOSSIP.

ON a lawn near Stanmore, Galium saxatile has gradually ousted the grass. It is said to be somewhat less easily mown by the machine than grass, but it forms, nevertheless, a nice elastic turf.

—— An inspection of the Rev. F. D. Horner's fine collection of Auriculas, at Kirkby Malzeard, shows them to be in fine condition, and as usual full of promise. While information is reaching us from other quarters that the Auriculas are getting usually active at this season of the year, the Kirkby flowers have reached that period of pause which comes between the summer and the autumnal growth. It is no doubt very pleasant to cultivators to have lively plants in early autumn, but it almost always means mischief, it results in a premature autumn bloom. The Auriculas at Kirkby are quite as large as they ought to be, and they are particularly quiet; much of their work has to be done. The autumn growth should commence in September, and continue to the first week in November. It may be perhaps because Kirkby Malzeard lies in one of the latest districts of England, but as a general rule the plants do not begin to make their autumn growth till September. They are now in the raised frames under the cool north Ivy-clad wall in the vicarage garden, and there they will remain till they are housed for the winter at the end of November. In wet weather the lights are kept over the plants, but air is freely given on fine days, of which but very few have been experienced of late in the North Riding of Yorkshire; the lights are pushed back, and air freely given. The soil about the plants is kept fairly moist and no more, and yet the pots are thoroughly full of vigorous roots. Such fine and scarce varieties as Alderman Wisbey, Booth's Freedom, and Taylor's Glory, are seen to have their leaves much mottled with yellow. This is not a sign of health, but the natural character of the leaves at this season of the year. The leaves of George Lightbody, a fine grey-edge, become slightly streaked with yellow in autumn. The seedling house is now a most interesting sight. A conspicuous feature is a line of some fifteen or eighteen selected seedlings of high-class quality, that are to be subjected to another trial in the coming spring. There are also some 2000 or more seedlings in all stages of growth—from the strongest, some of which are throwing up autumn trusses, to the very youngest, from seed sown in August last. Though the seed is saved only from the very finest varieties crossed with others of equal value, a great many inferior flowers are certain to result. Only a very small proportion indeed of cracks can be expected to come out of 1000 seedlings, and it often happens that flowers of otherwise fine qualities have the fatal defect of a pin eye; but these make valuable parents in many instances.

—— Mr. W. Culverwell, of Thorpe Perrow Gardens, Bedale, has forwarded some flowers of a seedling white Clove Carnation, named Susan Askey. The flowers are large, full, pure in colour, and richly fragrant. It has a good habit of growth, blooms freely, and it is without the fault that spoils many otherwise good flowers—it never bursts its pods. It is one of those varieties that deserves to be grown for its flowers; which last for some time without losing much of their exquisite fragrance.

—— Crinum Moorei is beautifully in flower in the cool end of the T range at Kew. Without doubt it is the finest species for greenhouse decoration. The flowers are large, of fine substance and form, ranging in colour from nearly pure white to deep pink. An important feature is the facility of its cultivation, requiring only to be potted at long intervals. It is nearly if not quite hardy, a specimen having remained fully exposed all last winter, and is now making strong growth.

—— Which is the more elegant, Tacsonia Van Volxemii or its hybrid offspring, T. exoniensis? A matter of individual taste this, no doubt, but when we saw the two together at Hardwicke lately, we were disposed to yield the palm to T. Van Volxemii. Perhaps the hybrid is the more free-flowering of the two, but, in any case, no one would do wrong to choose either of them, and those who have room enough should have both.

—— In the flower garden at Culford, near Bury St. Edmunds—a garden with a well-earned repute—we lately saw a flower screen of a somewhat novel and brilliant character. It was formed of Canary Creeper, Sweet Peas, and Convolvulus major. When we saw it the Tropæolum was predominant, but it may easily be imagined how gay such a hedge would be when in perfection.

—— The tuberous-rooted Begonias are brilliantly in flower in the cool end of the T range at Kew. Emperor, with flowers approaching those of Vesuvius, is much superior in habit and is really one of the finest. Kallista is also new but with fewer branches, though fine and distinct in colour. Dr. Masters, one of the earlier productions, still remains an essential, no other having appeared with equal colour and length of flowers. Orange Boven is distinct and desirable. Chelsoni is profuse in bloom, and branches to the extent of being a most effective kind, with flowers that are not equal to many others. Comet, Rosette, Vesuvius and Prince of Wales are all highly effective. Starlight is one of Colonel T. Clarke's hybrids, and valuable from its quantity of white flowers. It is a cross between Insignis and Pearcei, but with little of the latter in its appearance. The original species are here of some importance. B. rosæflora is extremely pretty, but the colour, we believe, is not yet found among the results of hybridising. One, indeed, is an approach, but scarcely worth mention. B. Pearcei is splendid from its clear yellow flowers and rich foliage, perhaps not likely to be improved in this respect. B. Veitchii has grown with great strength, and is handsome, with large flowers elevated on stout stems. The old B. Evansiana is well worth attention from its large leaves and pink flowers. B. Froebelii is in flower from seed sown this year, and is of excellent colour, with fine ample foliage. B. boliviensis widely differs from other species, but from a decorative point of view is now quite superseded. Several other tuberous species are cultivated in the Royal gardens, though unfortunately one or two appear to have quite passed out of cultivation. The new B. Davisii is evidently of great value and merit.

—— We do not know whether the circumstance is general or no, but the scarcity of fruit includes, in our experience, the Aucuba also. The male blossoms were severely injured by May frost, and especially by the unfavourable weather on June 1, and the consequence is that the berries did not form on the female bushes. On the other hand, the crop of Pyracantha berries is very large. Some prophets, with more audacity than sense, would argue from this that a hard winter was to be expected.

—— On the south coast, as at Folkestone and Brighton, we have noticed the flowering of Euonymus japonicus year after year, but not until the present year have we observed any but exceptional flowers on the bush in the neighbourhood of London. This year, however, the shrub, and even the variegated variety, has flowered freely. What possible climatic combinations can have influenced it?

—— In a front garden in one of the streets of the town of St. Albans may now be seen a thriving young plant of Eucalyptus globulus 5 or 6 feet high, and which was unprotected last winter. Until lately a very young plant of the same or some nearly allied species might have been seen on the Thames Embankment, in the corner of a yard belonging to Messrs. Minier, Nash & Co. As it has disappeared of late we presume the local circumstances were not propitious.

—— Among deciduous climbers for covering walls Cissus orientalis, figured by us in 1871, p. 1615, should not be overlooked. A plant at Messrs. Veitch's shows a rich profusion of dark coloured elegant foliage. The new tuberous Begonias which have such a future before them, as they are highly decorative, easy to grow, and in many cases hardy, also form a very noteworthy feature in Messrs. Veitch's establishment at the present time.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—To grow Luculia gratissima when planted out in the manner it is capable of, and to produce its splendid flowers in the profusion in which they are occasionally met with, it must have an intermediate temperature—a description of house much less frequently met with than it once was, consequent upon the greatly increased number of fine-leaved plants that have been introduced and have found favour in recent years, that will not succeed without a high temperature and a very humid atmosphere. The absence of such flowering subjects as the above is much to be regretted, especially through the dull autumn months. Every one who has a house wherein a night temperature of 50° or 55° is kept up during the autumn and winter, with a corresponding rise in the daytime, and the summer-heat night and day in keeping with this, should grow this Luculia, more particularly if there is a back wall to cover, as it is one of the best possible plants for such a situation. When it happens to be grown under conditions where it receives a little more heat than it likes, I have found it less disposed to flower early, from an inclination to keep on growing. This may be checked by allowing it to get dry at the roots for a week or

two, which will sometimes cause it to bloom later in the autumn; but this checking process must not be carried so far as to injure the leaves. As soon as it shows flower it will be benefited by the use of manure-water. The splendid climbing Hexacentris mysorensis, although a native of the warm Mysore country, I have never found do so well in a hot stove as in the cooler temperature of an intermediate house, so here it makes a glorious plant for a rafter, and its large, pendent racemes of highly-coloured crimson and yellow flowers are seen to advantage, flowering much more freely, though later in the season than when subjected to more heat. It is naturally a strong grower, and if planted out should not have too much root-room. Where grown in pots, directly it begins to show blossom it will be greatly assisted by the application of manure-water. So treated I have had it continue blooming on to the end of the year. Grown thus cooler its flowers will be found much more useful for cutting than when subjected to hotter treatment. It should be closely cut in after blooming.

Hedychiums.—These stately flowering plants, so useful for conservatory decoration when in bloom, also do best in a medium heat; it is not well to let them get too large, as from their strong-growing, free-rooting habit when allowed to remain for years without division of the roots the soil becomes so exhausted that they do not flower so freely. In most cases they will now be done blooming, and where the plants are big enough may with advantage be divided. The way I have usually dealt with them is to turn them out of the pots and cut them in pieces with an edging-iron. A plant that has occupied a 15 or 16-inch pot may be cut into three or four pieces, accommodating each with a 10 or 12-inch pot and placing them where they will keep on growing through the winter. They will succeed in either peat or loam, but they usually flower most freely in the latter. Medinilla magnifica, and the handsome, newer M. amabilis, will be now about finishing their growth; this is easily seen by a stout bud being formed at the base of the terminal leaves, which acquire their full size and substance with no further disposition in the shoots to extend. When these plants have attained this condition they will be better through the autumn and winter in an intermediate temperature, and kept considerably drier at the roots. Griffinias that have been subjected to more air and cooler treatment since their growth was completed, will now be pushing up their flowers. They must not be kept too cool whilst these are advancing, and care should be taken in watering that the ascending bloom stems until they have got somewhat advanced are not wetted, excepting sufficiently early in the day for them to get dry before night, or they will be liable to damp. Lachenalias that flowered in the spring, and have now completed their growth, must have the supply of water gradually reduced, as when growth is fully matured the soil should be kept in almost a dry state until they show signs of again commencing to grow, either by being submitted to a higher temperature for forcing into flower during the early months of the year, or later in spring, when they come in more gradually. The species of Gloriosa or Methonica, when done blooming, and that indicate signs of going to rest, should have the water gradually withheld so as to cause their tops to die down by degrees. To succeed with these, as with all plants of a similar character, the moisture supply must not be suddenly cut off whilst the leaves and stems are yet green, otherwise they are sure to suffer and to show the effects by puny growth in the spring. When quite at rest they must not be kept too cool or damp; a shelf in an intermediate-house will suit them. Any plants of a tender character yet remaining in conservatories should at once be moved to warmer quarters, or they will be likely to suffer; but in doing this care must be taken not to at once subject them to a very high temperature, for even in the case of such things as require to be kept growing more or less through the autumn or winter, if at once placed in stong heat it will have the effect of exciting them too much whilst the leaves are more or less stagnant. *T. Baines.*

Orchids.—As many of the plants will have in a great measure formed their new growths, it will now be necessary to give them a little more exposure to the light; and at the same time, on every favourable opportunity, give a free admission of air, as well as careful attention to the watering, in some degree withholding moisture from those that are in a forward state, so that by these means the bulbs may be hardened and matured, and thus be the better prepared to remain healthy and plump during the resting season, so that in due course the flower-buds may be formed, and ultimately perfect blooms may appear. Weak and thinly formed bulbs cannot bring such a show of blooms as those that are stout and thoroughly ripened, even if they are somewhat short. The aim, therefore, should be, instead of continuing the growth long into the autumn, to endeavour to perfect the medium-sized bulbs in preference to those which have a tendency to continue growing. The collection as a whole must also have less shade, the back blinds being only run down when it is absolutely necessary, and those on the front side, or rather the side facing the south or south-west, should be run up in the afternoon as early as it can be done with safety. Calanthes will mostly have finished up their bulbs. The stout leaves, however, must be encouraged to remain on as long as possible, and the spikes as they form at the base of the bulbs must have support, and be treated so that they may start away with strength and vigour, and also be kept in a growing state, so that Veitchii, if the bulbs are large and sound, will reward the care bestowed upon it by producing spikes 4, 5, and even 6 feet in length, those of the vestita section bringing also spikes of from 3 to 4 feet. The later flowering varieties, Turnerii and nivalis, will not be quite so forward as those just mentioned; they will, however, come on, and succeed the others, and be very welcome during February and March. C. Turnerii is certainly a gem of a flower, the white being so pure. A little manure-water should still be given to the whole of them; being free rooting plants they enjoy a liberal treatment at the roots, at the same time they should now have scarcely any shade at all, though the leaves must not be scorched. By this means they become strong and ripened, and in the dull months are objects of grandeur and intense gratification. The varieties of Veitchii vary considerably, some having flowers of a much darker colour than others. When the deep rose form is obtained, it should be carefully preserved and increased by divisions in the early spring, so that in due time the whole stock may be of the better sort. Aerides, Vandas, and Saccolabiums are still growing vigorously, and must have a good supply of water, that the stout fleshy roots may quickly find the desired support. Syringing overhead must now be discontinued, water lodging in the axils of leaves often causing them either to become spotted or fall off altogether. Angræcums, too, are still in free growth; these are much disposed when the roots enter the moss to start away into many lateral divisions, thus increasing the means of obtaining its share of moisture. They must not, at any time, be kept very long without water. A. eburneum will now be showing its flower-spikes, and will, in a very short time, be succeeded by the magnificent sesquipedale. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

After the heavy rains we have lately experienced, the great attraction of the flower garden has faded for a time, but a few days of sunshine would again renew the appearance greatly. Have the Pelargoniums picked over, and all the decayed flowers and foliage removed; some of the sorts have suffered considerably. Several of the plants in the beds and borders have rather outgrown their proper limit. These must be stopped, or the shoots thinned in a careful manner, so as not to mar the general appearance, for so much depends upon all: he plants being well-balanced that discrimination is required to execute the work with neatness. The grass will also require more attention now to keep it solid and clean, as the worms are getting troublesome and making mowing more difficult. Push forward the propagating of Pelargoniums and all other bedding plants, with the exception of shrubby Calceolarias, which are better delayed until next month. Roses may still be budded. Those that were done early in the season had better be looked over. See that the binding material is not cutting into the wood. Any that have not taken may be done again. The buds are now in good condition, and the season not yet too far advanced for the operation. Where there are many trees the leaves will soon begin to give additional labour and make the place littery; have them swept up as often as may be needful. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Strawberries in Pots.—If former directions have been carried out in respect to these plants they will now be making rapid growth, and will soon have filled the pots with roots. With us early potted plants of Black Prince in 4-inch pots, and others also, are already in this condition. At this stage of growth weak manure-water will be highly beneficial to all the plants, but particularly so to those in small pots: and it should be given at least once every week if water be required. Watering, in comparison with some seasons, has been reduced to a minimum state this year by reason of frequent rainfalls; under such circumstances see that no imperfection in the drainage exists, as, if this be the case, and it be not remedied at once, it will speedily prove fatal to the health of the plant. As the plants increase in size give them more room to perfectly develope themselves, and keep them free from runners and weeds. This remark will likewise apply to those plants which are planted out in open quarters. The present season is a good time to prick out runners beside the margin of walks and other such suitable places, for the sole purpose of producing stock for the subsequent year: this method is highly commendable. Where plants of Keens' Seedling and similar early fruiters were planted out early last spring after being forced, there will probably in most cases be some which are showing fruit now; if this crop be valued provide the means to keep the fruit free from grit at once, and if any hand-lights be at liberty these might be placed over them and be advantageous. *Geo. Thos. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

It is only those who have charge of the fruit department of a garden that can have any idea of the vexation and annoyance wasps cause, and, voracious as they are, spoil much more than they devour, for no sooner is the skin of a Peach or Plum broken through than it begins to decay, and is soon totally unfit for use. Unfortunately there are not many of either of these, or, indeed, anything else except Figs and a few Apples and Pears, for them to attack this season, but that is the more reason why increased vigilance should be exercised to preserve what little there is, and as this cannot be done by the ordinary means of protection (the use of hexagon netting and such-like), the only thing is to seek out their nests and destroy them. This is most readily effected by pouring into the hole some carbolic acid, turps, or tar, and then to block it up tight, so as to prevent any fresh air getting in, when they will soon be suffocated; but this should be done at night when they are all home, otherwise those out will continue their depredations. The small quantity of fruit at stake may deter some from taking much trouble in the matter, but it should be borne in mind that every nest destroyed now does away with a great many queens that would most likely winter securely and form fresh colonies next year. These may likewise be trapped by hanging up bottles containing a mixture of coarse sugar and stale beer, which decoys them in and seals their fate. Next to blackbirds, the most destructive to the Fig crop are the small tomtits and a migratory bird about the size of a hedge-sparrow, that does much mischief unless very fine nets are used to keep them out, and these should be put on at once, and made secure before any damage is done to the fruit, which are now fast ripening. Early Pears, such as Williams' Bon Chrétien and others that are now approaching maturity, should be frequently looked over, so as to gather the most advanced, by which means a longer succession may be kept up, besides having all of improved quality, as when they become over-ripe from laying they get mealy and lose much of their flavour. The same remarks apply to Kerry Pippin and other short keeping Apples that soon deteriorate after they are fit for use, and should therefore be watched to catch them at the right time, and when this is the case any one at all acquainted with fruit will have no difficulty in judging. The late heavy rains have caused fresh shoots to start on Pears, Plums and most wall trees, which should be kept closely stopped back or laid in according to their respective kinds. Owing to the late growth Peaches and Nectarines made, much attention will be requisite in order to get the young wood properly ripened, in which process they may be greatly assisted by thinning out all superfluous shoots, and nailing or tying in others quite close to the wall so as to afford them the full benefit of any extra heat absorbed by the bricks or that may be reflected from them. Now that summer fruiting Raspberries have done bearing, the old canes should at once be cut away to let in plenty of light and air amongst those formed during the present summer, that they may become well hardened before winter sets in. The present season has been eminently favourable for the growth of Strawberry plants, all of which are looking in a most vigorous healthy condition, and as they are now forming their flower-buds there is not likely to be any lack of this most useful and wholesome fruit next year. It is the practice with some to clear away the greater part of the foliage when trimming the beds, but this is a very barbarous proceeding and has a decidedly weakening effect on the plants by checking root-action, besides which, the leaves are necessary in developing and maturing the crowns. Every leaf therefore that is at all green should be carefully preserved and allowed to remain as a natural winter protection, in addition to a coat of half rotten manure to act as a mulching, for the purpose of enriching the ground and to prevent frost penetrating sufficiently deep to have an injurious effect. Although Strawberries should not be trimmed up in the severe manner they usually are, or have the soil between them disturbed by being dug or forked up, all runners that are not required for forming fresh plantations should be at once removed and the ground cleaned by giving it a shallow hoeing with a Dutch hoe. *J. Sheppard, Woolverstone Park.*

King René and Flowers. — The last of the troubadours, as he has also been called, introduced Carnations into Anjou and Poitou, for which all lovers of flowers should be grateful. Nowhere do you see these glorious flowers in such perfection as in this part of France, the most delicate perfumes, the richest colours make it the crowning glory of flower-beds. "*A Year in Western France*," *by M. Betham-Edwards.*

THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 8, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Sept. 10	Sale of Dutch Bulbs at Stevens' Rooms.
WEDNESDAY,	Sept. 12	Royal Caledonian Horticultural Society's Autumn Show. Newcastle-on-Tyne Botanical and Horticultural Society's Autumn Show (two days). Brighton and Sussex Horticultural Society's Autumn Show (two days). Sale of Dutch Bulbs at Stevens' Rooms.
THURSDAY,	Sept. 13	Alexandra Palace Fruit Show (three days).
SATURDAY,	Sept. 15	Sale of Dutch Bulbs at Stevens' Rooms.

WE learn by a telegram, received as these sheets are passing through the press, from our correspondent at CARLISLE, that the prospects of the INTERNATIONAL EXHIBITION of Fruits and Flowers which opened in that city on the 6th inst. are sadly marred by extremely unpropitious weather. Up to Wednesday evening the promise of a successful exhibition was all that the most energetic of committee-men could desire, but, as BURNS has well said, "The best-laid schemes o' mice and men gang aft aglee;" and so it has proved in this case. The weather was, comparatively speaking, fine for the last week, but on Thursday morning it commenced to rain before daybreak, and rained an incessant downpour up to the time our telegram was despatched, thoroughly damping the spirits of all concerned in the undertaking. The show ground is one of the best that could possibly have been selected had the weather only been fine. As it was, the visitors had to wade ankle-deep in slush or water, and there was no exception—show tents and outside promenades were all alike a perfect Slough of Despond. The Sauceries, a piece of ground belonging to the Corporation, and on which the show was held, is, without exception, one of the prettiest places for holding a show of this kind that could be met with. It is near the centre of the town, not far from the railway, generally convenient of access, and surrounded with pleasant scenery; but the weather has upset everybody's calculations. In another column will be found the full details of the show, but we may here say in general terms that, as compared with similar exhibitions held in the North during the last few years, the show is only of second-rate importance. The preparations that are made were on the most liberal scale. There is enough and to spare of everything but the essentials to a successful show—plants and fruits. As regards the plants we are bound to say that the display on the whole is good, but when we come to the fruit department—really the life and soul of an autumn show—we are obliged to admit that it is a long way beneath the standard. The arrangements made by the committee are all that could have been desired, and had everything been shown that was entered, and the weather been fine, it must have been an unqualified success. As the exhibition does not close until Saturday, it is to be hoped that the efforts of the committee may still find their justly merited reward.

The luncheon was held on Thursday in the grounds, Lord MUNCASTER in the chair, supported by the Mayor of Carlisle, Sir WILFRID LAWSON, the Earl of LONSDALE, and a large number of the gentry of the neighbourhood.

A CORRESPONDENT has lately forwarded us a most interesting WAIF FROM OVER THE SEA, in the shape of a young plant of CÆSALPINIA or Guilandina Bonduc, raised from a seed washed on shore in August, 1876, in Festrol Bay, on the north coast of Cornwall. It was sown in April of the present year, and has germinated well. The two species of Guilandina are trailing leguminous plants, found in nearly every tropical country, particularly on the sea-shore, their extensive distribution being caused by the transport of the seeds (which have an exceedingly hard impervious shell), from one country to another by means of oceanic currents. In the present instance the seeds must have crossed the Atlantic probably from the West Indies. How long they were on the journey who shall tell? The average rate of Atlantic currents is given at 33 miles a day, some running at the rate of 60 miles. In any case the seeds must, in all probability, have been a considerable time on the journey, and afford an instance of resistance to the injurious action of seawater. In Mr. DARWIN'S experiments, out of eighty-seven kinds of seeds sixty-four germinated after an immersion of twenty-eight days in salt water, and a few survived after an immersion of 137 days. Ripe Hazel-nuts sank immediately, but when dried they floated for ninety days, and afterwards germinated. Mr. DARWIN concludes, from his own experiments and those of M. MARTENS, that the seeds of about 10 per cent. of the plants of a flora could, after having been dried, be floated across a space of sea 900 miles in width and then germinate.

Referring to this very plant (Guilandina), amongst others, ROBERT BROWN remarks "that the two conditions of development and protection of the embryo co-exist in so remarkable a degree that I have no doubt the seeds of those plants would retain their vitality for a great length of time, either in the currents of the ocean or in the digestive organs of birds." The eminent botanist adds in a note that—"Sir JOSEPH BANKS informs us that he received some years ago the drawing of a plant, which his correspondent assured him was raised from a seed found on the west coast of Ireland; and that the plant was indisputably Guilandina Bonduc: Linnæus also seems to have been acquainted with other instances of germination having taken place in seeds thrown on shore on the coast of Norway. Other instances of like nature are cited by Sir HANS SLOANE. These cases afford interesting proofs of the manner in which plants migrate and under favourable circumstances occupy new territory, though it is clear that the climatal conditions of North Cornwall are not such as would be suitable to the requirements of such a plant as Guilandina Bonduc. Let us hope the Colorado beetle will find these shores equally inhospitable. In any case our thanks are due to the correspondent who sowed the seed in question, and has thus afforded evidence that such seeds, wafted from a tropical country, may yet retain their vitality—a point which has been questioned.

—— OUR figure (fig. 61, p. 305) represents a flowering plant of LILIUM CORDIFOLIUM, which has flowered at Kew during the present year, and also with M. KRELAGE, of Haarlem. The flowers are whitish on the exterior, marked with purple on the interior, especially towards the base of the two inner segments. These coloured spots evidently serve as signposts to insects, which in visiting the flower for the honey must necessarily pass between the spots in question, and the anthers, which are curved downwards so that the insects would brush out the pollen therefrom. This is one of the innumerable illustrations of adaptation and design offered to the intelligent plant lover. It was at one time supposed that the Japanese L. cordifolium was the same as, or a variety of, L. giganteum of Nepal. From our figure, however, it will be seen that the differences between this species and L. giganteum are well marked. The leaves are more distinctly cordate than in L. giganteum, the flowers less numerous and more crowded, the bracts much broader, the flower-buds erect, not pendulous, the flowers of a different shape, more widely spreading at the limb, the segments of a different form, and the curvature and relative length of the stamens quite different. We do not know if these are general characteristics, as we speak only from the specimen before us. It would seem that botanists have been misled by the examination of dried specimens only. Much allowance must also be made for individual variation, as is apparent from the letters which have appeared in our columns lately from Messrs. KRELAGE, MAX LEICHTLIN, and NOBLE.

—— The COLORADO POTATO BEETLE has become simultaneously the special subject of an Act of Parliament and the theme of a music hall comic song. Looking at what has taken place in one branch of our Legislature recently, it would be difficult to say which of the two was the greater honour or the greatest absurdity. The other day, in the Richmond Police Court, the Act and its provisions became the theme of general laughter and ridicule, the absurd red-tapeism of the Act assisting to expose the greater absurdity of the great beetle scare.

—— It is a somewhat remarkable fact that the VINE MILDEW seldom displays itself on Vines grown in the open air. Does this arise from the hardier nature of these exposed Vines, or does it follow because they are grown in a pure free air? We have lately seen in rural districts large quantities of Grapes produced on cottages, the culture being of the rudest, and the roots finding food amidst those of trees, hedgerows, flowers, and, indeed, where and how they can, yet not a trace of the mildew could be found. Of Vines so grown have been found such tender kinds as Muscat of Alexandria and Black Hamburgh—varieties that take it freely under glass, and yet grown in the open air they are as clean as could be desired. The best sorts for cottage culture are Royal Muscadine and Sweetwater, as these will ripen fruit well in any ordinary summer. The former and the Esperione are the best for wine-making, and for this purpose need not attain to perfect ripeness. Nice ripe imported Grapes, both black and white, have during the past week been selling in the streets of London at 6*d.* per lb. What will our Grape-growers say to this?

—— The following particulars with reference to sales recently effected by Messrs. PROTHEROE & MORRIS may be of interest to our readers, as showing the value of land:—The Park Estate, Leytonstone, consisting of 24 acres of freehold land, family mansion, out-buildings, &c., realised £16,800; the Grove Estate, of Leytonstone, comprising 6 acres of freehold building land and house, £6350; 8 acres of freehold land, part of the estate known as The Cedars, Leytonstone, £7000; the Garston Vineyard, Liverpool, consisting of about 6 acres of freehold land, thirty greenhouses, dwelling-house, &c., £11,500; Broomfield Hall, Herne Bay, 12 acres of freehold land, dwelling-house and out-buildings, £3750; result of sale of land (fifty plots) in the Mornington Grove and High Roads, Leytonstone, £5500—the total amount of these and other minor sales not here detailed being £53,900.

—— It is very necessary to look at things from all possible points of view. Perhaps if the Richmond agitators who seek to overthrow the walls of the ROYAL GARDENS, KEW, by "shouting with a great shout," were to look on the other side of the wall, they would not be so desirous to level it, at least those portions which now conceal from view sheds and out-houses, coke stores and rubbish-heaps, turf stacks and rearing places for ornamental waterfowl, cloak-rooms and furnaces, and all the miscellaneous offices which are now concealed between the shrubberies and the wall bounding the Richmond Road. Again, it would be most undesirable to remove the wall where it skirts the herbaceous ground. Making allowances, then, for those portions of the wall which are absolutely necessary for the purposes of the protection of the property, shelter to the plants, or concealment of unsightly objects, there does not remain much for the Richmond folk to spend their breath on.

—— The annual FUNGUS MEETING OF THE WOOLHOPE CLUB is appointed for the week beginning Monday, October 1. Messrs. Berkeley, Broome, Cooke, Houghton, Lees, Percival, Phillips, Plowright, Renny, Smith, Vize, and others have, we believe, promised to take part in the proceedings. Tillington, Wormsley Grange, Holme Lacy, Downton, Dinmore, and Moor Court will be visited in turns in search of edible and poisonous fungi, and such species as possess botanical interest. Amongst the papers to be read at the evening meetings we may

FIG. 61.—LILIUM CORDIFOLIUM.

mention two by Dr. COOKE—one termed "What is the Use of Fungus Hunting?" the other on "The Structure and Classification of the Myxogastres." Mr. WORTHINGTON SMITH will also read some notes on "A Fossil Fungus (Phythium) of the Palæozoic Epoch, with zoospores *in situ*," and exhibit the actual specimens, with drawings.

—— Mr. GREENFIELD, The Priory Garden, Warwick, informs us that the subscription is closed for Mr. GARDENER's testimonial, and that Mr. GARDENER begs to tender his best thanks to the numerous friends who kindly subscribed.

—— The Report of the Fruit Grower's Association of the Province of Ontario, 1876, is largely occupied with a detailed report of the fine exhibition of fruit made under the Society's auspices at the recent Centennial Exhibition in Philadelphia. To it is appended the report of the Entomological Society of Ontario.

—— Mr. MEEHAN sums up his review of Mr. DARWIN's work on CROSS AND SELF FERTILISATION OF PLANTS by stating his opinion that "there is infinitely more self-fertilisation among flowers than advocates of insect agency have of late years been contending for; that cross-fertilisation, as developed to advantage by Mr. DARWIN's artificial experiments, is an almost impossible occurrence in most cases in Nature; and where it must and does occur the fact is capable of a very different explanation."

—— The second part of the recently resuscitated *Journal of the Royal Horticultural Society* has just been issued in the form of a single sheet containing the report of the Pelargoniums grown at Chiswick in 1876, and the commencement of a paper by Mr. WOLLASTON on the best means of preserving from extirpation some of the aboriginal plants of St. Helena, which is very tantalising, inasmuch as only a page or so is given—"to be continued." The author, in view of the difficulty of getting seeds to germinate in this country, proposes to introduce them by means of rooted cuttings.

—— In the report on the SINGAPORE BOTANIC GARDEN for 1876 it is mentioned that "a little insect, Baridius aterrimus, has proved very destructive to the Orchids by depositing its eggs in the axils of the youngest leaves; the young insects, or larvæ, when hatched, soon destroy the whole centre of the plant. Phalænopsis, Saccolabium, Aerides and Vanda are the genera most infested with them, and all the attempts made to stop its ravages have hitherto proved futile.

—— We have received the programme of the EXHIBITIONS OF FLOWERS AND FRUIT to be held at DRESDEN in 1878 in honour of the jubilee of the Flora Society of Botany and Horticulture, established in that city in 1828 by Professor REICHENBACH the elder. The first exhibition will be held from March 21 to 25, and will include Camellias, Azaleas, stove plants, forced Hyacinths, &c. The second exhibition will take place from May 16 to 20, and will comprise Azaleas and Rhododendrons; the third, from July 25 to 29, is a general summer show; and the fourth, from October 3 to 7, will be devoted mainly to fruit and vegetables. Following the example set at South Kensington this season, there will also be exhibitions of market plants. Prizes will be given. Communications should be addressed to the secretary of the Floral Society, Brückenstrasse No. 6, Dresden.

—— The usual monthly meeting of the SCOTTISH HORTICULTURAL ASSOCIATION was held at 5, St. Andrew Square, Edinburgh, on the evening of the 4th inst. Mr. DUNN, Dalkeith Park Gardens, occupied the chair. Fifteen gentlemen were elected members, while other ten were proposed and seconded for election at next meeting. Mr. KERR, of Messrs. DOWNIE & LAIRD, nurserymen, read an interesting paper on "The Rose," in which he pointed out its antiquity, the appreciation in which it was held by the ancients, described the most essential parts of its culture, and the conditions requisite to its successful growth. He detailed the mode of propagating by cuttings, of collecting stocks, of pruning, budding, &c. He referred to an eminent American author, Mr. SCOTT, Philadelphia, who recommended budding of the Maréchal Niel Rose on the Banksian, a natural climbing Rose, which is more vigorous, and shoots more suitable than any other; but Mr. KERR, as well as the Chairman, Mr. DOWNIE, Mr. GRAY, Mavisbank Gardens, and others, who afterwards spoke, were of opinion that Roses did generally well on their own roots, if they were only properly attended to, and people had the patience to wait on them until they grew into fair-sized plants. A hearty vote of thanks was awarded to Mr. KERR for his admirable paper. The Chairman intimated that provision had been made for the reading of papers for the next three months; Mr. ROBERT LINDSAY, of the Botanical Gardens, having agreed to read a paper at next meeting on "Root Propagation." Mr. ROBERTSON, Seacot Gardens, Leith, exhibited a stand of two dozen very superior seedling Carnations of his own raising, for which he received the high commendation of the meeting. A vote of thanks was also awarded to Mr. HUNTER, Newbailes Gardens, for a pan of his new Tropæolum Hunteri, which was shown in excellent condition, and proves to be a decided acquisition in the flower garden.

—— We are informed that Mr. D. LAMONT, late gardener to Lord CHESHAM, has been appointed gardener to Captain HAWKESLEY, Ranelagh House, Fulham, a distinguished fruit and plant grower.

—— At the CONGRESS organised by the BOTANICAL and HORTICULTURAL SOCIETIES OF FRANCE, to open on the 16th of August, 1878, and continue for six days, it is proposed that the following subjects should be treated:—

BOTANY.

Scientific Department.—1. Physiology of the root. 2. Gymnospermy—present state of our knowledge concerning. 3. Fecundation of Hymenomycetes and Ascomycetes.

Practical Department.—1. Organisation of botanical and physiological laboratories; description of the best ordered establishments and plans for the organisation of a model laboratory. 2. Comparison of the mode of organisation of the large botanical collections of Europe; conditions to be fulfilled in such collections; Herbaria, collections of woods, fruits, fossil plants, &c. 3. Different modes of arrangement, labelling, &c., in various botanic gardens.

If possible, plans should be exhibited in connection with these communications.

HORTICULTURE.

Scientific Department.—1. Influence of the age of the seed on the offspring. 2. Circumstances determining the production of double flowers. 3. Production and fixation of varieties. 4. VAN MONS' theory of the production of varieties, is it well founded?

Practical Department.—1. Hortus Europæus, continuation of the discussion of. 2. Means of cultivating plants in botanical gardens which at present are rebellious to cultivation. 3. Indication of woody plants remarkable for their age, habit, form, or other peculiarities. 4. Artificial manures applied to plants cultivated in the open air or under glass.

Other subjects may be treated of, and a list of the subjects which botanists or horticulturists may desire to bring under the notice of the congress will be hereafter published. Those botanists and horticulturists who may not be able to be present, but who send papers, are requested to furnish abstracts thereof, to be read at the meetings. An exhibition of herbaria, and all materials for the preparation and conservation of plants, and for the study of botany generally, plans of laboratories, museums, botanic gardens, books, plates and drawings relating to the study, or to the mode of teaching botany and horticulture, will be held at the meeting-place of the congress, 84, Rue de Grenelle St. Germain. Directors of museums and botanists are earnestly desired to contribute specimens, so as to render this exhibition as complete and instructive as possible. The President is M. LAVALLÉE, the Secretary M. MER, and among the names of the committee we find those of MM. Baillon, Bureau, Chatin, Corme, Cosson, Duchartre, Duvivier, Hardy, Jamin, Ketelee, Malet, Moras, Briot, Planchon, Prillieux, Ramon, Roze, Verlot, and Vilmorin.

—— In this all but fruitless season it would be very desirable if our correspondents would kindly name those sorts of Apples and Pears which are bearing a crop. In some places we hear of Small's Admirable bearing a good crop.

—— The "RIPENING OF THE WOOD," a process familiar enough to gardeners as taking place in hot autumns, receives some illustration from some experiments lately published by M. VESQUE of Paris, in the *Annales des Sciences Naturelles*. We are all familiar with the maturing process that goes on in this hot weather, a process so characteristic of the month of August in these latitudes that the French word for it is *aoûté*, from *août*, August. It is, however, questionable whether we have any but a vague and general idea of what the process really consists in. An excessive amount of evaporation of fluid from the surface of the leaves as contrasted with the quantity absorbed by the roots, a consequent withering of the leaves, and a general drying up of the tissues of the plant, with consequent chemical changes, resulting partly in a hardening of the tissues, partly in an alteration of their several contents, so as to enable them to be stored up as reserve stores for future use under altered circumstances — this is, roughly speaking, all we know about the consolidating maturing process commonly known as ripening of the wood. M. VESQUE's experiments were devised with the object of determining the quantity of water absorbed when the amount of transpiration was varied. Does absorption increase in the same proportion as transpiration? What is the effect of changes of temperature? It is not the extent of surface merely but the age of the leaf which must be taken into account, younger leaves, as a rule, transpiring more freely than older ones. As to the effect of temperature M. VESQUE's experiments show that every sudden rise of temperature of the air diminishes the amount of water absorbed by the roots. A lowering of the temperature promotes the absorption of water by the roots. When a plant is removed from darkness to diffused light the amount of transpiration does not immediately increase, and inversely, when a plant is withdrawn from the action of the light the amount of evaporation is not immediately diminished. The effects of changes of temperature may be explained by the expansion or condensation of gases in the interior of the plant.

—— We are informed that the date of the ROYAL HORTICULTURAL SOCIETY'S PROVINCIAL SHOW AT PRESTON in 1878 will be from Tuesday, July 9, until Saturday, July 13, both days inclusive, and that a committee has been appointed to draw up a schedule. The show is to be held on a beautiful and well adapted piece of land, some 35 acres in extent, belonging to, and a portion of, the Preston Nursery and Pleasure Garden Company's grounds, on the outskirts of the town, easy of access, and in every way calculated to give confidence of a successful gathering. Those who take an interest in, and are acquainted with horticultural matters are well aware that this county, so engrossed in manufacturing and mercantile pursuits, has always cherished gardening to an extent not surpassed by any other portion of the kingdom; the numerous and splendid collections of plants existant in the surrounding district at once furnish the material for a grand display, and the spirit always shown in horticultural affairs in this division of the kingdom is sufficient to warrant our expecting its being one of the most satisfactory visits the Society has made to the provinces. We hear that the local authorities are taking steps that will leave nothing undone to secure a favourable issue, calculated alike to reflect credit on the town and district, and give an increased impetus to good gardening, in the way these summer shows of the Society have so far done in the different localities they have been held in.

—— In the last issued part of the *Journal* of the Linnean Society Mr. LYNCH calls attention to some very curious cases of Cladoptosis or DISARTICULATION OF THE BRANCHES. This process, as is well known, occurs in Taxodium distichum, in Thujas, and sometimes in Oaks and Elms. The process is quite analogous to that by which the ripe fruit—say a Pear—is separated from the stalk bearing it, and by which the fall of the leaf is brought about Vitis macropus, a curious fleshy-stemmed Vine, thus year by year detaches a portion of the season's growth, a small section only being permanent. Mr. LYNCH gives other instances of detachment of the branches in Castilloa, in Antiaris, and in Phyllanthus.

—— Among BEETS the EGYPTIAN TURNIP-ROOTED variety may be recommended as very early and of good flavour. We lately saw some samples

of it at Hardwicke, which fully bore out Mr. FISH's commendation.

—— The last part to hand of the *Wiener Gartenfreund* contains, in the form of an appendix, a history of the Proceedings of the Horticultural Society of Vienna during the years 1864 to 1877, preceded by a short sketch of the progress and work of the society from the time of its foundation in 1827 up to 1864. The occasion of this was the celebration of the fiftieth anniversary of the society. Like our own society it has enjoyed periods of prosperity interrupted by the most gloomy and hopeless reverses. More than once it has been apparently on the eve of dissolution, when a few energetic and enthusiastic men have by almost unceasing labour succeeded in resuscitating it, liquidating outstanding debts, and raising it to its proper level. A part of the self-imposed functions of this society is a school of gardening, but hitherto want of funds has hindered the perfect realisation of the scheme.

ON THE SEDUMS OF THE RUPESTRE GROUP.

THERE are no succulent plants more common in gardens than the yellow-flowered perennial Sedums, with narrow, turgid, pointed leaves, and none about the naming of which there is more confusion. As I have this summer taken some pains to ascertain the right application of the various names which have been used, and the relationship to one another of the plants which they denominate, I should like to be allowed to explain in your columns my conclusions in detail. I have named all the specimens at Kew in accordance with the nomenclature here followed, and any one who is interested in the matter may easily study for themselves on the rockeries in Kew Gardens authenticated specimens of all the leading forms here described.

I admit in the group six fully distinct species, five European, for which, according to my interpretation of the recognised rules of botanical nomenclature, the proper names to be used are S. reflexum, rupestre, ochroleucum, anopetalum, and amplexicaule, and one American species, S. stenopetalum. In the *Hortus Cliffortianus* (1737) Linnæus represented this group under two varieties, one of which is S. reflexum, and the other a plant gathered by Dillenius at Cheddar, which is figured and described by the latter in *Hortus Elthamensis*, p. 243, tab. 256, fig. 333, under the name of Sedum rupestre repens foliis compressis, and is identical with what was afterwards called S. pruinatum by Brotero, and S. elegans by Lejeune. These two are perfectly distinct species, but in his *Species Plantarum*, in which the foundations of our present system of nomenclature of genera and species are laid, Linnæus combined the two together as a single species, for which he adopted the Dillenian name of rupestre. In his *Herbarium* the type specimen is neither S. reflexum nor the Dillenian rupestre, but the very different South European S. amplexicaule. In his later writings (*Flora Suecica* and *Species Plantarum*, 2d edition) Linnæus defines two species, which he calls rupestre and reflexum, but he does not seem to have understood the plants clearly, and the wild form which in the *Flora Suecica* he calls rupestre is not the Dillenian rupestre, but a variety of reflexum. Through this has arisen much confusion in the application of the name of rupestre by later writers, but although in doing this I am at variance with several of the most highly esteemed floras written by Continental authors, it seems to me that the proper thing to do under these circumstances is to limit the name rupestre, as Hudson, Smith, and English writers have done, to the original Dillenian plant. The only other alternative would be to let it fall out of use altogether. This premised, I proceed next to characterise the six species and their varieties.

Key to the Species.

Leaves without any wing in the lower part	
Leaves distinctly compressed on both face and back	
Leaves oblanceolate or linear-lanceolate	
Petals lanceolate, pale yellow	1. S. OCHROLEUCUM.
Petals linear, bright yellow	2. S. STENOPETALUM.
Leaves linear	3. S. RUPESTRE.
Leaves subulate	
Petals 3—4 times as long as the deltoid sepals	4. S. REFLEXUM.
Petals barely twice as long as the lanceolate sepals	5. S. ANOPETALUM.
Leaves with a broad chartaceous wing down the lower part	6. S. AMPLEXICAULE.

1. *S. ochroleucum*, Chaix, in Vill. Fl. Delph., vol. i., p. 325 (1786), vol. iii., p. 676; Smith, Prodr. Fl. Græc., p. 312; *Sempervivum sediforme*, Jacq. Hort. Vind. i., t. 81 (1770); *Sedum altissimum*, Poiret, Encyc., vol. iv., p. 634 (1796); Reich, Ic. Crit., t. 285; D.C., Plantes Grasses, t. 40; *S. lusitanum*, Brotero, Phyl., t. 178; *S. fruticulosum*, Brot. Fl. Lusit., vol. ii., p. 206 (1804); *S. rufescens*, Tenore, Fl. Nap., vol. i., p. 248, tab 41; *S. dioicum*, Donn, Cat., edit. iii. (1804); *S. altum*, Clarke; *S. Jacquini*, Haworth.—Stems $\frac{1}{6}$—$\frac{1}{4}$ inch thick, trailing in the lower part, the leafy shoots 3—4 inches long, bearing oblong tufts of leaves for 1 or 2 inches, leafless below them. Leaves arranged in spires of six, a light rather glaucous green when young, when old tinged with claret-red, oblanceolate, $\frac{3}{4}$—1 inch long, $\frac{1}{4}$—$\frac{3}{8}$ inch broad, acute, both the back and face nearly flat. Flowering-stem stouter than in the other species, 1 foot or more long, bearing 30—40 leaves, which are stouter and more ovate than those of the sterile rosettes, the lower 1 inch, the upper $\frac{1}{2}$ inch long, all erect. Cymes dense, $1\frac{1}{2}$—3 inches in diameter, consisting of three or four dichotomously forked reflexed branches, the lower flowers only furnished with very short pedicels. Calyx $\frac{1}{4}$ inch in diameter, $\frac{1}{8}$ inch long; teeth deltoid, twice as long as the tube. Expanded corolla above $\frac{1}{2}$ inch across; petals lanceolate, deeply channelled, $\frac{1}{4}$ inch long, always pale yellow, spreading between the sepals. Stamens little shorter than the petals; filaments linear, pale yellow, slightly pubescent; anthers oblong, orange-yellow. Carpels greenish, erect, $\frac{1}{4}$ inch long; style half as long as the ovary. Parts of the flower usually 6—8.

This is spread through the South of Europe, from Portugal to Palestine and Asia Minor. It may easily be distinguished from any of the other Old World kinds by its flat oblanceolate leaves. As will be seen by the synonymy, it has received eight different names under Sedum, the oldest being that which I have used. *Sedum nicæense* of Allioni, Fl. Ped., vol. ii., p. 122, tab. 90, fig. 1, which is sometimes referred here, goes back to 1785, but the figure looks as if it was made up of a cyme of S. amplexicaule put on the top of a flower-stem of this species; and I therefore reject it. The old figure of Jacquin is a very good one. The only variety worth mentioning with which I am acquainted is *S. cœrulescens*, Haworth, in Phil. Mag., 1825, p. 174, which is not more than half as tall as the type, with very glaucous leaves.

2. *S. stenopetalum*, Pursh. Fl. Amer. Sept., vol. i., p. 324; Hook. Fl. Bor. Am., vol. i., p. 228; Torrey and Gray, Fl., vol. i., p. 560; S. Wats. Bot. 40 Parall., p. 101; *S. lanceolatum*, Torrey, in Ann. Lyc. New York, vol. ii., p. 205; *S. subclavatum*, Haw. in Phil. Mag. 1841, p. 414.—Densely tufted. Barren shoots not more than 1—$1\frac{1}{2}$ inch long, bearing in the upper half dense rosettes of leaves, which are about $\frac{1}{2}$ inch in diameter. Leaves linear-lanceolate, acute, under $\frac{1}{2}$ inch long, $\frac{1}{12}$ inch broad, $\frac{1}{16}$ inch thick, turgid on both faces, glaucous. Erect flowering-stems under $\frac{1}{2}$ foot high, clothed with dense erect small narrow lanceolate leaves. Cymes dense, reaching a diameter of 3—4 inches, bearing as many as 4—5 dichotomous forks, only the lowest flowers furnished with very short pedicels. Calyx $\frac{1}{8}$ inch long; teeth deltoid, twice as long as the tube. Petals 5—6, bright yellow, linear, $\frac{1}{4}$—$\frac{3}{8}$ inch long, spreading widely when expanded. Stamens nearly as long as the petals. Carpels as long as the filaments, narrowed gradually into a long slender style half as long as the ovary.

A native of the Rocky Mountains in Oregon, Upper Missouri, and Nevada, ascending to a height above sea level of 8000—9000 feet. It is most like S. reflexum, from which it is easily distinguished by its flattened leaves. It is rare in English gardens, and our Kew specimen has not yet flowered.

3. *S. rupestre*, Linn. Sp. Plant., both editions in part; Huds. Fl. Angl. 195, as regards all the English synonyms and localities; Smith, Engl. Bot., t. 170; Engl. Flora, vol. ii., p. 321; Syme, Engl. Bot. edit. iii., vol. iv., p. 58; *S. rupestre repens foliis compressis*, Dillen. Hort. Elth., p. 343, tab. 256, fig. 333; *S. minus ad rupe S. Vincentii*, Ray, Synops., edit. ii., p. 152; *S. pruinatum*, Link, in Brot. Fl. Lusit., vol ii, p. 209 (1804); Willk. and Lange, Prodr., vol. iii., p. 137; *S. elegans*, Lejeune, Fl. Spa, vol. i., p. 205 (1811); Gren. and Godr. Fl. France, vol. i., p. 626; Koch, Syn. Germ., edit. ii., p. 288.—Densely tufted. Dark red-brown stems under $\frac{1}{8}$ in. diameter, trailing at the base, bearing copious barren leafy branches 2—4 inches long, at the top of which the ascending leaves form a dense obconical rosette $\frac{3}{4}$ to 1 inch in diameter, the lower part of these branches clothed with ascending withered leaves. Outside leaves of the rosette linear, $\frac{1}{2}$ inch long, $\frac{1}{12}$ inch broad at the middle, not more than $\frac{1}{3}$ line thick, pale glaucous green, only slightly turgid on both faces, distinctly cuspidate. Flowering stem about 1 foot high, densely clothed with erect leaves shorter than those of the rosettes, the lowest $\frac{1}{2}$ inch long. Cymes dense, 1—2 inches broad, consisting of about four dichotomously forked branches; lower flowers furnished with pedicels $\frac{1}{12}$—$\frac{1}{8}$ inch long, upper sessile. Calyx under $\frac{1}{12}$ inch long; teeth oblong-lanceolate, twice as long as the tube. Petals bright yellow, lanceolate, $\frac{1}{4}$ inch long, spreading widely when fully expanded. Stamens bright yellow, very little shorter than the petals. Carpels as long as the filaments, the slender permanently erect ovary narrowed into a style half as long as itself. Parts of the flower in fives to sevens.

Widely spread through France, Spain, and Portugal. It grows wild also in Belgium, and in England in the Cheddar gorge, and on St. Vincent's Rocks, near Bristol. We have specimens at Kew gathered at Lochnaw, in Galloway, by Professor Balfour, but I am not aware whether it be truly native in Scotland. It seems to be quite absent from Italy, Switzerland, Germany, Scandinavia, and further east. The *English Botany* figure, which is rather too robust in habit and thick in the stem-leaves to give a good idea of the species as contrasted with reflexum, was drawn from a specimen sent to Sir J. E. Smith, by my relative Edward Robson, from walls at Darlington. The plant drawn by Redouté for De Candolle in the *Plantes Grasses* (tab. 115) as rupestre is simply typical reflexum. Though this species is so common and well known a thoroughly satisfatory plate, with the character of the leaves of the sterile shoots well brought out, is yet a desideratum. It flowers in our London gardens early in July, a fortnight or three weeks earlier than reflexum, from the smaller forms of which it may easily be recognised by its compressed leaves and very dense rosettes. The original account of the plant given by Dillenius is as follows:—

"Quoniam in rupe D. Vincentii prope Bristolium primum fuit repertum hoc Sedum, ideo hactenus Sedum minus e rupe D. Vincentii dictum fuit. Postea in Cambriæ rupibus, dictis Hisvaé, Lloydio et mihi anno 1726, in Chediderensibus Somerseteæ rupibus observatum fuit, quapropter rupestre tantum voco et foliis compressis a Sedo minore luteo foliis acutis C. B. (cujus varietas tantum a Rajo habetur, Sedum minus luteum ramulis reflexis, Ejusd.), cui proxime accedit, distinguo. Porro folia sunt breviora et crebriora, ad basim parte aversa apophysi quadam, violæ caninæ calycis æmula, donata, caules autem teneriores sunt et minus lignosi magis pervoluti, e quorum parte inferiore surculi novi in globulos magis congesti egrediuntur." *Dillen. Hort. Eltham.*, p. 343.

This Cheddar plant, of which the description above given is drawn up from living specimens which I brought from the wild station to Kew two years ago, is the most robust form of the species, and is the variety majus of Dr. Boswell-Syme, as described in third edition of *English Botany*. This runs down by gradual degrees into his variety minus, in which the leaves of the sterile shoots are not more than $\frac{1}{4}$ inch long, and the flowering stems shorter and more slender.

Var. *S Forsterianum*, Smith, Engl. Bot., t. 1802, Engl. Flora, vol. ii., p. 322; *S. rupestre* subspecies *Fosterianum*, Syme, Engl. Bot., edit. iii., vol. iv., p. 59; *S. Forsteri*, Haworth, Syn. Succ., p. 117; *S. aureum*, Wirtgen, Flora Preuss. Rheinprov. p. 184; *S. elegans var. virescens*, Donck. and Durand, in Bull. Bot. Soc. Belg. xiii., p. 303.—Differs from the type by its bright green, not glaucous, leaves.

This is the Montfauçon plant mentioned by Dillenius. It grows about several of the waterfalls in North Wales, and also in Shropshire. Forster's plant, which was distributed to many botanists from his garden, came from the Devil's Bridge in Cardiganshire. Wirtgen's aureum, which is undistinguishable from Forsterianum, grows on the hilly banks of the Rhine at Coblenz, Ems, and Ehrhenbreitstein, and in Belgium in the province of Liege. I have not seen specimens of the closely allied *S. trevirense*, described by Wirtgen at pp. 185 and 186 of his *Flora of the Palatinate*. *J. G. Baker.*

(*To be continued.*)

Home Correspondence.

Melon Growing at Longford Castle.—I am sorry that I was not more explicit in the few remarks I hurriedly made in the *Gardeners' Chronicle* at p. 214 respecting Melon growing here, and for which shortcoming I have called forth an interrogatory voice from Manchester (p. 278), to which call I readily respond. Mr. G. F. Didymus asks for the length and breadth of the sashes, &c. They are 8 feet long and 4 feet wide, and the compartment in which the Melons are growing consists of four lights, each light having one plant, and each plant four fruits, each crop; hence "four times four" (sixteen fruits) each crop—I trust I shall make myself sufficiently understood this time—making eighty fruits altogether, but

a few either way is of little consequence—all of which, *a maximis ad minima*, were fit for the table, otherwise I should not have written upon the subject. Mr. Didymus asks how about flavour: suffice to say that my noble employer wrote me last May to say that the flavour was excellent. I now send you a fruit of the "fifth" crop for your opinion. I think I have answered all your correspondent's questions, and I hope to his entire satisfaction. Having done so I will now, with your permission, refer briefly to Mr. G. F. Didymus' concluding remarks, when he says that "from the first week in May to August 18 is fifteen weeks, and to finish five crops in fifteen weeks leaves three weeks for each crop," and goes on to say that to flower, set, and swell and ripen a crop of Melons in twenty-one days (I did not say I had done so), and that without much sun-heat, is quick work even in these fast days. I think Mr. Didymus is in error when he says five crops in fifteen weeks. I think, if he refers to the article in question again, he will see there, in very plain type, that we commenced cutting in the first week in May (first crop), and not, as Mr. Didymus reads it, commenced flowering at that date. Thus Mr. Didymus' five is converted into a four. Therefore, he must start with four crops from the first week in May to the 18th of August, at which time I stated the plant were finishing their fifth (say fourth) crop. Now, I think Mr. Didymus will find that there is a difference between "ripe" and "being ripened," and consequently a difference in his calculations. That being so, he will allow that he has given us credit for being faster than we really are, and that he would have been nearer had he written thirty-one days instead of twenty-one days to flower, set, and swell and ripen each crop of fruit. I think, in conclusion, I shall have again to refer Mr. Didymus to the *Gardeners' Chronicle* (p. 214), where he will find me among the Melons, where I have found something not altogether to my surprise, but to my entire satisfaction; and from what Mr. Didymus sees there I think he will infer that each succeeding crop has not only flowered and set, but that the fruits have commenced to swell before the preceding crop has been cut. There is nothing at all wonderful in this. It is true all practical gardeners endeavour to procure an equal and regularly distributed set of fruit on their plants, so that all may swell together; but, nevertheles, another good set can be secured by the time the fruit have done swelling, so long as the plants are treated as they require to be, which means keeping them clean, a judicious application of water (including liquid manure) to the roots and otherwise, thinning and stopping, a suitable temperature, and, above all, not to crop too heavily. There is no reason why—no matter how many crops have been taken from the same plants between May and September—the flavour of the last should not be as good as that of the first, providing the foliage is kept clean, and hot-water pipes at command; at least, such is the humble opinion of *H. D. Ward.*

Glass Coping.—We have a Peach wall, with a due south aspect, the greater part of which has a wide glass coping from which nets were suspended, the same as described by Mr. Sheppard. But the trees have shared the same cruel fate as the remaining part of the wall that had none, so far as the fruit is concerned, but the leaves under the coping were not so badly blistered; so that I hope we may next season derive some benefit from the part so covered. *T. Shingles, Tortworth Gardens.*

Primula cortusoides.—In a garden at Brighton I have some Primula cortusoides now in flower, which, as the bloom declines, throw up a stalk from the centre with a new head of bloom, leaving a circlet similar to the growth of the Primula japonica. I mention this as I have not before observed it. In case you may consider it worthy of notice, I could send you a specimen if desired. *W. E. Heathfield.*

Turf: its Uses.—I believe it was Mr. Thomson, of Dalkeith, who spoke so highly of the use of turf for striking Vine sets on. He stated that the roots struck into the turf in a circle, and that this was the plan for growing the roots of the Vine, as when planted out permanently they continued to grow in this form, instead of running away into long straggling roots. I have often weighed this matter, and it is no doubt a plan of great value. I extended this by paving the whole of a wooden trough with turf—forming strata of rotten dung, sand, and turf to a foot in height. As the roots could not extend beyond this trough they in time exhausted all the nutriment from its contents. The surface turf was then taken off, and the roots gently lifted with forks, and the whole contents removed. The same thing was again carried out as before. I have adopted another most important use of turf, and this is the season of the year for it. Procure some good thick turf from an old pasture, and cut it into pieces 9 inches square; then with a broad hoe scrape away 3 inches of soil, and place the turf grass-side downwards in this hole, draw the loose earth round the edges, and on the top of the turf put a handful of good rotten dung. Place a Strawberry runner on the dung, you will then get plants equal to two years old, and capable of bearing fruit equal to any two-year-old bed. It does not take a long time to prepare a thousand plants. This is one of the best uses of turf I have tried. Again, pave the inside bed of a vinery or orchard-house with turf, placing 3 inches of fine, good mould on the surface, then sow all your annuals in rows—not too thickly, as any seed will grow if good. The first week in June cut out pieces 6 inches by 6, and plant out in the borders. I have now many plots 2 feet in diameter from these pieces growing most luxuriantly, especially Mignonette. A month is gained by this plan. *Observer.*

Orchids in August.—The list shrinks considerably for this month, whose principal business is growth. Nevertheless, there is variety enough to charm the eye of the florist, and many are very beautiful.

Cattleya crispa
,, Forbesii
,, marginata
,, ,, Pinelli
Lælia elegans
,, Dayana
,, crispa
Dendrobium fimbriatum oculatum
,, crumenatum
,, moschatum
,, cumulatum
,, calceolus
,, formosum giganteum
,, chrysanthum
Saccolabium Blumei majus
,, Blumei
Masdevallia nycterinia
,, Veitchii
,, peristeria
,, Lindeni
,, amabilis
,, octhodes
,, myrostigmata
,, Wagneriana
,, Harryana
Zygopetalum maxillare
,, Gautierii
Miltonia spectabilis
,, candida
,, cuneata
,, cereola
,, festiva
Epidendrum radiatum
,, cochleatum
,, species
,, vitellinum majus
,, conspicuum
,, macrochilum
Gongora species
Cypripedium Sedeni
,, nigrum superbum
,, superbiens
,, niveum
Oncidium flexuosum
,, Lanceanum
Oncidium nubigenum
,, Kramerianum
,, Papilio majus
,, luridum
,, incurvum
,, trulliferum
,, triquetrum
,, Wentworthianum
,, tigratum
Comparettia coccinea
Trichopilia fragrans
Polycycois muscifera (a very remarkable flower, yellowish-brown, on upright spikes about 8 inches in length; flowers profusely, and should be in every collection)
Sigmatostalix radicans (a very prettybranching plant, the flowers very small but extremely beautiful when closely inspected)
Lycaste Skinneri
,, aromatica
,, nigrescens
Brassavola acaulis
Brassia Gireoudiana
Thunia alba
Maxillaria venusta
Stanhopea Wardii
Warscewiczella discolor
Mesospinidium sanguineum
,, oulianicum
Anguloa uniflora grandiflora
Aerides roseum
Disa Barelli (magnificent)
Sobralia macranthra
Odontoglossum Alexandræ
,, crocidipterum
,, Rossii
,, rubescens
,, angustatum

Odontoglossum angustatum is a very remarkable plant. It has been in flower for four months. The stalk is 9 feet in length, it throws out numerous long branches thickly set with flowers of pleasing and soft shades of brown and yellow, about 1 inch in diameter. These branches are still growing and throwing out new flower-buds. The same bulb has also lately sent forth a second flower stem, already 4 feet in length. I am surprised that so little notice has been taken of this very beautiful and interesting Odontoglossum. It should have a place in every collection. It seems to be known to but few Orchid growers. It is very hardy, and flourishes in the coolest house. *Edward W. Cox, Moat Mount, Mill Hill, N.W., Aug. 31.*

Rose Madame de Cambacérès.—In reading Mr. D. T. Fish's paragraph, headed the "Roseless Autumn," I should have liked to have seen the above old favourite Rose mentioned in his few true Hybrid Perpetuals. I am afraid it has been discarded by many Rose growers, and why so? Its fragrance is nearly equal to the old Cabbage Provence, and no other Hybrid Perpetual blows so late and free. It has fine foliage, and is one of the hardiest of Roses; in fact I cannot find anything to take its place with me. I am cutting scores of blooms daily from, comparatively speaking, a few plants, having a great demand for cut flowers, Roses more especially. I find no other Hybrid Perpetual flowers so late and free in autumn. *H. Gibbons, Folkestone.*

The Fruit Crops.—A few weeks back I sent you a favourable account of the Apple crop at Dunesbury. I now have great pleasure in confirming that report. We have got the very best crop that has fallen to our lot for several seasons. They are clean, healthy, and good in every form, and a fine crop. The following Pears have escaped from the general wreck:—Emile de Heyst, Beurré Rance, Joséphine de Malines, Alexandre Lambre, Glou Morçeau, Seckle, Ne Plus Meuris, and Morel. How is it accounted for? Can any one give the reason why, out of nearly one hundred trees, we have about eight or nine that have got a full crop, while the others are more or less fruitless, and these trees are growing in every point of the compass? *A. Parsons, Danesbury, Welwyn.*

The Roseless Autumn.—I was a little surprised to read the article in last week's *Gardeners' Chronicle* under this heading. I do not know when my Roses have been finer than this autumn, and in many cases they have been even finer than they were in the summer. Mr. Corp, of Oxford, showed as fine (if not finer) Roses at Taunton, Trowbridge, Weston, and Dorchester, as any seen at the summer shows. I do not know where your correspondent lives, but certainly in the West of England we have had by no means a Roseless autumn. *John R. M. Camm.*

"Salus" and the Potato Disease.—When I saw the Potato crop lifted at Heckfield, which had been twice dressed with Salus, I remarked that although the soil generally was light and dry, yet around the roots lifted it was moist and sticky. The destruction there by disease was truly great, and yet all possible care had been taken to ensure success. Mr. McKinlay has at Beckenham the lightest and silkiest soil for the growth of Potatos I have ever seen. He also tested Salus with a portion of his samples, using two 14 lb. bags of it. He found on lifting the dressed crops exactly the same characteristics as seen at Heckfield—the soil moist and sticky, and, unfortunately for the reputation of the Salus, more disease amongst the dressed crops than in any part of all his growths. If the Salus contains ingredients that possess virtues destructive to the disease, it contains others that equally assist its development, as has been shown in these two cases. In any objective opinions that may be offered as to the benefits derivable from the use of Salus I trust Mr. Smith will be quite prepared to look for entire impartiality. All Potato growers will be only too pleased to be able to award to Mr. Smith all due and proper praise if he really can produce a material that will hold the disease in check. At present I see no evidence to lead me to believe that Salus is in any way calculated to effect that purpose, and farther, I have seen enough to lead me to believe that it may possibly be capable of promoting the disease rather than checking it. Mr. McKinlay has lifted superb clean crops from undressed ground; Mr. Fenn, who also used Salus without deriving any benefit from it, has also done the same. The Lapstone Kidney was his most diseased crop, and of those dressed specially with Salus and those without it, gave of good and bad relatively no appreciable difference. With reference to Mr. Smith's particular trials at Chiswick, to which he refers at p. 277, I would remark that of the sorts he employed in his experiments two only, Lapstone and York Regent, have generally the reputation of taking the disease badly. Early Rose is generally this year very good, and where it has escaped the curl the crop ripened early, and was ready for lifting ere the great wave of the disease—if I may so term it—swept over the Potato crops. Bresee's Prolific is a very hard-fleshed tuber, and I can pronounce it to be generally little affected. Striped Don and Victoria are both very robust late-ripening Potatos, as a rule seldom fit to lift for storing until the end of September, and yet Mr. Smith lifts them on August 24. All kinds of Potatos take the disease more or less just as they have attained to a certain stage of maturity or otherwise, and it is because of this, and also because the disease generally appears in its most virulent form in mid-season, that second early ripening sorts are as a rule the worst hit. If such kinds as Dawes' Matchless, Red Emperor, Rector of Woodstock, and Scammell's Glory—the latter I have found very diseased this year—had been tried, perhaps the results would have been different. Mr. Smith thinks that the position occupied by the twice dressed crops amidst the fruit trees was the worst, but judging by what I know of the Chiswick soil, I am inclined to think in this case it was the best. Now, in the first place, the open garden soil there is pretty liberally enriched with manure, and that is about the worst possible state of things for the production of a healthy crop of Potatos. The spaces between the trees are usually employed for the growth of annuals or other catch crops, and is not liberally dressed with manure; moreover, the trees root near the surface, and keep the soil moderately poor. This is, therefore, in favour of the production of fairly healthy tubers. Then in the open the Potato crops were more than once much cut with frost, whilst those planted in the trees were materially sheltered, and this again told in favour of the latter. Again, the heavy rains of the past month rendered the soil very moist, and as in the open there was less absorption than amidst the trees, the tubers and haulm were naturally more prone to the attacks of the fungus. These considerations deserve much more weight than has been attached to them. I can but add that the Chiswick garden seems unfortunately to have become about the worst possible place to conduct experiments and trials in connection with the Potato; and if Salus is to receive another year any-

thing like a satisfactory test, it must be done elsewhere. Some four or five years ago there was a good crop of Potatos at Chiswick; since then there has been general failure. I notice that Mr. Fish has considerably qualified the somewhat positive position that he took up with reference to the Salus in the spring. Looking at the results, this is but natural. Alas! our present knowledge of the nature of the fungus and its mode of operation in the Potato plant but leads me to the conviction that it is, as influenced by external applications, practically indestructible. *A. Dean.*

The Flow of the Sap.—I have read with much interest the able paper on the "Flow of the Sap," by Mr. Andrew Murray, and the various articles on this subject by other contributors; and in order, if possible, to throw some small light on this difficult question, I beg to forward to you two sections of the stem of a young Ash tree (illustrated natural size in elevation and section at A, A, B, B, fig. 62), on which I commenced an experiment for the purpose of ascertaining how long a tree would live after a horizontal section of its bark had been removed. In the summer of 1875 I cut a ring of bark (about 1 inch broad) off the lower part of the stem (C), taking care not to allow the knife to enter the wood; some time afterwards I noticed that the leader of the stem was making little progress and that the young leaves were not developing as quickly as those on the adjoining trees, thus showing that part of their nourishing elements had been interfered with or intercepted. For about two months the tree continued to grow very slowly, and a second ring of bark (about 1½ inch broad) was removed from the stem about 20 inches above the other ring (D); this had the effect of still further hindering the growth. The length of the leader formed in the year (1874) previous to the removal of the rings of bark was 28 inches, in 1875 (year of removal of bark) it was 8 inches, while in 1876 it only grew 4 inches. Unfortunately for the object which I had in view, the cutting of the Ash in the winter of 1876 was rendered necessary, as several large trees close by were being felled. However, from the foregoing it will be seen that a part (of no inconsiderable amount) of the sap ascends by the bark. Having preserved the tree as a specimen, and on seeing Mr. Murray's new proposition as to the flow of the sap, it occurred to me that some information regarding this matter might be got by sawing the stem up the centre, and examining the sections: from these it will be observed that no growth took place upwards from the bottom of either ring, and that the bark from the bottom of these rings downwards to the next lateral branches is quite dead (E, E); showing that no sap can ascend in the bark without the pumping action of the leaves. Now in support of the theory that the sap must descend it will be noticed that there are two layers of new wood (one for each year, 1875 and 1876) above the top of the rings (F, F), while there are no new ones in the stem below the lower ring; and it will also be seen that the lower end of these two new layers of wood is freely below the top of the rings of bark when first removed (G, G). From this it apparently follows that the sap to form these layers of wood must have descended. I refrain from making any definite assertion as to what the true course of the flow of the sap may be; but it appears to me that the sap ascends both by the internal vascular portion of the stem and by the bark, and on reaching the leaves receives a portion of its carbonic acid from the air, and descends on the outside of previous year's growth of wood, forming a layer of cambium and new bark cells. This idea may be erroneous, but in the (to me) absence of anything more probable, one can ask to be excused for entertaining it till a more conclusive proof than that of Mr. Murray's be given that it is untenable. Allow me to say that the above is not written in a spirit of mere controversy—if it add anything to the furthering of a true knowledge being got on this extremely interesting subject, my object will be gained. *A.*

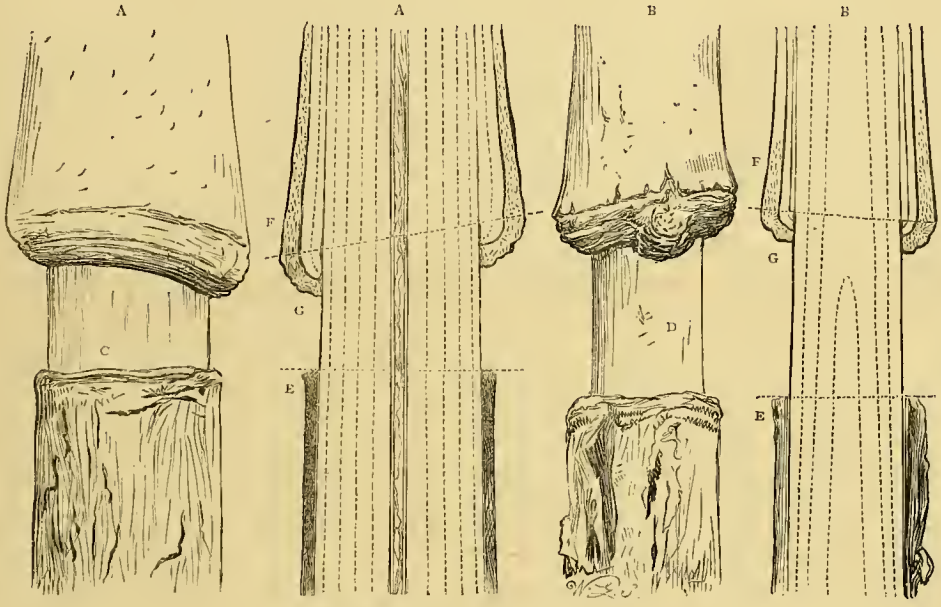


FIG. 62.—EFFECT OF GIRDLING TREES.

The Prairie Rose.—Rosa setigera, or the Prairie Rose, a native of the Western and Middle States, is one of our most ornamental midsummer hardy plants. The blooms are single, deep rose, and produced in dense corymbs along the arching and climbing stems, from twenty to fifty flowers in bouquet-fashion terminating each branchlet. These Prairie Roses are profuse bloomers, bright and pretty, and coming into perfection as they do all through July, some weeks after our garden Roses are past, are quite desirable. They are, too, hardy, and no matter whether isolated or cramped up with other shrubs and Vines, providing they get sun and a rich soil they are quite at home. *William Falconer, August 22.*

The Potato Crops.—I am at a loss to know who is to blame or who will forgive your correspondent for the report you published a few weeks ago respecting the Potato crop. I only know that if I had to send in another report, it would be a very different one, for long before your paper reached the hands of your subscribers the Peronospora or blight had made its appearance in the most violent form. In the whole of my experience I never saw it come on so rapid—it is positively distressing! The cottage gardens and fields are all alike; in this place our crops are simply rotten! And the weather continues as bad as it can be. I expect we shall not be able to save one half enough for the winter supply. *A. Parsons, Danesbury, Welwyn.*

Pittosporum Tobira.—This evergreen tree, from New Zealand, has proved hardy here during the two last winters (out-of-doors). *G., Bath.* [It is quite hardy on the south coast, where it flowers well. EDS.]

Butcher's Broom as a Badge or Crest.—While the Butcher's Broom is being under consideration in your columns, it may be interesting to note that this plant has been used and claimed from a very early date by the Earls of Sutherland as the distinguishing badge of their followers and clan. The present Duke of Sutherland, as Earl and chief of the clan, still retains it, and, although the old feudal times have passed away, every Sutherland Volunteer still wears a sprig of Butcher's Broom on the bonnet as part of the uniform on review and field days. This plant is well suited for such a purpose from its erect prickly habit, and it also retains its green colour for a long time after being cut. Some very old plants, still full of vigour, grow in the old part of the gardens here. They have no doubt provided many a badge in more troublous times than the present. They still furnish an annual supply of about 500 pieces for the Volunteers. During the period the Highlanders were divided into clans or tribes, considerable importance was attached to these badges or crests. Logan, in his work, *The Scottish Gael*, says, "The painted shields, the crests or badges worn on the head, the standards and strictly-regulated patterns of their garments, were the insignia by which the Celtic warrior was distinguished and his tribe recognised." He then gives a list of the plants worn as badges or crests by the Scottish clans, and states that "For carrying these marks of distinction after 1745, some Frasers and Mackenzies were subjected to the penalties of the Disarming Act." The use of plants or flowers as badges was not confined to Scotland. The Wars of the Red and White Roses forms an interesting chapter in English history. *D. M., Dunrobin.*

Reports of Societies.

Royal Horticultural: *Sept. 4.*—As usual at this season, the meeting to-day was a small one, and thinly attended.

FLORAL COMMITTEE.—G. F. Wilson, Esq., in the chair. Mr. Cannell, of Swanley, showed a dozen bunches of cut blooms and half-a-dozen flowering plants of his new striped Pelargonium New Life, and received a First-class Certificate for it as a decorative plant. Mr. Cannell also sent a fine stand of Cockscombs; also cut blooms of several new Zonal Pelargoniums, including Mr. Jean Sisley's valuable new break Dr. Denny, the pips of which are of a bright magenta colour, with a blotch of orange on the two lower petals, and which, though not shown nearly so fine as at Chiswick the other day, was Highly Commended by the committee. Mr. Parker, Tooting, showed a cut panicle of flowers of that fine hardy plant Hydrangea paniculata grandiflora, and also cut spikes of the beautiful blue Lobelia syphyllitica, an old hardy herbaceous plant, which does equally well, if not better, on a bog as in the open border. Of the merits of the Hydrangea really but little is known at present, but after seeing it in Mr. Parker's nursery one cannot do otherwise than strongly recommend it. Mr. Parker has 130 plants in a row, each of which is

about 18 inches high, and bears from two to three glorious panicles of white flowers. It is as hardy as the common Lilac, and a most valuable plant for a row or for mixing (see *Gardeners' Chronicle*, 1875, p. 652, fig. 135). Mr. Craike, The Gardens, Sand Hall, Howden, Yorkshire, sent a specimen of a Coleus under the name of Miss Scholefield, which could not be distinguished from the variety sent out some time ago by Messrs. James Carter & Co. as Duchess of Edinburgh. From Messrs. James Carter & Co. came some immense and very perfect flowers of the African Marigold. Mr. George, Putney Heath, showed some cut blooms of some brightly coloured hybrid Ivy-leaved Pelargoniums named Nemesis, St. George, and Gem. Messrs. J. Laing & Co. sent a close, upright-growing form of Nephrolepis exaltata named compacta; and Sir Henry Peek, Wimbledon House, S.W., received a vote of thanks for a fine specimen of the distinct Oncidium Lanceanum. G. F. Wilson, Esq., showed a fasciated flower-stem of Agapanthus umbellatus, and from Mr. J. Stokes, gr. to Mrs. Charles Crosland, Crosland Lodge, Huddersfield, came cut flowers of two seedling Lapagerias, the one being of fine size and of a nice mottled shade of crimson, and the other pink flushed with crimson. The last named is the greatest novelty, and may prove a useful acquisition. Mr. Kinghorn, Sheen Nursery, Richmond, showed cut flowers of the fine old Tropæolum speciosum, a plant which grows like a weed in Scotland, but which is difficult to grow in the South; but Mr. Kinghorn has succeeded in flowering it very freely this season. From Mr. G. Smith, Edge Lane, Edmonton, came a nice stand of Dahlias, and a similar one was contributed by Mr. Rawlings, of Romford. Mr. Turner also sent a few new Dahlias, as well as cut blooms of the distinct new Petunia, Mount Beauty. Mr. John Keynes, Salisbury, also sent a fine lot of Dahlias, and was awarded First-class Certificates for the following varieties, all of his own raising:—Louisa Neate, a finely formed flower, pale pink with a white centre; Charles Wyatt, a fine fancy variety, deep pink, striped and blotched with crimson; Bessie Ford, rich pink, shaded with rose; Henry Bond, a large bright rose flower; and The Countess, white flushed with crimson, and a dark centre. Messrs James Veitch & Sons received a vote of thanks for a fine display of Seedling Begonias raised from the open ground, and which further went to show the value of these attractive plants for bedding out. From the Society's Gardens, Chiswick, came a choice assortment of Asters, of which a most interesting trial has been carried out this season.

FRUIT COMMITTEE.—J. Lee, Esq., in the chair. Mr. Gilbert, gr. to the Marquis of Exeter, Burghley Park, Stamford, sent examples of five Kashgar Melons named Bhilki Katchgar, Lobiani, Na-Shakar, Anhabat, and Yori Kand. The first four are all of a pale green colour, with darker longitudinal bands of green, and very bad in quality. The best of all was Yori Kand, an oval-shaped, white-fleshed variety; but bad indeed was the best. Several new varieties of Peaches and Nectarines came from Messrs. Thomas Rivers & Sons, Sawbridgeworth, but they were not in good condition for judging. Good ripe fruits of Souvenir du Congrès, Summer Beurré d'Aremberg, and Williams' Bon Chrétien Pears, all grown on pot trees, were shown by Mr. Douglas, gr. to F. Whitburn, Esq., Loxford Hall, Ilford; and from the Society's garden at Chiswick came an interesting collection, comprising samples of thirty varieties of Tomatos.

Great International Horticultural Exhibition: *Carlisle, September* 6.—[*By Special Telegram.*]—The entrance tent is reached by a covered way, and is 200 feet long and 50 feet wide, and is thinly filled with excellent specimens of stove and greenhouse plants, florists' flowers, and subjects of a miscellaneous description. At the end is a central marquee 100 feet in diameter, with a large group of fine-foliaged plants in the centre, contributed by Messrs. Little & Ballantyne of this city, and smaller groups radiating from it of Palms, Ferns, &c., from various other sources, together with an outer staging filled with small plants of various kinds from Messrs. Barron & Son, of Elvaston Nurseries, Borrowash, Clark Bros. & Co, and Thos. Armstrong, of Carlisle. From this circular marquee three other long tents are reached. The first one on the left is about 80 feet long, and contains a miscellaneous assortment of florists' flowers, cut Roses, Pansies, Violas, Dahlias, &c., together with several meritorious exhibits of skeleton leaves, flowers, and seed-vessels. Next comes the fruit tent—the most disappointing part of the whole, but still by no means the least interesting to the non-professional visitor. Then follows a tent 300 feet long by 40 feet wide, with two rows of 4-inch piping running all round, and most efficiently heated, so far as we saw, by one of Hartley & Sugden's (Halifax) patent Climax boilers, which was highly commended by the judges. The piping was fixed by Mr. Corbett, of Corporation Road, Carlisle, and the work does him credit. This tent holds the most valuable lot of subjects on the ground, including magnificent groups of new and rare plants from Messrs. Veitch, B. S. Williams; Ireland & Thomson, Craigleith Nursery, Edinburgh; J. & B. Thyne, Glasgow; Dickson & Co., Chester; and several others.

In another part of the show-ground, or we should say swamp, a long tent is devoted to vegetables, not many of them, nor particularly good in quality; and another to dinner-table decorations, which, on the contrary, are above the usual run of such displays, and really good. These are the whole of the tents—a grand lot of canvas it must be admitted, and all put up by Unite, of Paddington, and lighted with gas by the city authorities.

FRUIT.

The judges commenced their labours, as usual at these northern shows, at 6 A.M., and by the time we reached the grounds, at 7 A.M., their work was nearly over. We found that in the first class, for a collection of sixteen sorts of fruit, containing not more than four sorts of Grapes, two of Pines, and two of Melons, Mr. Johnstone, gr. to the Earl of Strathmore, Glamis Castle, Forfar, was just beaten by Mr. Coleman, gr. at Eastnor Castle, who took the £20 offered as a 1st prize with splendidly finished samples, not over large, of Madresfield Court, Black Hamburgh, Muscat of Alexandria, and Black Morocco Grapes; good Jargonelle Pears, Morellos, Bellegarde and Crimson Galande Peaches, Golden Gem, Eastnor Castle and Queen Emma Melons, Brown Turkey Figs, Pitmaston Orange and Elruge Nectarines, Diamond Plums, Smooth Cayenne and Jamaica Pines, all of exceedingly good quality. Mr. Johnstone has by far the best Grapes, large bunches well filled out with good-sized, well coloured and perfectly finished berries. His varieties are Black Alicante, Muscat of Alexandria, Black Hamburgh, and Barbarossa, good Queen and Smooth Cayenne Pines, Peaches, Nectarines, Plums, Melons, and Figs, but very little behind Mr. Coleman's in quality. Mr. Ingram, gr. to the Duke of Northumberland, Alnwick, is 3d, his most noteworthy exhibits being a fine dish of Trebbiano Grapes and a nice bunch of Bananas. These are the only competitors. In the most important class, which was for a collection of twelve sorts, Pines excluded, there was a much better competition, and the highest prize, £15, goes to Mr. Wallis, gr. to Sir H. Thomson; and the 2d to Mr. McKelvie, gr. to the Duke of Roxburgh, Broxmouth Park, Dunbar. The first-named has Muscat and Black Hamburgh, Buckland Sweetwater, and Muscat of Alexandria Grapes, all fairly good; while Mr. McKelvie has superior samples of Muscat of Alexandria and Black Prince, the latter shown under the name of Southend Black. Mr. W. B. Upjohn, gr. to the Earl Ellesmere, Worsley Hall, Manchester, comes in 3d, and the gr. to J. Whyte Melville, Esq., Mount Melville, St. Andrews, 4th—the latter having, amongst others, the best sample we have seen of the Duke of Buccleuch Grape, which, like Golden Champion, is by no means plentiful here.

The class for ten sorts, Grapes and Pines excluded, is a poor one. Mr. Shand, gr. to the Earl of Lonsdale, Lowther, is 1st, and Mr. H. Graham, gr. to J. Allan, Esq., Craigieburn, Moffat, is 2d.

Pines are a very poor show. The best Queens come from Mr. Ingram, gr., Alnwick Castle, and from Mr. Sandford, gr. to the Earl of Bective, Underley Hall. Of collections of eight varieties of Grapes there are only three exhibits, and the first two prizes go, in the order named, to Mr. G. Reed, gr. to A. H. Moncur, Esq., Rockfield, Dundee, and to Messrs. H. Lane & Son, Berkhamstead. The first-named has a large and beautifully shaped bunch of Barbarossa as his centre of attraction, and smaller but certainly good samples of Muscat of Alexandria, Lady Downes, Black Hamburgh, Black Alicante, Mrs. Pince's Black Muscat and Gros Colman, the latter especially being fine in berry, but not quite up to the mark in colour. Messrs. Lane's Grapes are very good, but not in their usual style.

There are no less than fourteen collections of four varieties of Grapes, but they are mostly unripe, and as a rule bad. The 1st prize is easily won by Mr. J. R. Hammond, gr. to Sir Wilfrid Lawson, Brayton Hall, with clean and well finished samples; Mr. Coleman, Eastnor Castle, is 2d; Mr. A. Kirk, gr. to Mrs. Mackie, Ernespie House, Castle Douglas, 3d; and Mr. J. Curror, gr. to J. Douglas, Esq., Eskbank, Edinburgh, 4th. There are twelve lots of two bunches of Black Hamburghs, but they are mostly bad. Mr. Coleman is 1st, and Mr. Upjohn 2d. Messrs. Lane & Son are 1st for a pair of bunches of Muscat; and Mr. D. Fraser, Stobo Castle, 2d for two bunches of Madresfield Court, good samples in all respects but colour. The best Lady Downe's come from Sir Wilfrid Lawson, whose Black Alicantes are also very perfect in berry, colour, and finish. Mrs. Pince is represented by a brace of fine bunches, about 3 lb. weight, only wanting in colour to make them perfect. The class for two bunches of Muscat of Alexandria is a particularly good one. Mr. McKelvie, gr. to the Duke of Roxburgh, is 1st, with a grand sample; 2d, Mr. A. Ferguson, gr. to B. Shawley, Esq., Cavick Hall, Selby; and 3d, Mr. Coleman of Eastnor Castle Gardens. The Duke of Buccleuch is best shown by Messrs. Wm. Thomson & Son, Clovenfords; and Buckland Sweetwater by Mr. J. Curror. In the last class, that for any other white Grape, Pearson's Golden Queen is shown by Mr. Anderson, gr. to the Earl of Stair, Oxenford Castle. The heaviest bunch of the black Grapes is one of Alicante, weighing 6 lb. 13 oz.; and the heaviest white, one of Syrian, weighing 9 lb. 3 oz.; both being shown by Mr. Dixon, gr. to J. Jardine, Esq., Arkleton. The 1st prize for one bunch, finest bloom, not less than 1 lb. weight, comes from Mr. Lees, gr. to the Marquis of Downshire, Hillsborough Castle, Co. Down, the sort being called Cooper's Late Black, whatever that may be.

Peaches, Nectarines, Melons, and Plums are not particularly good classes, and were it not for large and admirable collections of Apples and Pears sent by Mr. Jones, gr. to the Queen at Frogmore, and by Mr. Miles, gr. to Lord Carington, the display in those departments would have been equally poor. The 1st prizes in the class for a collection of hardy fruits, given by J. Jardine, Esq., of Arkleton, is won by Mr. Sandford, gr. to the Earl of Bective. It is a fairly good class, and that is all that can be said of it. As a rule, the hardy fruits are all poor, and, therefore, the amateur classes need not be more than mentioned.

In the classes devoted to fruits of Continental growth there is only one exhibitor, M. Adolphe d'Haene, of Ghent, who sends a selection of Apples and Pears and takes a 1st prize. This is the extent of the international character of the show. Amongst miscellaneous subjects must be mentioned a meritorious lot of Citrons, &c., from Mr. J. Muir, gr. to C. R. Mansel Talbot, Esq., Margam Park, Glamorganshire.

PLANTS.

In this department there is a good display, but the subjects sent in are rather thinly spread out, and do not strike us, as a whole, as being so good as at previous shows in this part of the country. The 1st prize of £20 for twenty stove or greenhouse plants is well won by W. Troughton, manager to the Nursery and Pleasure Gardens Company at Preston, who stages a handsome specimen of Lapageria rosea, fine examples of Cycas revoluta, Phœnocoma prolifera, Croton Weismanni, Cocos Weddelliana, fine tall specimens of Alsophila australis, Dicksonia antarctica, D. squarrosa, Dion edule, and Cycas circinalis. For twelve new plants not yet in commerce Mr. Bull is 1st with Alocasia Johnstoni, Bowenia spectabilis serrulata, Croton triumphans, Aralia splendidissima, Dieffenbachia Shuttleworthii, Dracæna Goldieana, Curmeria marmorata, Martinezia Roezlii, Croton formosus, Aralia ornata, Diffenbachia regina, and Zamia princeps; and Mr. B. S. Williams comes in 2d with very good specimens of Cibotium nigrescens, a striking new Tree Fern; Nepenthes phyllamphora variegata, Aralia nobilis, Dracænas Bausei and Scottii, Croton Prince of Wales, &c.; Messrs. J. & R. Thyne, of Glasgow, are 3d, with large specimens of Calamus Goldieanus, Hechtia Maclellani, Dieffenbachia Thynei, and Aralia neo-caledonica. Mr. Bull's cups were won by J. M. Shuttleworth, Esq., Howick House, Preston; Mr. J. Hammond, gr. to Sir W. Lawson: and by Mr. J. McIntyre, gr. to A. A. Richardson, Esq., Lisburn, Ireland. Mr. Shuttleworth's are a grand lot of new plants, including Plectocoma Andersoni, Encephalartos villosus ampliatus, Sadleria cyatheoides, Dipladenia Brearleyana, a finely bloomed plant, Crotons Disraeli and majesticus, Bertolonia superbissima, Lomaria Dalgairnsiæ, and Macrozamia plumosa, &c. Mr. Shuttleworth also sends the best dozen stove and greenhouse flowering plants, including magnificent specimens of Gleichenia dicarpa, 6 feet high and the same through, Phormium Colensoi variegatum almost as large, Allamanda nobilis, Dipladenia insignis, all large and profusely bloomed, and a remarkably fine plant of Lapageria rosea, well flowered. Mr. Todd, gr. to A. B. Stewart, Esq., Rawcliffe, Langside, is 2d. The best six come from J. Hammond, Sir W. Lawson's gardener, and the same exhibitor is also to the front with half a dozen fine-foliage plants. Of dinner-table plants the display is excellent, the entries being numerous, and the plants staged thoroughly good for the work intended. Mr. Shuttleworth, Preston, comes in 1st; Mr. Todd, 2d. For a dozen new plants for the same purpose, Messrs. J. & R. Thyne are well 1st, and Messrs. Clark Brothers & Co., Carlisle, 2d. Of the other plants shown in lots we need only say that they are of fair average quality, and call for no comment except perhaps in the case of Liliums, which are specially well shown by Mr. Shand, gr. at Lowther Castle.

The TABLE DECORATIONS are prime features in the display and a source of much local interest. There are eleven competitors, and for a wonder not a particularly bad example amongst them. The 1st prize, a cup, value £25, given by Lady Musgrave, Eden Hall, Penrith, was deservedly awarded by the lady judges

to Mr. James Cypher, of Cheltenham, who put up one of the lightest and prettiest tables we have seen. Everything used is of the best quality, and the design is put together very thinly and with good taste. From the light and elegaot the ladies jumped to the severely heavy, in giving the 2d prize to Mr. Shand, gr., Lowther Castle, whose table, though neatly arranged, is much too heavy and contains too much colour. The 3d is awarded to Mr. Lewin, gr. to Colonel Buchanan, Drumpellier.

Cut flowers are not shown to anything like the extent we expected, and include nothing out of the common order.

Coniferous Plants are well shown by Messrs. Barron & Son, Elvaston Nurseries, Borrowash; Dickson & Turnbull, Perth; and Little & Ballantyne, Carlisle, who take the prizes in the order named. In the class for fifteen specimens Messrs. Barron & Son have splendid examples of Abies Alcoquiana, A. Parryana, Piceas magnifica, Nordmanniana, Parsonsiana, and bracteata; Retinospora plumosa aurea, R. filifera, and R. obtusa compacta; Arthrotaxis selaginoides, Biota elegantissima, Cupressus Lawsoniana lutea and erecta viridis, Thujopsis dolabrata variegata, &c. Messrs. Barron & Son are also 1st for six hardy Conifers not yet introduced into commerce, with Podocarpus alpina, Wellingtonia gigantea lutea, Retinospora tetragona aurea, Picea concolor, Retinospora pisifera aurea, and Cupressus Lawsoniana elegantissima. The 1st prize for a new hardy Conifer of real merit is won by Messrs. Little & Ballantyne, with their very handsome Wellingtonia gigantea pendula vera, a very distinct plant, to be sent out this autumn.

Of the display of Vegetables we can only say that it, too, is not up to the mark, the number shown being under the usual autumn quantity, and certainly inferior to the Northern standard of excellence, and to the Southern too for that matter. Mr. Sandford, gr., Underley Hall, sends the best collection of twenty sorts, and Mr. Nichol, gr. to J. A. Cory, Esq., Botcherby, comes in 2d. In the class for ten varieties the competition is very much better, and certainly there is a better class of produce here. G. Bloxholm, gr. to Sir P. Duncombe, Brickill Manor, Bletchley, is 1st with the neatest lot of all. In the amateur's classes the samples are both numerous and fairly good.

Miscellaneous Groups of plants are contributed most liberally by Messrs. Veitch & Sons, B. S. Williams; James Dickson & Sons, Newton Nurseries, Chester; Ireland & Thomson, Craigleith Nursery, Edinburgh; R. Thyne, Glasgow; R. P. Kerr & Sons, Aigburth Nursery; and R. Pattinson, Carlisle, all of whom are "commended" or "highly commended" by the judges in the show ground.

Messrs. Little & Ballantyne have a fine stand for the display of seeds, dried grasses, and cereals and garden cutlery, for which a silver medal is awarded. Horticultural buildings are shown by Messrs. Boulton & Paul, of Norwich, and Richardson & Co., Darlington; the Hudley Lawn Mower by Mr. Parkinson, Ripon; garden furniture by Haughton & Thomson, Carlisle; boilers by Hartley & Sugden, Halifax; summer-houses by H. Inman; and wirework by J. Branhan, Dale Street, Liverpool.

The judges made an inspection of these, but the rain prevented our learning with what results. All the tents are efficiently lighted with gas at night, and fitted with patent pneumatic bells, by Corbett, of Carlisle. It is most unfortunate that the weather should have turned out so unfavourably, as the committee have gone to an enormous expense, and the entries promised a magnificent show.

Basingstoke Horticultural: *August* 21.—This is an old exhibition resuscitated, after being allowed to lapse for several years. The show itself was very creditable a s a first attempt, and improvements in the general cultivation of the plants will be certain to follow. There were enough to fill three spacious tents, and a small one had to be improvised to take a miscellaneous collection of plants that was crowded out of the larger tent.

The principal exhibitors for competition were Wyndham Portal, Esq, Malshanger Park (Mr. N. Kneller, gr.); W. L. Chute, Esq., Basingstoke (Mr. G. Broomfield, gr.); T. Pain, Esq., Basingstoke (Mr. T. Russell, gr.); Major Warren, Basingstoke (Mr. Osman, gr.); the Rev. Mr. Fitton, Laverstoke (Mr. H. McLean, gr.); the Rev. Mr. Fraser, Basingstoke (Mr. B. Roberts, gr.); and Dr. Webb (Mr. Penford, gr.)

The display of plants was not large, but they were on the whole pretty well grown. Mr. N. Kneller had the best six foliage plants, consisting of Dracæna terminalis, Gymnogramma sulphurea, Coleus The Shah, Croton irregularis, Caladium Chautinii, and Cyanophyllum magnificum. The best six exotic Ferns came from E. Bates, Esq. (E. Turner, gr.), nice, well-grown, small-sized plants; and the same exhibitor had a good and varied collection of hardy Ferns. Achimenes, Fuchsias, Balsams, Pelargoniums, &c., were also shown. In the amateurs' classes there was generally a good competition with plants, which were on the whole small in size, but clean and nicely bloomed. Under the head of miscellaneous a good group of Crotons, Ferns, Palms, &c., was shown by Mr. Hibbert, gr. to W. B. Beach, Esq., Oakley Hall; and a useful group came from Mr. Dauncey, gr. to Branston Slane, Esq., while a collection of flowering plants, useful decorative stuff, came from Mr. G. Cooper, florist, Basingstoke.

The best collection of eight dishes of fruit came from Mr. Kneller, as also did the best three bunches of Black Hamburgh and Buckland Sweetwater Grapes, also the two best Melons. In the scarlet-fleshed class Sutton's Hero of Bath was very fine in quality.

Vegetables were capitally shown, Mr. Kneller having the best collection of ten distinct varieties. There was a handsome special prize for a collection of eight varieties of Potatos, and this also fell to the lot of Mr. Kneller, who had capital examples of Late Rose, Waterloo Kidney, Blanchard, Schoolmaster, Sutton's King, Birmingham Blue, Snowflake, and one other. By several exhibitors Salmon Kidney was shown under the name of Bountiful, leading to the supposition that it has been distributed under that name. (*From a Correspondent*).

Trowbridge Horticultural: *August* 22.—As usual, the show ground was literally crammed with visitors towards evening. From the surrounding districts they come into the town thickly in the morning, the early part of the day is spent in examining the decorations in the town, soon after mid-day a general move takes place to the show ground adjoining the railway station, and as soon as the cheap admission commences the tents speedily become almost impassable.

It was said to have been the best show of fruit for the last three years. The best ten dishes came from Mr. King, gr. to R. V. Leach, Esq., Devizes Castle, who had Black Alicante and Muscat of Alexandria Grapes, Bellegarde and Barrington Peaches, Prince of Wales and Pitmaston Orange Nectarines, Melons, Moor Park Apricots, Green Gage Plums, and Morello Cherries. Mr. Squires had the best two bunches of Black Hamburgh Grapes, as well as the best two bunches of White Muscat. The best black Grapes other than Hamburgh were Muscat Hamburgh from Mr. J. White, in excellent condition; Mr. King coming next with some well finished examples of Black Muscat. Dessert Pears were represented by Jargonelle and the Windsor Pear; dessert Apples by Summer Stibbert, Fletcher's (?), Red Quarrenden, Red Astrachan, Carnation (?), very handsomely striped with red, a fine early variety; and Kerry Pippin: culinary Apples by Lord Suffield, Cox's Orange Pippin, Emperor Alexander, Newtown Pippin, and Manks Codlin; Nectarines by Pitmaston Orange and Elruge; Peaches, which were generally very good, by Noblesse, Royal George, Grosse Mignonne, and Violette Hâtive. The best red Plums were Kirke's, Orleans, Magnum Bonum, Victoria, and Goliath; white varieties were represented by Washington and Green Gage. Apricots were very good, the season considered.

Fuchsias are always the leading characteristic among flowering plants, and they were on the whole extremely well done this season. The best six as well as the best four came from Mr. Matthews, gr. to W. B. Brown, Esq., Trowbridge. As usual the plants were large, well grown, and beautifully flowered. The group of six comprised Souvenier de Chiswick, Alba coccinea, a beautiful plant, and a charming exhibition variety; Doel's Favourite; Marginata, very fine; Rose of Castille, very fine; and Marchioness of Bath, admirably done. The group of four comprised Pauline, Rose of Castile, British Sailor, and Lustre. On this occasion Mr. Lye, gr. to the Hon. Mrs. Hay, Market Lavington, had to take second honours in both classes, having in his group of six plants, Queen Victoria, Charming, Hon. Mrs. Hay, Delicata, Purity, and Doel's Favourite; and in his group of four varieties Marginata, Scarlet King, Rose of Castille, and a fine dark seedling. Mr. E. Hobbs, gr. to J. Gayton, Esq., Trowbridge, was 3d in both classes. As usual Petunias, Fuchsias, Balsams, Cockscombs, Zonal Pelargoniums, &c., were finely shown.

Stove and greenhouse plants, as well as foliaged plants, were scarcely up to the mark, but all the growers complained of the season. Exotic Ferns were plentiful and generally good, but mostly of medium size, because of the extent of the leading collections, as many as eighteen distinct kinds being required.

Vegetables were largely shown in all the classes, and of superb quality. The cottagers' tent was a show in itself, so good were all the exhibits. Potatos were particularly numerous, large, clean, and handsome. Many old varieties are known there under local names, but some of the cottagers' trays contained from twenty to thirty varieties.

In the cut flower classes Dahlias are always a feature, as Mr. Keynes, of Salisbury, makes a point of exhibiting at Trowbridge; and indeed he is looked upon as one of the pillars of the exhibition. His stand of twenty-four varieties, all the blooms in which were remarkably fine, comprised Royal Queen, James Cocker, Flag of Truce, J. N. Keynes, James Service, Mrs. Stancomb, Burgundy, Henry Walton, Jno. W. Lord, Baron Taunton, Thomas Godwin, Queen of York, Vice-President, Queen of Beauties, Alexander Cramond, Harriett Tetterill, John Wyatt, Mrs. Downie, William Lewis, Hon. S. Herbert, Lady G. Herbert, George Goodball, and Prince Arthur. Mr. Thomas Hobbs, Lower Easton, Bristol, was 2d, with much smaller flowers. Mr. Keynes' stand of twelve fancies consisted of Octoroon, Rev. J. B. Camm, Richard Dean, Fanny Sturt, Mrs. Saunders, Henry Glasscock, Samuel Bartlett, Miss Lilly Lange, and seedlings. The best seedling Dahlia of 1877 was Eclipse (Keynes), pale primrose, heavily tipped with orange-brown—a flower of high-class quality; Charles Wyatt, a wine-purple ground, fancy, flaked with crimson, was remarkably fine; as near perfection in a fancy as can well be imagined. Both the foregoing received First-class Certificates of Merit, as did also Louise Neate, pale apple-blossom, a charming flower; George Barnes, Henry Bond, Maid of Athens (fancy), and Cleopatra, rich glowing red, intense in colour.

Messrs. Kelway & Son, Langport, staged a fine lot of Gladioli, in their usual admirable style, some of them seedlings of rare merit, and to the following First-class Certificates were awarded:—Helena, Vemileius, Crown Prince, Buteo, Charmante, very rich in colour; Scepas, and Semile. (*From a Correspondent.*)

Reading Horticultural Autumn Show: *August* 23.—It is worthy of remark that, while the season has proved generally unfavourable to plants, fruits, &c., certain exhibitions have been unusually fine notwithstanding. A striking illustration of this was afforded at Reading on the above date, for, as a whole, the show was one of the best held for years. The large exhibition tent was completely filled, and the exhibits were admirably arranged by Mr. Phippen, the superintendent. The Forbury gardens, too, which form an excellent approach to the Abbey ruins, in which the shows are held, are now at their very best.

The leading feature was the class for nine stove and greenhouse plants, and here Mr. E. Tudgey, gr. to J. F. Williams, Esq, Henwick Grange, Worcester, was well ahead with good examples of Allamanda nobilis, Ixora aurantiaca, Erica Fairrieana, Clerodendron Balfourianum, Erica Austiniana, Statice profusa, and Anthurium Scherzerianum; 2d, Mr. W. Lees, gr. to Mrs. Marsland, Reading, whose best examples were Allamanda Schottii, Bougainvillea glabra, Pentas carnea, and Scutellaria Mociniana. With four plants, Mr. G. Parham, gr. to G. May, Esq., Reading, was 1st, having nice examples of Vinca alba, Lantana Le Grenadier, Bougainvillea glabra, and Allamanda Hendersoni. There were some good single specimens of stove and greenhouse and foliaged plants, which greatly helped the show. Probably some of the best-grown Lycopods ever seen were furnished by Mr. S. Mortimer, gr. to Major Storer, Purley Park. The group comprised an admirable selection, excellently grown, viz.:—Selaginella cæsia, Martensii, Martensii variegata, Kraussiana, Kraussiana variegata, and stolonifera. The best group of nine foliaged plants also came from Mr. Tudgey, who had Croton Veitchii, Cycas revoluta, Latania borbonica, Stevensonia grandiflora, Dracæna Shepherdii, Dasylirion acrotrichum, Croton interruptus, Cordyline indivisa, and Pritchardia pacifica—a capital lot. The best group of exotic Ferns came from Mr. J. C. Higgs, gr. to Mrs. Crawshay, Reading, and they formed a bold feature at one end of the tent.

Variegated Pelargoniums were well shown by Mr. Ashby, gr. to Mrs. Fanning, Reading, some of the best-finished plants seen this season; and by Mr. J. F. Mould. The 1st prize group of six bedding Pelargoniums, from Mr. S. Mortimer, were well done, and as they comprised fine exhibition varieties their names are given, viz.:—Premier, Clipper, Rose Bradwardine, Lord Derby, Mrs. William Paul, and Excellent.

Mr. W. Lees was 1st with six Fuchsias, but a long way behind the West of England exhibition style. Mr. J. F. Mould, had some well-grown Ericas. Lilies in pots were a good feature, so were Cockscombs, Coleus, Balsams, &c.

The groups of plants for effective arrangement were well set up on this occasion; Mr. G. Parham was 1st. This is a favourite feature of the Reading people, and the decisions of the judges are freely criticised. Of cut flowers Messrs. Phippen & Robinson set up a capital stand of twenty-four bunches, which was a great improvement on the bouquets of previous years. This stand included some good hardy things, the pretty Physostegia imbricata being very attractive. Mr. Tudgey had the best twelve bunches of stove and greenhouse flowers, and all the exhibits in this class were highly meritorious. The best twenty-four Dahlias came from Mr. Jackson, nurseryman, Kidderminster. The best twenty-four Roses came from Mr,

Corp, Oxford, very fresh and nice. Gladioli and Asters were well shown. Table decorations both of garden flowers and of wild flowers were very good, in the one class Miss Phippen was 1st, in the other Mrs. Adwarn. Messrs. Phippen & Robinson had a charming bridal bouquet, a long way in advance of any other; and the basket of sweet scented flowers arranged by Miss Phippen was an excellent performance.

The blue riband of the fruit prizes was the handsome silver cup given by Messrs. Sutton & Son, for the best collection of eight dishes of fruit; and there having been three good money prizes also, a good competition ensued. The best came from Mr. C. Howe, gr. to Sir Richard Sutton, Bart., Benham Park, who had a fine lot, including Black Hamburgh and White Muscat Grapes, Pine, Melon, Peaches, Nectarines, Pears, and Figs. Mr. Austen had some remarkably fine Noblesse Peaches, and a collection only just second in point of merit. The best collection of four dishes came from Mr. J. C. Higgs, Caversham Park, who had black and white Grapes, Melon, very fine Barrington Peaches, capital Moor Park Apricots, and Elruge Nectarines. The best four dishes of fruit grown in the open air came from Mr. J. S. Bellis, gr. to Major Thoyts, Sulhampstead House, Reading.

The show of Grapes was both extensive and excellent. The three bunches of Black Hamburghs from Mr. J. Ashby, gr. to W. Fanning, Esq., were perfect examples of high-class culture. In the class for three bunches of black Grapes other than Hamburghs, Mr. Atkins was to the fore with some superb examples of Madresfield Court. In the class for three bunches of white Muscats, Mr. P. Feist was 1st, with well finished bunches. With any other variety of white Grape Mr. J. Wells, gr. to R. Ravenhill, Esq., Winkfield, had some very fine examples of Buckland Sweet-water. Peaches were numerous and fine; the best dish was Barrington, from Mr. J. C. Higgs, and wonderful fruits they were. Nectarines were good, so were Apricots, and Melons were in plenty. The best three dishes of Plums came from Mr. A. Bridgeman, gr. to T. S. Cocks, Esq., Marlow, and consisted of Washington, Kirke's, and Green Gage. Apples were plentiful and good. Vegetables were numerous and very good, but space will not admit of particulars being furnished. (*From a Correspondent.*)

Henley-on-Thames Horticultural: *August* 29.—The annual show of the Society was held in connection with a show of poultry, &c., on a meadow adjoining the town. As usual at this place, there was a good display of stove and greenhouse plants, also Ferns, Lycopods, and foliaged plants. For six stove and greenhouse plants Mr. Smith, gr. to C. Lane, Esq., was 1st, 2d honours going to Mr. Good, gr. to the Right Hon. W. H. Smith, Greenlands. The 1st prize lot contained nice young plants of Dipladenia amabilis and splendens in fine health and well-flowered; also Ixora Williamsii, Clerodendron falax, Anthurium Scherzerianum, and an Oocidium. In Mr. Good's collection was the old Rondeletia speciosa, Phœnocoma Barnesii, Cassia corymbosa, &c., all well-grown plants. The same exhibitor stood 1st with eight fine-foliaged plants. In this group Croton Weismanni, Cyanophyllum magnificum, and Acalypha Wilkesiana, were conspicuous; he also took a 1st prize for a single specimen plant of Ixora Williamsii, the 2d prize going to a Dipladenia splendens. Fuchsias were fairly shown, as were Cockcombs and Balsams. Zonal and variegated Pelargoniums combined made a good display, Mr. Smith, gr. to C. Law, Esq., being 1st with six of Dr. Denny's varieties. Mr. Good contributed a nice group of Ferns, which took 1st honours, and included a fine plant of Gymnogramma peruvianum; six very good speciemns of Lycopodiums were also staged by the same exhibitor. In the fruit classes belonging to this section were some small but nicely finished Black Hamburgh Grapes: 1st, Mr. Neville; 2d, Mr. Rixon, gr. to J. Cooper, Esq. For other black kinds Mr. Good was the only exhibitor, and had the 1st prize with three nice bunches of Madresfield Court, which just required the finishing stroke in colour to make them perfect examples of this fine Grape. A dish of Muscats from Mr. Reeves, an amateur, was a highly creditable production, and as such deserved the 1st prize. Very good Peaches were shown by Mr. Neville and Mr. Good; the first had a splendid dish of Grosse Mignonne, and the latter grower was 1st with a dish of Elruge Nectarines in that class. Excepting Morello Cherries and culinary Apples the supply of hardy fruit was, as might be expected this year, confined to a few dishes of each sort. Vegetables were good, but not plentifully shown. The keenest competition in this way was in the collections of nine dishes of distinct kinds—Mr. Neville, gr. to W. Vidler, Esq., coming in 1st with excellent Celery, Peas, French Beans, &c. In the open class Celery, Cucumbers, and Onions were particularly good, Snowflake Potatos taking the premier prize for kidneys and Paterson's Victoria in the round sorts.

In the section devoted to amateur growers the 1st prize lot for four varieties comprised Vallota purpurea, Plumbago capensis, Balsam, and a Sedum. Other exhibits—scarlet and variegated Pelargoniums, Balsams, &c.—were fairly good, as was the cut flowers of Dahlias, Roses, Asters, and Zinnias, Verbenas being very poor. The Grapes in this section were about an average quality; Melons poor; Peaches fair; one dish of good Orleans Plums; no Figs or Pears, and but few dessert Apples. Amongst vegetables we noticed good Snowflake and Victoria Potatos, both taking the leading position in their respective classes; fine Onions and Peas, Laxton's Quality being 1st. For collections of vegetables Mr. Tranter was 1st, and Mr. Mortlock 2d.

In the cottagers' tent a very creditable lot of vegetables appeared, many of the dishes being nearly equal in point of merit when compared with the gentlemen's gardeners. The front of the stage in this tent was filled, in a very effective way, with a miscellaneous collection of plants, including Fuchsias, Zonal Pelargoniums, Coleus, &c., which were interspersed with Maidenhair Ferns and cut flowers of Gladioli, Zinnias, Asters, &c., by Mr. Jones, nurseryman, of Henley-on-Thames. A very interesting collection of wild flowers was sent by the Park Place Gardens Botanic Class, held in connection with the Science and Art Department, South Kensington, comprising 228 species, all these being obtained from the immediate locality. A group of young Palms, including some of the best varieties in cultivation, in fine condition, was sent from the gardens of the Right Hon. W. H. Smith, Greenlands. *Observer.*

Isle of Thanet Horticultural: *August* 29.—The twelve miscellaneous stove and greenhouse plants exhibited by Mr. F. Miller, gr. to Mr. Friend, and which were awarded the 1st prize, were particularly good, as were also the twenty-four miscellaneous, arranged for effect, the first in which was taken by Mr. T. Godfrey, gr. to Mrs. Jolliffe. For six exotic Ferns Mr. Jarman was fortunate, and deservedly so; we could not help noticing two particularly good ones amongst his collection—a small Adiantum gracillimum and a Lastrea called elegans. The next in order of merit, those shown by Mr. Godfrey, gr. to Mrs. Joliffe, were also much admired. There was a good show of Begonias and Petunias. Of Pelargoniums there was a first-class show, the golden and silver tricolor and bronze being a capital competition. Among the cut flowers the Dahlias were good, those shown by Mr. Miller and taking 1st prize being very fine. Marigolds and Hollyhocks were a passable show. In this tent the most noticeable stand was that of Messrs. Kinmont & Kidd, of Canterbury. There were a couple of boxes of Dahlias, but the great feature of the stand was the collection of Roses, their Maréchal Niels being superb; indeed their show of Roses was really splendid. The Roses for competition, though they in no way approached in excellence to the above, were very good for the time of year, Mr. C. Howard carrying away the 1st prize. Another stand worthy of mention was that of Mr. H. Cannell, nurseryman, of Swanley, his Pelargoniums being especially good.

Coming to the fruit, the Grapes were exceedingly fine, three bunches of Muscat of Alexandria shown by Mr. W. Jarman averaging, we should think, 4 lb. a bunch; the berries were very large and the colour excellent. Mr. Jarman also exhibited the heaviest bunch, which weighed 5¼ lb. There was a capital show of Figs, and the Melons were better than last year, both the scarlet and green-fleshed ones being very fair specimens. There was a bouquet of exotics, by Miss Kinmont, not for competition, with a decoration for the table, worthy of special mention, and the only regret appeared to be that Miss Kinmont had not exhibited for prizes.

Of vegetables there was an excellent competition. The cottagers' productions were also very good this year. The Potatos, Onions, &c., were first-class, it being remarked that in many instances they were superior to the professional gardeners' vegetables. (*From "Keble's Gazette."*)

Preston Horticultural: *August* 29 *and* 30.—This Society held its annual exhibition on the above date in the spacious glass-covered area of the Corn Exchange. The weather in the north of the kingdom has been such this summer (with rain almost every day since the beginning of July) that many of the productions, especially flowering plants, have upset the calculations of the growers, not being sufficiently in bloom at the time they were intended for, hence the more limited competition in some of the classes.

Collection of thirty plants in 12-inch pots (nurserymen only).—1st, the Preston Nursery Co., showing a beautiful lot of mixed flowering and foliage plants, amongst which were nice examples of Erica Marnockiana, E. insignis, E. Fairrieana, E. Aitoniana Turnbullii, the white Lapageria, Phœnocoma prolifera, and the singular and seldom-seen Gloriosa superba; Encephalartos cycadifolius, Dion edule, Cocos Weddelliana, Kentia Canterburyana, and splendidly coloured young specimens of Croton Weismanni and C. majesticus. The whole were in a free-growing condition, and in no ways stunted, as the groups restricted to size of pot are often met with.

In the twelve miscellaneous plants there was a close and spirited competition, Mr. Newton, gr. to W. Birley, Esq., being 1st with an even well-matched group, conspicuous in which was Allamanda nobilis, Ixora coccinea, Bougainvillea glabra, and Crotons undulatus and variegatus. Mr. Williams, gr. to Colonel Birchall, was a close 2d, stronger than his opponent in foliage-plants, but weaker in blooming subjects. He had the rarely-met-with pretty white flowered Abelia rupestris, Vallota purpurea, a fine Agave schidigera, Dracæna Draco, Phœnix reclinata, and Cycas revoluta.

Six stove and greenhouse plants, three in flower and three foliage.—Here the competition was so close betwixt Mr. Newton and Mr. Leayell that equal 1sts were awarded them. The best plants in Mr. Leayell's exhibit were Lapageria alba, Erica Marnockiana, and Maranta Veitchii, Mr. Newton had Allamanda grandiflora, Bougainvillea glabra, and Latania borbonica in very nice condition.

Three ornamental foliage plants.—In this class Mr. Leayell deservedly took first honours, showing one of the finest examples of the Venus Fly-trap (Dionæa muscipula) we have ever seen, in a pan 15 inches across, a dense mass of healthy traps, individually large and of the peculiar bronzy tinge this strange plant is sometimes seen in. This collection also contained a nice young plant of Nepenthes Rafflesiana.

Adiantums were well represented. For three Mr. Leayell took the lead, Mr. Williams being a very close 2d; Mr. Newton and J. Harding, Esq., equal 3d.

Six dinner-table plants.—These were well shown. In a near competition Mr. Newton was 1st with plants just right in size, not too big or two massive; 2d, J. C. Stevenson, Esq.; 3d, J. Harding, Esq.

Mr. Thornher, gr. to T. M. Shuttleworth, Esq., exhibited, not for competition, a splendid group of fine-foliage plants, comprising grand examples of Palms, amongst which noticeable were Areca Verschaffeltii, Chamærops humilis, and Cocos Weddelliana, an immense specimen; Dion edule, Phormium Colensoi variegata, a beautifully-grown Dasylirion gracile, Dicksonia antarctica, Vriezia reticulata, immense plants of Adiantum glaucophyllum, A. tenerum, and A. trapeziforme, from 4 to 5 feet across, and a very large example of the Fern-like Paullinia thalictrifolia.

The Preston Nursery Company also showed a group to which the 1st extra prize was deservedly awarded, in which was probably the best example of Lapageria rosea, trained as a pot specimen, ever produced—4½ feet through, and as much in height, completely clothed with its beautiful bell-shaped blossoms; and well-flowered examples of the Willow-leaved Ixora (I. salicifolia), Allamanda Hendersoni, Phœnocoma prolifera, and a well-coloured Bougainvillea glabra, intermixed with tall Tree Ferns, Palms, Dracænas, and Crotons—altogether a well-grown, effective lot. The Company likewise had a large collection of new and rare plants, occupying a long table. Messrs. T. Hodson & Son, nurserymen, Preston, exhibited a very nice selection of flowering and fine-leaved plants, furnished window-boxes, garden appliances, &c., which received an extra prize.

Fruit from under glass was exhibited in moderate quantities; the extreme wet experienced in this part has been very much against outdoor fruits. Collection of six dishes.—1st, Mr. J. Myerscough. Two bunches black Grapes.—1st, Mr. Loose, gr. to Lord Winmarleigh, having beautiful bunches of Madresfield Court, well finished in every respect; 2d, Mr. Meehan, gr. to J. Brown, Esq., with Black Hamburghs; 3d, Mr. J. Myerscough. Two bunches white Grapes.—1st, Mr. Loose, showing good examples of Muscat of Alexandria, even in berry and nicely coloured; 2d, Col. Cross; 3d, Mr. Meeham. Mr. Loose had a beautiful bunch of Black Hamburgh Grapes, 11½ lb. in weight, finely swelled berries, compact, and the best finished generally we have seen for so large a bunch of this variety. (*From a Correspondent.*)

Dundee Horticultural: *August* 30.—Many flowers, such as Gladioli, are weeks behind in flowering, while Hollyhocks are rotted by the rains. Asters, Pansies, and Marigolds are in wretched condition, while herbaceous blooms generally present a draggled appearance. Nevertheless, the exhibition was in every way good. In the competition for stove or greenhouse plants Mr. James Wilson, gr. to Mr. George A. Cox, Beechwood, gained the 1st prize. Next in conspicuous position were the exhibits and prizes gained by the local nurserymen, to whom the Society is greatly indebted for their readiness in coming forward to sustain the shows by their valuable collections. Messrs. John Stewart & Sons were successful in carrying off a large share of the prizes, obtaining 1sts for Ferns, Pelargoniums, hardy shrubs, Roses, and bouquets. Messrs. Laird & Sinclair were successful in taking 1st honours for a group of stove

and greenhouse plants, for plants for table decoration, for Pelargoniums in flower, for alpine plants, also prizes in various other classes open to nurserymen. Messrs. D. & W. Croll had for exhibition a collection of stove and greenhouse plants, which contained compact, well-grown specimens of the leading varieties, also Pelargoniums in flower, variegated-leaved Pelargoniums, exotic Ferns, alpines, and table plants, &c. For two pots of Lilium speciosum the 1st prize was awarded to Mr. James Low, Maryfield. In scarlet Pelargoniums there were three competing gardeners: the 1st prize fell to Mr. W. Alison, gr. to Mr. J. F. Low, Seaview, Monifieth. Mr. David Middleton was 1st for six exotic Ferns. Some 165 pots of alpines were shown, Mr. Andrew Pattison, of the Baxter Park, came to the front with the best thirty. It is pleasant to find the old-fashioned "Heather-reenge" (Hydrangea) of our grandmothers encouraged in the present show, and Mr. A. J. Warden gained the 1st prize for a specimen with thirteen heads of the colour and shade the ancient matrons of the Glamis district delighted in. Mr. David Mitchell, gr. to Mr. G. B. Simpson, who has won prizes without fail at the Dundee shows for fifty-one years, has gained a 2d prize for twelve succulents, and thus completed his fifty-second prize year. Mr. Peter Barron, the well-known railway porter, has again won laurels among the Ferns—two 1st prizes in Ferns, and a 1st in Lycopods. Mr. John Hampton, Newport, took 1st prize for twelve Pentstemons, also 1st for twelve Phloxes and for twelve herbaceous blooms. Mr. John Macpherson, Polmuir, who carried the 1st prize for best eighteen Dahlias, showed a beautiful collection. Alexander Westland, Raemoir House, Banchory, had a number of bright and shapely gems in his twelve, for which he carried a 1st prize.

Councillor Moncur successfully sustained his high position among the Grape-growers, having been awarded no less than four 1st prizes. For the eight varieties of fruit (Pine-apple excluded) Mr. John Macdonald, gr. to Mr. James Paterson of Kinnettles, was 1st. Mr. Reid (Councillor Moncur) gained the 1st prize with four large, compact bunches, consisting of Lady Downes, Mrs. Pince, Muscat of Alexandria, and Muscat Hamburgh. Mr. Jas. M'Connochie, gr. to Mr. G. A. Smollett, won the 2d prize with excellent bunches of Black Alicante, West's St. Peter's, Lady Downes, and Muscat of Alexandria. Mr. John M'Donald, gr. to Mr. James Paterson, won the 1st prize for heaviest bunch of Grapes with a Raisin de Calabre weighing 6 lb. 2 oz. There were no less than eight competitors for the one bunch of Black Hamburgh prizes, Mr. Wm. Watson taking the premier award.

In the vegetable department a good deal of interest was taken in the competition among gardeners for the best basket of vegetables. The 1st was won by Mr. Peter M'Arthur, gr. to Mr. John Leng, Kinbrae. *Dundee Advertiser.*

Bishop Auckland Horticultural: *August* 31.—The great floral carnival of the North of England was held under circumstances of the most depressing character. A thorough wet morning—not a steady mild rainfall, but a merciless downpour, characterised the opening hours of the morning, and the staging and judging had to be done amid surroundings of cold and wet, darkness and mud, that were sadly out of harmony with a floral show. To a society depending solely on the gate money to meet the expenses of the day the unpropitious weather would have brought absolute ruin; and yet, despite the falling rain and mud, it was marvellous to witness how many persons were present. The tents were as much thronged as ever, but the immense throng that gathers round the band stand during the afternoon was considerably lessened in numbers. When the weather is fine at Bishop Auckland the popular assemblage is one of the sights that powerfully impresses the mind. The disc of scarlet-coated musicians, surrounded by an immense crowd a hundred or more in depth, hushed to stillness in order that those on the remote circumference may catch the softest music—then a belt of trees, and above and beyond these on two sides the hills literally swarming with human beings, and the white tents containing the plants group in a charming dell hard by. The show of stove and greenhouse plants was considered to have been one of the best ever held at Bishop Auckland. They were numerous and good. On the other hand there was a marked falling off in fruit, and in such cut flowers as Dahlias, Hollyhocks, and Roses, owing to the wet, sunless season; but in all other respects the show, if anything, excelled what has gone before.

STOVE AND GREENHOUSE PLANTS.—There were six collections of six stove and greenhouse plants, the prizes being £10, £7, £4, £2, and £1. The best group—and the plants were all remarkably good—came from Mr. E. Tudgey, gr. to H. F. Williams, Esq., Henwick Grange, Worcester, who had Allamanda nobilis, Anthurium Scherzerianum, Clerodendron Balfourii, very fine; Erica eximia superba, Statice profusa, and Ixora coccinea. 2d, Messrs. E. Cole & Son, Withington, Manchester, with Allamanda nobilis, A. Heodersoni, Ixora coccinea superba, Statice profusa, Erica Marnockiana, and Bougainvillea glabra. 3d, Mr. Thomas Wilson, Normanton Hall, Middlesborough, with Dipladenia amabilis, very fine; Stephanotis floribunda, Ixora javanica, Lapageria rosea, Erica obbata purpurea, and Allamanda Hendersoni. Mr. Wilson had the best three plants in Phœnocoma prolifera, Barnesi, and Erica aristtata; 2d, Mr. E. Letts, the gardens, Upleatham, with Bougainvillea glabra, Stephanotis floribunda, and Ixora coccinea.

There were also groups of twelve stove and greenhouse plants, handsome foliaged plants or Ferns confined to 14-inch pots, but, while they materially helped the show, they contained nothing calling for special remark. Indeed, in the case of a large show like this, it is extremely difficult to pick up all the details even if it were expedient to do so, and only the leading features can be referred to. The best exotic Ferns came from Mr. R. Wescott, the gardens, Raby Castle, who had Todea superba, very fine, Davallia Mooreana in splendid condition, Cyathea dealbata, Davallia polyantha, Gleichenia flabellata, and Dicksonia squarrosa. The prize card had been knocked off the 2d prize group, but they were all well-grown plants. British Ferns were well grown, and contained some choice things, and the six Lycopods staged by Mr. John Short, Darlington, were remarkably good.

On the opposite side to the stove and greenhouse plants in the large plant tent the groups of six FINE-FOLIAGED PLANTS were staged, and a grand bank they formed. Messrs. E. Cole & Sons, Withington, Manchester, were placed 1st, with a huge Latania borbonica, Croton Johannis, C. angustifolius, Geonoma Schottiana, a splendid Cycas revoluta, and Pritchardia pacifica, not in the best condition. 2d, Mr. S. Lazenby, Woodside, Darlington, with Phœnix reclinata, Cocos Weddelliana, Croton majesticus, Croton Weismanni, Cycas revoluta, and Dasylirion gracile; 3d, Mr. James Noble, Woodburn, with a fine Ficus Parcelli, Croton Johannis, Croton interruptus, Dasylirion seratifolium, and Corypha australis; the 4th prize group, staged by Mr. N. Black, gr. to the Misses Pease, Southend, Darlington, containing small but such remarkably well-grown plants, as to deserve mention—the specimens were superbly finished, they only wanted bulk to have attained a higher place: they were Maranta rosea picta, very fine; M. Makoyana, beautifully grown; Croton Weismanni, Cocos Weddelliana, Pandanus Veitchii, and Dæmonorops plumosus. It would be as well if, at a large show like that at Bishop Auckland, there could be a class for fine-foliaged plants restricted to a certain size, so as to admit of a fine group like that of Mr. Black's taking a higher position. Small plants, however well furnished, stand but a poor chance against much larger specimens of less attractive forms, so long as they are well developed.

The three best ORCHIDS came from Mr. Levi Hartley, Etherley, and consisted of Oncidium macranthum, O. Reichenbachianum (?), and Masdevallia Lindeni. Cockscombs were good. There were small but nicely-grown bushes of Coleus; Achimenes were well done; and the six Zonal Pelargoniums staged by Mr. C. Hockney, Stocksley, were all that could be desired, being good exhibition varieties, nicely grown and flowered.

Turning to the CUT FLOWER classes, it may be stated that, though remarkably good prizes were offered for Roses, the hoped-for feature of a thoroughly good autumn Rose show was not forthcoming. It was thought that five prizes of £10, £7, £5, £3, and £2, for twenty-four cut Roses, three trusses of each, would have tempted the Southern growers, like Mr. C. Turner, Mr. George Paul, and others, to have gone northwards; but this expectation was not realised. Probably these large prizes will be abandoned another year. Mr. John Harrison, Catterick Bridge, was 1st with some very good flowers, the weather in the North considered. The 2d, 3d, and 4th prizes were withheld, the 5th going to Mr. W. Jackson, Blakedown, Kidderminster. Miss Robinson had the best twelve Roses; the best twenty-four in single blooms came from Mr. Harrison, but the 1st prize was withheld in this class. In the class for twelve yellow Roses, Gloire de Dijon and Marie Van Houtte were shown.

Dahlias fell much below their usual mark at Bishop Auckland. The best twenty-four dissimilar blooms came from Mr. W. Jackson, Blakedown, Kidderminster, who had Henry Walton, Charles Leicester, Lady G. Herbert, Drake Lewis, Hugh Miller, Vice President, Monarch, Ovid, Mr. Seaman, a new northern flower, pale green tipped with lake; Thomas White, Willie Eckford, Charles Backhouse, Criterion, Chancellor, &c. 2d, Mr. H. Clarke, Rodley, whose best flowers were Charles Leicester, Cremorne, J. N. Keynes, Mrs. Harris, Henry Walton, Acme of Perfection, Leah, John Standish, Flora Wyatt, and Mr. Stancomb. In the amateurs' class for twelve Dahlias, Mr. John Walker, Lonfell, was 1st, his best blooms being Delicata, Flora Wyatt, Vice-President, James Cocker, Henry Walton, J. N. Keynes, Prince Arthur, Vidette, Willie Keynes, and Mrs. Eckford. 2d, Mr. John Alderson, Calverley, Leeds, with Vice-President, J. N. Keynes, Flora Wyatt, John Standish, Charles Leicester, Miss Henshaw, Chancellor. With twelve fancy Dahlias, Messrs. Edwards & Son, Nottingham, were 1st, having Eccentric, Miss Anna, William Glass, Fanny Sturt, Mrs. Saunders, Flora Wyatt, Countess de Beatere, Parrot, and Sparkler, as the best blooms. 2d, Mr. H. Clark, Rodley, with Mrs. Saunders, Parrot, Miss Nelly Large, J. B. Camm, Flora Wyatt, and Henry Glasscock.

Gladioli, generally so fine at Bishop Auckland, fell far short of their usual quality, owing to the wet, sunless season. The best nine spikes came from W. Spoor, Gateshead; 2d, W. Jackson, Kidderminster. The best seven spikes—a most awkward number to stage effectively—were shown by Mr. W. Slater, Plowsworth; 2d, Mr. George Hankin, Wolverton. Cut flowers of herbaceous plants were remarkably well shown, but as the stands included Yucca gloriosa and things of a similar character, it was seen that a wide interpretation had been given to the class. Asters, African and French Marigolds, were very good, the latter showing the fine florists' character, of which but little is known in the South.

The show of FRUIT fell far short of its usual character. The gardeners present stated that the season had been dead against them. The best eight dishes of fruit, Pines excluded, came from Mr. R. Westcott, The Gardens, Raby Castle, who had Golden Champion and Golden Queen Grapes, both good; Eastnor Castle Melon, Royal George Peaches, Albert Victor Nectarine, Reine Claude de Bavay Plum, Moor Park Apricot, and Figs; 2d, Mr. W. Wallis, with Black Hamburgh and Muscat of Alexandria Grapes, very fine Royal George Peaches, Nectarines, Apricots, Figs, Queen Emma Melon, and Plums; 3d, Mr. T. R. Jowsey. Mr. Westcott also had the best six bunches of Grapes, which included Golden Queen, Waltham Cross, Golden Champion, very well finished; Black Hamburgh, Muscat Hamburgh, and Black Alicante—a very good lot; 2d, Mr. T. R. Jowsey, with Trebbiano, Muscat of Alexandria, Bowood Muscat, Barbarossa, Black Hamburgh, and Foster's Seedling. The best two bunches of Black Hamburgh came from Mr. W. Larkur, Bishop Auckland; Mr. Thomas Aitken being 2d. In the class for two bunches of black Grapes, not Hamburghs, Mr. R. Westcott was 1st, with Black Alicante and Barbarossa, both of which had been worked on the Black Hamburgh, and were finely finished; 2d, Mr. T. R. Jowsey, with Barbarossa; 3d, Mr. E. Lazenby, Darlington, with Black Prince. Mr. R. Westcott had the best two bunches of White Muscat, Mr. T. R. Jowsey being 2d. Mr. N. Black, Darlington, had the best two bunches of white Grapes, not Muscat, in well-finished examples of Golden Hamburgh; 2d, Mr. J. Burrows, Catterick, with White Frontignan. Foster's Seedling and Syrian were also shown in this class. Peaches were fairly well represented, Mr. Wallis coming in 1st with some very good Royal George Nectarines; Cherries, Melons, and hardy fruits were good, but not large in quantity.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, SEPT. 5, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°				In.
Aug. 30	29.67	−0.20	66.8	53.0	13.8	57.5	− 2.5	52.4	83	S.W.: WSW	0.12
31	29.72	−0.16	67.0	49.8	17.2	57.0	− 2.8	46.3	67	S.W.	0.01
Sept. 1	29.90	+0.02	66.0	43.9	22.1	53.6	− 5.8	42.9	67	WNW: NNW	0.00
2	29.74	−0.15	67.1	45.6	21.5	55.8	− 3.5	42.6	62	WSW: S.W.	0.02
3	29.60	−0.30	58.1	48.0	10.1	52.1	− 7.0	51.3	97	S.W.: NNE	0.83
4	30.10	+0.19	63.7	45.9	17.8	52.5	− 6.3	45.7	78	N.: NNW	0.00
5	30.07	+0.16	66.4	42.1	24.3	53.3	− 5.3	42.1	66	N.E.: S.S.W.	0.00
Mean	29.83	−0.06	65.0	46.9	18.1	54.5	− 4.7	46.2	74	variable	sum 0.98

Aug. 30.—Fine and bright till noon. Dull and showery till 4 P.M. Fine and clear after.
— 31.—A fine bright day, partially cloudy. Few slight showers of rain in morning.
Sept. 1.—A very fine bright day. Partially cloudy.
— 2.—A very fine day. Smart shower of rain at 4.30 P.M.
— 3.—Overcast, dull, wet and cold throughout.
— 4.—A fine bright day. Cloudy at times. Cold.
— 5.—A very fine bright day, cloudless at night.

LONDON: *Barometer.*—During the week ending Saturday, September 1, in the neighbourhood of London the reading of the barometer at the level of the sea increased from 29.53 inches at the beginning of the week to 29 97 inches by the evening of August 26, decreased to 29 70 inches by the afternoon of the 28th, increased to 30 01 inches by mid-day on the 29th, decreased to 29.84 inches by the afternoon of the 30th, increased to 30.12 inches by the morning of September 1, and was 30.07 at the end of the week. The mean reading for the week at sea level was 29.90 inches, being 0.06 inch above that of the preceding week, and 0.16 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 72° on August 29, to 66° on September 1; the mean for the week was 68¼°. The lowest temperatures of the air observed by night ranged from 44° on September 1 to 59½° on August 26; the mean value for the week was 53¾°. The mean daily range of temperature in the week was 14½°, the greatest range in the day being 22° on September 1, and the least 7°, on August 26.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows:—August 26th, 61°.1, + 0°.7; 27th, 61°.6, + 1°.3; 28th, 62°.4, + 2°.2; 29th, 62°, + 1°.9; 30th, 57°.5, — 2°.5; 31st, 57°, — 2°.8; September 1st, 53°.6, — 5°.8. The mean temperature of the air for the week was 59°.3, being 0°.7 below the average of sixty years.

The highest readings of a thermometer with blackeoed bulb in vacuo, placed in sun's rays, were 131° on the 29th of August, 130° on the 31st, and 126¾° on the 28th, but on the 27th the reading did not rise above 84°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 36° on September 1, and 43¾° on August 31. The mean of the seven low readings was 49°.

Wind.—The direction of the wind was W.S.W., and its strength brisk.

The weather during the week was changeable, although very fine at intervals,

Rain fell on five days during the week; the amount collected was 0.45 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 76° at Sunderland, 72° at Blackheath, and 71° both at Norwich and Nottingham; the highest temperature at Portsmouth, Liverpool, and Bradford was 66¼°; the mean value for the week from all stations was 69°. The lowest temperatures of the air observed by night were 39¼° at Nottingham and Eccles, 41° at Bristol, and 41½° at Wolverhampton; the lowest temperature at Portsmouth was 49°, and at Plymouth 48½°; the general mean from all stations was 44¼°. The range of temperature was the greatest at Nottingham, 31¾°, and the least at Portsmouth, 17¼°; the mean range of temperature from all stations was 25°.

The mean of the seven high day temperatures was the highest at Blackheath, 68¼°, and Norwich, 67¼°; and the lowest at Liverpool, 62°. The mean from all stations was 65°. The mean of the seven low night temperatures was the lowest at Eccles, 48°; and the highest at Portsmouth, 56¼°; the mean value from all stations was 52¼°. The mean daily range of temperature was the least at Portsmouth, 8¼°; and the greatest at Nottingham, 17½°; the mean daily range from all stations was 13°.

The mean temperature of the air for the week from all stations was 57¼°, being 2° higher than the value for the corresponding week in 1876. The highest was 59¼° at Blackheath and Brighton, and the lowest 54°, at Eccles.

Rain fell on every day in the week at Truro, Bristol, and Bradford, and five and six days at most other places. The amounts varied from 2½ inches nearly at Bristol, and 2¼ inches at Plymouth, to half an inch at Blackheath; the average fall over the country was 1¼ inch.

The weather during the week was generally dull, and the sky cloudy, but fine weather prevailed at intervals. A thunderstorm occurred at Hull on August 31, and lightning was seen at Liverpool on September 1.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 70° at Paisley to 60¾° at Glasgow and Aberdeen; the mean value from all stations was 63¼°. The lowest temperatures of the air ranged from 42° at Edinburgh and Paisley to 44¼° at Glasgow; the mean from all stations was 43°. The mean range of temperature in the week from all stations was 20¼°.

The mean temperature of the air for the week from all stations was 53½°, being ¾° lower than the value for the corresponding week in 1876. The highest was 54½°, at both Glasgow and Greenock, and the lowest 52½°, at Aberdeen.

Rain fell at Greenock to the amount of 2¾ inches, at Paisley 2½ inches fell, at Dundee 2¼ inches fell, whilst at Leith 1¼ inch was measured. The average fall over the country was 2 inches.

DUBLIN.—The highest temperature of the air was 70½°, the lowest was 38°, the range was 32½°, the mean was 55½°, and the fall of rain was 0.58 inch.

JAMES GLAISHER.

Variorum.

APPLE CULTIVATION IN CANADA.—This, after all said and done, is the standby of Canadian fruit culture. No fruit product is more important in a sanitary and pecuniary aspect than this. None is so common, and can be so generally cultivated by all. The cultivation of small fruits is important, and making rapid strides among us as fruit growers, but all other fruit culture must yield to that of the Apple. Even Pears, I am sorry to say, must give way to the value of the Apple. It would be curious to know what is the annual production of Apples throughout the country. Statistics on this head would be invaluable. There is no means, however, of knowing, and on such a subject guessing is in vain. The amount must be something enormous, and yet it is far below what it should be. There are large districts highly susceptible of fruit raising that are barren of any fruit product. It sometimes startles one to see the lop-sided, decaying fruit trees that stand, like some deserted home, around the poor and ill-conditioned homesteads of a class of our Canadian farmers. Such men are not aware of the abundant and efficient means of health they are squandering in allowing such a state of things to exist on their farms. No addition to the farmers' table is more wholesome than the Apple. No product he raises so easily brings a return to the family income. An obstacle to Apple raising is often presented to me, and consists of the following assertion:—"That attention to the orchard comes at the very time when the farm demands the most care and toil." Now the difficulty is imaginary. Pruning may be done in the fall, when the land is too wet for ploughing. Trees can be cared for in early spring, in February and March, when other farm labour is mostly in abeyance. Two irons in the fire at the same time, of course, require attention. They can both be attended to. Again, it is asked, what are the varieties to be planted? The answer is ready; plant few, and let these be good varieties. It may be questioned by some that your President is able to give such directions as will lead to beneficial results on these heads. If the Apple be planted for profit, then I would say the fewer varieties planted the better. We can confidently recommend the Roxbury Russet, the Russet of Western New York, the Rhode Island Greening, and Northern Spy. We would like to add the Golden Russet to these, and our profitable winter list would be complete. A great advantage is to be gained in selling when few varieties are cultivated. Buyers like the sorts to be homogeneous—all Roxbury Russets—all Rhode Island Greenings—all Northern Spy. As a matter of course, the above list must be modified according to locality and aspect. Such a list, however, would afford a farmer fruit during a large portion of the year, as it is easy in almost every quarter to supplement his own supply from the earlier varieties cultivated by his neighbours. *From the President's Address to the Fruit Growers of Ontario.*

A GARDEN WITHOUT A GOOSEBERRY.—Gooseberry tarts might "gnaw a file," to say nothing of eating off the little enamel left on the snaggy remnants of any decayed dentine. This fruit grows thriftily, bears profusely, is entirely hardy, but to the palate is as concentrated vinegar. Beautiful in pictures, grand on exhibition, profitable to the nurserymen, valuable to the boarding-house keeper, but the most unsavoury morsel that enters one's mouth. A man with a single healthy Gooseberry bush (and who ever saw one that was not healthy?) had better lay in a stock of sugar, for in no manner of "putting up" will less than three parts of sugar to one of Gooseberries suffice. An humble friend of mine, fresh from the "old sod," used to indulge in the most grandiloquent tales about these self-same Gooseberries. "In the ould counthry they wur as big as your fist, zur," and "they jist milt in your mouth like dew." Shortly after I had the pleasure of testing this fruit for myself, and I must acknowledge that I was surprised to find it occasionally palatable, although very far from the nectar and ambrosia that some writers describe. I shall not forget my first look in the celebrated Covent Garden Market, London, on the tempting array of Gooseberries in the height of the season, but the Crown Bobs, luscious-looking fellows, proved flavourless; the Queen of Sheba, as sour as a red Dutch Currant; the Jolly Anglers, tasteless as the latest novelty in French Pears; and Roaring Lion insipid. I was told that was an exceptionally poor season for the Gooseberry. As every season throughout my life had been a poor one (for flavour) for Gooseberries at home I accepted the apology.—*Croppie, in the "New York Tribune."*

Enquiries.

He that questioneth much shall learn much.—BACON.

203. CISALPINE STRAWBERRY.—Where can I procure runners or seeds of this variety, mentioned by William Cobbett in his *English Gardener? J. E. Daniel*, 6, *The Terrace, Epsom.*

Answers to Correspondents.

ARAUCARIA IMBRICATA: *W. S.* It is not "very" rare to see this tree producing cones, and as time goes on it will probably be even more common. What is the shape of the cones, on your tree? If globular they are females, if elongated they are male spikes.

ARGYREIA CYMOSA: *W. K.* An East Indian creeper, much resembling an Ipomœa, and should be treated as such. Sow at once in light rich soil.

BOOKS: *D. P.* We do not know of any such book as you ask for.

CINERARIAS: *C. G.* If your plants have not been kept too wet at the roots, the cause of damping off must be that they have been too close—want of air.

CUCUMBERS: *E. C.* Your Cucumber leaves appear to be caught by the sun after having been sprinkled. There is no indication of disease.

CUTTING SHRUBS: *Old Subscriber.* We cannot at this distance estimate the value of your loss, and recommend you to get some competent person near at hand, and who will be able to see the disfigurement, to advise you on the matter.

FUCHSIA LEAVES DAMAGED: *L. H.* The leaves seem to have been grown in a hot, dry atmosphere, and to be literally stewed. Try if more moisture will not improve them. Put the Cinerarias into a cold pit.

GARDENERS' BENEFITS: *J. P.* We do not think your scheme would work well, and, unless greatly modified, would be open to much objection.

GREEN BEDDING PLANT: *T. P.* What you send is the common Peppermint,—a very different plant to the Mentha Pulegium gibraltaricum used at Cleveland House and elsewhere.

INSECT: *J. E.* A sawfly called Sirex gigas, which bores into timber and woodwork, and deposits its eggs therein. Did you find the insect near growing or near

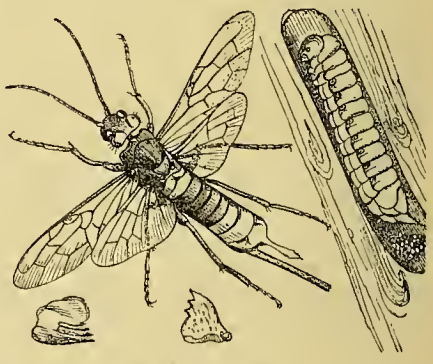


FIG. 63.—SIREX GIGAS.

dead timber? The long sting-like process is the ovipositor. The insect has much of the appearance of a hornet, but has no power of stinging.

NAMES OF FRUITS: *W. T.* Probably some species of Attalea, like the Coquilla nuts.

NAMES OF PLANTS: *E. C. C. D.* We believe your plant to be a white variety of Erythræa pulchella, which is itself, to our thinking, but a variety of E. Centaurium, which we have more than once found white near Folkestone.—*J. C. M.* 1, Pseudo-Larix Kæmpferi; 2, Libocedrus chilensis; 3, Abies Douglasii, from Vancouver Island; 4, Retinospora leptoclada; 5, Taxodium distichum; 6, Thuja occidentalis, or it may be a variety of it. We should be thankful for a specimen in fruit of No. 2.—*A. G.* 1, Solidago virga aurea; 2, Ballota nigra; 3, Hieracium sp.; 4, Ranunculus acris; 5, Matricaria inodora; 6, Lapsana communis; 7, Atriplex patula; 8, Chenopodium polyspermum; 9, Asclepias curassavica; 10, Polygonum cuspidatum. Another time do not send more than six, and send good specimens.—*T. R. J.* 1, Alstrœmeria aurea; 2, Anemone japonica var. Honorine Jobert; 3, Sedum Sieboldii variegatum; 4, Phlox paniculata.—*G., Bath.* Picea Lowiana of Gordon, or Pinus grandis of Parlatore.—*T. T., Cullompton.* Maxillaria Houtteana, provided your sketch of leaf and bulb is correct. If it is fantastic, and the real leaf is very long and linear, then it is M. tenuifolius.

NEW CUCUMBER: *R. Cragg.* Send a fruit to the Royal Horticultural Society's Fruit Committee in a condition fit for use. If it is an old sort it would probably be recognised there.

PITTOSPORUM TOBIRA.—It is an old-fashioned greenhouse plant—hardy in many localities—that should be obtainable at any plant nursery.

PLANTS FOR EFFECT: *Contant Reader.* These classes at flower shows are generally unsatisfactory, for want of definition. You ask,—When the schedule says

"Finest collection of plants arranged for effect," is the merit of the individual plants considered, or is it effect only? We think the words "finest collection" indicate that the framers of the schedule had meritorious cultivation in view, as well as meritorious arrangement, but it should have been more clearly expressed.

PRUNING OLD FRUIT TREES: *Felthim.* You had better consult some practical fruit grower than trust to the information to be found in books, which would, in all probability, not be applicable to such a case as yours. Then when the trees are reduced to order the book advice would be useful.

REFUSAL OF CHARACTER: *M. B.* We cannot advise you; we only know your view of the case. Apply to the magistrate, or consult a solicitor.

ROOTS ON VINE STEMS: *Old Subscriber.* They indicate one or both of two things—imperfect root-action, or a very damp, perhaps excessively damp, atmosphere acting on individual Vines which are in this condition; or in some cases it may be exuberance of growth developing itself in this particular form.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—Emil Liebig (Handels Gärtnerei, Dresden), Catalogue of Azaleas, Camellias, Rhododendrons, Roses, &c.—W. Smith & Son (35, Market Street, Aberdeen), Catalogue of Dutch Flower Roots, &c.—J. W. Mackey (40, Westmoreland Street, Dublin), Descriptive Catalogue of Dutch Flower Roots, &c.—Messrs. Barr & Sugden (12, King Street, Covent Garden, London, W.C.), Descriptive Catalogue of Bulbs and Plants, &c.—Thomas S. Ware (Hale Farm Nurseries, Tottenham), A. B. C. Catalogue of Bulbs, Herbs, Flowers, Grasses, Orchids, &c.—W. Tait & Co. (45, Capel Street, Dublin) Autumn Catalogue of Dutch Bulbs and Flower Roots.—Messrs. J. Boyd & Sons (Engineers, Paisley), Catalogue of Horticultural Buildings, Heating Apparatus, &c.—John Scott (Hendford Hill, Yeovil), Catalogue of Flower Roots, &c.—F. Brassac (17, Rue Matabian, Bonnefoy, Toulouse), General Catalogue of Plants, &c.—S. Yates (16 and 18, Old Millgate, Manchester), Illustrated Catalogue of Flower Roots, &c.

COMMUNICATIONS RECEIVED.—H.—Irish Subscriber.—B. M.—G. Palmer.—G. H.—J. S.—C. Naudin.—A. F.—J. James.—H. King.—P. H. G.—F. Bax.—Arcanium.

Markets.

COVENT GARDEN, September 6.

Our market is now very bare of fruit, with the exception of Apples and Nuts; of the former we are getting a very fair supply, while of the latter (if this week is any criterion) the crop must be the heaviest known for many years. Plums are a complete failure, the supply, with now and then an exception, being entirely from abroad. Large quantities of Grapes are reaching us from the Channel Islands, and fetching fair prices. Trade quiet.
James Webber, Wholesale Apple Market.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Oranges, per 100	12 0–20 0
Grapes, per lb.	0 9– 6 0	Peaches, per doz.	3 0–12 0
Lemons, per 100	8 0–12 0	Pears, per doz.	1 0– 3 0
Melons, each	2 0– 5 0	Pine-apples, per lb.	4 0– 8 0
Nuts, Cobs, per lb.	0 4– 0 6	Figs, green, each	0 2– 0 4

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Leeks, per bunch	0 2– 0 4
Aubergines, p. doz.	2 0– ..	Lettuces, per score	2 0– ..
Beans, French, per bushel	3 0– ..	Mint, green, bunch	0 6– ..
— Scarlet Runners, per bushel	2 6– ..	Mushrooms, per pott.	1 0– 3 0
Beet, per doz.	1 0– 2 0	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
Horse Radish, p. bun.	4 0– ..	Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos:—Kent Regents, 100s. to 120s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	3 0– 9 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	0 6– 1 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	2 0– 9 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	4 0–12 0
Gardenia, per doz.	3 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0
Lilies (in var. 12 spr.	1 0– 2 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Fuchsias, per dozen	2 0–12 0
Begonias, per doz.	6 0–12 0	Heliotrope, per doz.	4 0–12 0
Bouvardias, do.	12 0–24 0	Hydrangea, per doz.	6 0–24 0
China Asters, dozen	4 0–12 0	Liliums in var., each	1 6– 6 0
Chrysanth., per doz.	5 0–12 0	Mignonette, per doz.	6 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargon., scarlet, p. dozen	2 0– 9 0
Cyperus, do.	4 0–12 0	Petunias, per doz.	4 0–12 0
Dracæna terminalis	30 0–60 0	Roses, fairy, p. doz.	4 0–12 0
— viridis, per doz.	18 0–24 0	Solanums	12 0–24 0
Ferns, in var., p. doz.	4 0– ..	Valotta purpur., doz.	9 0–18 0
Ficus elastica, each	2 6–15 0		

SEEDS.

LONDON: *Sept.* 5.—No special feature of interest has this week been developed in connection with the trade for farm seeds. Owing to the recent badness of the weather, and the damage thereby inflicted on the growing crops, yearling Clover seeds are naturally held with greater firmness; but, as respects red seed, no large amount of business has yet resulted. New Bordeaux red is offering at a moderate figure. The speculative inquiry for Alsike has driven up quotations several shillings per cwt. For white Clover seed rates are likewise tending upwards. In Trefoils there has been some business doing at former currencies. The excessive and continued rains have kept back the supply of new Mustard and Rape seed. Winter Tares command a ready sale at last week's prices. For sowing Rye there is also a brisk request. More money is now asked for imported Italian and perennial Rye grasses. The trade for bird seeds exhibits no noteworthy alteration. Blue Peas are firmer, especially for sound dry samples; a considerable portion of the new crop having suffered greatly from the wet. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday there was not that amount of business in the trade as the state of the weather seemed to warrant. As regards Wheat, prices were not generally better than on the previous Monday. Barley experienced a slow sale at full prices. Some new malting produce of ordinary quality was held for about 45s. per quarter. Malt was steady, without change. Oats were rather dearer in some cases, while the market for Maize had a decided upward tendency. Beans and Peas were nominal, as also was the trade in flour.—Trade was quiet on Wednesday, but the tone continued firm. English Wheat was fully as dear, while as regards spring corn of superior quality there was a disposition to ask higher prices, the weather being unfavourable for the importation of produce in good condition.—Average prices of corn for the week ending Sept. 1:—Wheat, 62s.; Barley, 34s. 6d.; Oats, 27s. 5d. For the corresponding week last year:—Wheat, 45s. 11d.; Barley, 36s. 8d.; Oats, 27s. 7d.

CATTLE.

At Copenhagen Fields on Monday there were a few more beasts than on the previous Monday, and the dead trade was worse, consequently prices were lower. A clearance was not effected. There were also a few more sheep and lambs. Trade was slow for sheep, but choicer qualities were not much lower. The lamb season is nearly over; very few are required, and those at much lower rates. Trade for calves was dull, prices rather lower on the average.—Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 6d. to 6s.; calves, 5s. to 6s. 2d.; sheep, 5s. 6d. to 6s., and 6s. 6d. to 7s. 2d.; lambs, 6s. 4d. to 7s. 4d.; pigs, 4s. to 5s. 4d.—On Thursday trade was rather quiet. Supplies were short, but sufficient for the demand. Beasts sold quietly at about Monday's prices, whilst sheep were a quotation easier. Calves also gave way, and pigs sold slowly.

HAY.

At the Whitechapel market on Monday, with moderate supplies and a fair trade, prices were unchanged. Prime old Clover, 100s. to 140s.; inferior, 85s. to 95s.; good new Clover, 100s. to 126s.; prime old meadow hay, 90s. to 120s.; inferior, 70s. to 85s.; good new hay, 80s. to 100s.; and straw, 44s. to 56s. per load.—On Thursday the market was moderately supplied with hay and straw. There was a brisk trade, especially for good qualities, and prices were firm. Quotations:—Prime old Clover, 100s. to 140s.; inferior, 85s. to 95s.; good new, 100s. to 126s.; prime old meadow hay, 90s. to 120s.; inferior, 70s. to 85s.; good new, 80s. to 100s.; and straw, 44s. to 57s. per load.—Cumberland Market quotations:—Superior old meadow hay, 110s. to 120s.; inferior, 70s. to 92s.; superior Clover, 132s. to 140s.; inferior, 90s. to 110s.; and straw, 54s. to 60s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that there was a steady trade, with little change in prices. Kent Regents, 80s. to 110s. per ton; Essex ditto, 80s. to 100s.; kidneys, 100s. to 120s.; Early Rose, 85s. to 110s.—The imports into London last week were very trifling, being confined to the receipt of 993 bags from Hamburgh.

COALS.

Monday's business at the market showed no improvement on the prices of last week, but on Wednesday there was a good demand, and "seconds" and Hartleys rose 6d. per ton. Quotations:—East Wylam, 17s. 6d.; Hasting's Hartley, 17s. 3d.; Walls End—Hetton, 20s.; Hetton Lyons, 17s. 9d.; Hawthorns, 17s. 9d.; Lambton, 19s. 6d.; South Hetton, 20s.; Hartlepool, 19s.; East Hartlepool, 19s. 9d.; South Kelloe, 18s.; Tees, 19s. 9d.

GARDEN REQUISITES, NURSERYMEN'S and SEEDSMEN'S SUNDRIES.
Cocoa-nut Fibre, finest Kent and Hampshire Peats, Yellow Loam, Leaf-mould, coarse and fine Sand, Sphagnum, all Manures, Tobacco Cloth and Paper, Garden Sticks and Labels, Russia Mats, Raffia, Pot Covers, Hyacinth Glasses, Tiffany, Scrim, Tarred Twine, Coir Yarn, Garden Pots and Tiles, and every Horticultural Requisite. Write for free Price List. Liberal terms to the Trade. Delivered free within 4 miles of Covent Garden at List Price. 4s. PER TON CARTAGE ALLOWED IF FETCHED FROM CASTLE STREET, LONG ACRE.
M. H. BENFOTE, Horticultural Sundriesman, 8, Castle Street, Long Acre, W.C.; 3 minutes from Covent Garden. Open at 4 o'Clock in the morning for Market Customers. Factory, Nunhead, S.E.

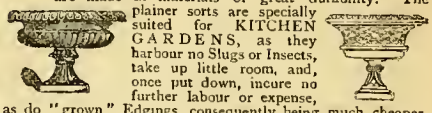
THE EUREKA POST BOX.—Specially adapted for the postal transit of Fruit, Plants, Flowers, &c. Price 4s. 6d. per dozen. Sample Box, with Grapes or Strawberry Plants enclosed, post-free, 1s.
W. LOVEL, Weaverthorpe, York.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12s. 6d.; 21-oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36s.; 3ds, 46s. per 300 feet;—21-oz. 4ths, 36s.; 3ds., 46s. per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

Cheapest House in the Trade.
HENRY WAINWRIGHT, GLASS and LEAD MERCHANT and GENERAL DEALER in Plumbers' Materials, Alfred Street, Boar Lane, Leeds.
Special attention paid to Glass for Horticultural Purposes. 300 PANES of beautiful strong Glass, 8 by 6, for 12s. 6d. GLASS TILES for Roofing. Manufacturers of best LINSEED OIL, PUTTY, SHEET LEAD and LEAD PIPE.
Prices on application.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incure no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



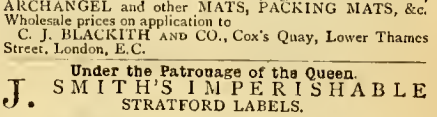
GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
See addresses above.

SILVER SAND, fine or coarse grain as desired. Prices by Post per Ton or Truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
F. ROSHER AND CO.—Addresses see above.
N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to
C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

Indestructible Terra-Cotta Plant Markers.
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Broseley.

JOHN BOWMAN.
GREENHOUSES—every description, VINERIES—all the latest improvements, GLASSHOUSES—perfect ventilation, } From £10 to £1000.
HORTICULTURAL BUILDER and TIMBER MERCHANT,
West End Steam Joinery, Newcastle.

Oil Paint No Longer Necessary.

HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL RECEIVED MAY 3, 1877.

"*The Ryleys, Alderly Edge, Manchester.*—Messrs. Hill & Smith.—Sirs,—For some 20 years I have used your 'Black Varnish,' and shall be glad if you will forward me another cask, *as I consider it the best thing known for the preservation of all outdoor work, either wood or iron,* that requires to be painted. —Yours respectfully, ALFRED LOWE, J.P."

Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

CARSONS' PAINT,

PATRONISED BY THE QUEEN,
H.R.H. THE PRINCE OF WALES,
H.R.H. THE DUKE OF EDINBURGH,

The British, Indian and Colonial Governments, 10,000 of the Nobility, Gentry, and Clergy, Railway and Canal Companies, Collieries, Ironmasters, &c., &c.,

Is extensively used for all kinds of

OUTDOOR WORK.

It is especially applicable to

WOOD, IRON, BRICK, STONE & COMPO.

CAN BE LAID ON BY UNSKILLED LABOUR.

Sold in all Colours.

2 cwt. free to all Stations.

Prices, Patterns, and Testimonials Post Free.

WALTER CARSON & SONS,
LA BELLE SAUVAGE YARD,
LUDGATE HILL, LONDON, E.C.
And 21, BACHELOR'S WALK, DUBLIN.
NO AGENTS.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

THE CHEAPEST and MOST DURABLE SHADING.—"Lasting for years."
MADE of PREPARED WOOL and HAIR.

A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied.

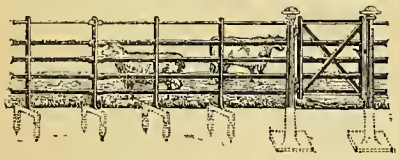
Patronised by Her Majesty the Queen, for Windsor Castle; Prince Christian, for Frogmore Gardens; the late Sir J. Paxton; the late A. F. Paxton, Esq.; the late S. Rucker, Esq., &c.

"FRIGI DOMO" CANVAS.

2 yards wide	1*s.* 10*d.*
3 yards wide	3*s.* 0*d.*
4 yards wide	3*s.* 10*d.*

"FRIGI DOMO" NETTING, 1*s.* 6*d.* per yard.

Can be had from all Florists and Seedsmen, and of E. T. ARCHER, Brockley Road, Forest Hill, London, S.E.
*** Late of Cannon Street, City, E.C.



BAYLISS, JONES & BAYLISS,

Patentees and Manufacturers of Wrought Iron

CONTINUOUS BAR FENCING,

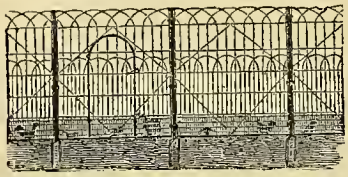
Iron Hurdles, Strained Wire Fencing,
Field and Entrance Gates, Tree Guards, &c.,
VICTORIA WORKS, WOLVERHAMPTON,
Crooked Lane, King William Street, London, E.C.
Catalogues free on application.

THOMAS'S

NEW POULTRY FENCING,

No. 508.

Very strong and durable. Reduced Prices, 1877.



Galvanised after Manufactured, with Iron Standards, Painted Black, AND SPACED 2 FEET APART, rendering it the strongest and best Fence in the Market.

This ornamental Fencing is easily fixed or removed by any labourer, without extra cost.

PRICES:—

6 feet high, 6s. per yard; 7 feet high, 7s. per yard,

Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 3*s.* extra, except when 12 yards are ordered, in which case a door is included.

Five per cent. discount allowed for prompt cash on Orders amounting to 40*s.* and upwards.

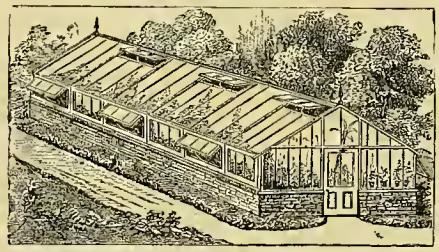
Illustrated and Priced Catalogues of every description of Horticultural Wirework on application.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plans, or Designs prepared and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, 3*d.*

HEREMAN AND MORTON, 2, Gloucester Street, Regent's Park, London, N.W.

W. H. LASCELLES, HORTICULTURAL BUILDER, Finsbury Steam Joinery Works, 121, Bunhill Row, London, E.C.

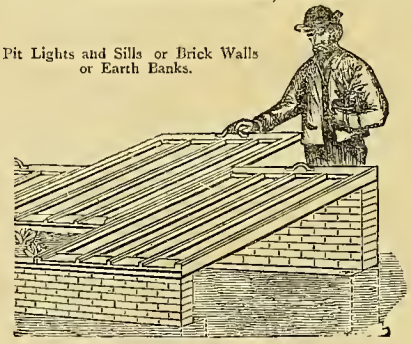


Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.	Each. s.	d.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	35	0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65	0
LIGHTS ONLY.		
3 feet by 4 feet Light, not painted nor glazed	3	6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10	0
6 feet by 4 feet, not painted nor glazed	6	0
Ditto glazed and painted four coats	16	6

BOULTON AND PAUL, HORTICULTURAL BUILDERS, Norwich.

Pit Lights and Sills or Brick Walls or Earth Banks.



PIT LIGHTS and FRAMES complete for fixing on Brickwork, made in two sizes of Lights to work 6 ft. by 4 ft. 2 in. thick, 7 ft. 6 in. by 4 ft. 2½ in. thick, Lights glazed with 21 oz. British sheet glass, painted four times, sills 4½ in. by 3 in., with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

Cash Prices. Carriage paid to any Railway Station in England and Wales; also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.

SILLS or FRAMES, with 2 Lights, 6 ft. by 4 ft., 8 ft. long by 6 ft. wide, £2 16*s.*; 3 Lights, 6 ft. by 4 ft., 12 ft. long by 6 ft. wide, £4 3*s.*; 4 Lights, 6 ft. by 4 ft., 16 ft. long by 6 ft. wide, £5 10*s.*; 2 Lights, 7 ft. 6 in. by 4 ft., 8 ft. long by 7 ft. 6 in. wide, £3 10*s.*; 3 Lights, 7 ft. 6 in. by 4 ft., 12 ft. long by 7 ft. 6 in. wide, £5 2*s.*; 4 Lights, 7 ft. 6 in. by 4 ft., 16 ft. long by 7 ft. 6 in. wide, £6 14*s.* Prices for longer lengths at cheaper rates. Prices on application.

Catalogue of every description of Horticultural Building, post-free, 24 stamps. Plant Preserver Lists, Melon Frame Lists and Greenhouse Lists, post-free.

Greenhouses.

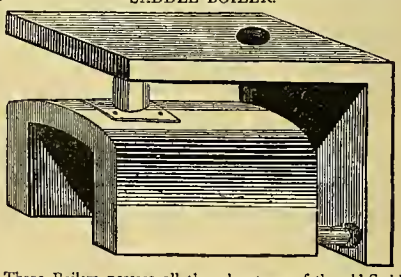
H. FREEMAN AND SONS, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantial made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 12 feet, £28; 12½ feet by 10 feet, £15. Estimates given in wood or iron.

MR. MECHI'S ADDRESS to his OLD FRIENDS and CUSTOMERS and to the PUBLIC:—

"As it has been erroneously supposed by some that I am no longer interested in my London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-strop trade was immense; now moustache and beard are the order of the day, and the razor and strop trade is comparatively defunct. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody travels by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor geese supplied our pens, and many a now rich merchant in the City will remember the quality of Mechi's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and, I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press? and how much less time is occupied in sipping port wine, as we used to do fifty years ago, when we could not travel? Steam will make our 4 lb loaves cheaper some day, just as it has converted calico from 2*s.* 6*d.* to 6*d.* or less per yard. Then, again, a letter which used to cost 6*s.* 6*d.* to Cork is now carried for 1*d.* Sir Rowland Hill richly deserves a monument. But to return to business: fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the strop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'Exchanged if not approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and coovenience of arrangements in the dressing bag and dressing case department, and in the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our sportsmen remain, and 'sporting knives' form one of our special departments. I feel firmly convinced that there is no fear of the departure of knives and forks, or dinners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their own conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

112, Regent Street, W., opposite Vigo Street.—1877.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes. High.	Wide.	Long.	To heat of 4-in. Pipe. Feet.	Price. £	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities, of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

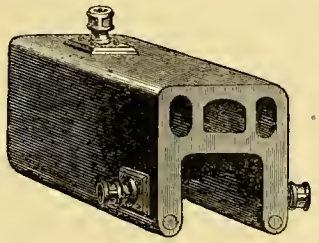
For Sale, a
STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
HILL AND SMITH, Brierley Hill Ironworks, Dudley.

THE THAMES BANK IRON COMPANY,

OLD BARGE WHARF,
UPPER GROUND ST., LONDON, S.E.
(Surrey Side, Blackfriars Bridge),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



PRICE LIST on application, or Six Stamps for Descriptive CATALOGUE (Seventh Edition).

"GOLD MEDAL" BOILER.

This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872)
PATENT "EXCELSIOR" BOILER (1871).
"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.
PATENT PAXTON INDEPENDENT BOILER.
"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

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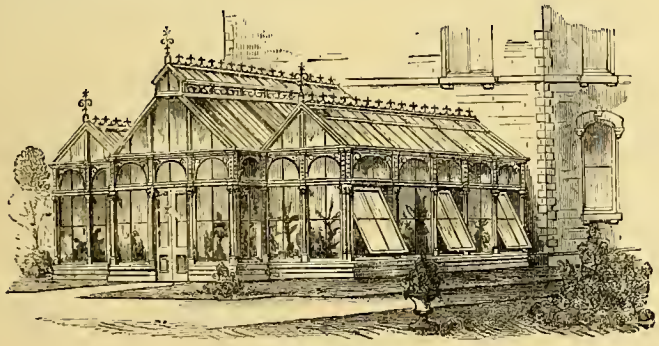

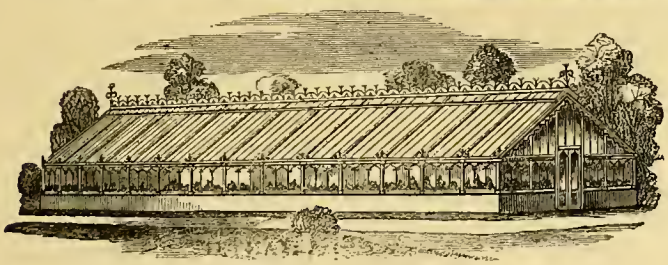

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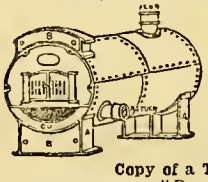

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GARDENER (SECOND).—Age 22; understands Stove and Greenhouse, Vines, and Flower and Kitchen Gardening. Total abstainer.—J. A. GARNHAM, 6, New Lane, Enfield, Middlesex.

GARDENER (UNDER), or JOURNEYMAN in a Gentleman's Garden.—Age 21; good character. Had several years' experience. Houses preferred.—C. M., Post-office, St. John's, Worcester.

GARDENER (UNDER).—Age 21; used to Kitchen and Flower Gardening; fair knowledge of Housework. Four and a half years' good character.—H. F., Mr. W. Bright's, Princes Street, Huntingdon.

GARDENER (UNDER).—Age 21; six years' experience, and three years' good character from last place.—J. B., Moor Street, Kidlington.

GARDENER (UNDER), in a Nobleman's or Gentleman's Establishment.—Age 20, single; has been brought up in the profession, and has a practical knowledge of Fruit Forcing, &c. Seven years' good character.—C. PATRICK, Rushton, Kettering, Northamptonshire.

STEWARD and HEAD GARDENER, or GENERAL ESTATE MANAGER.—Age 32, married. Thorough practical in the details of Farming, Home Park, Gardening, Laying-out and Ornamental Planting, Roads, Draining, Timber, &c. Good references for same.—R., 13, Waterford Road, Fulham, London, S.W.

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To Nurserymen.

ROBERT CRAGG can recommend with confidence his FOREMAN, who is leaving, to any Nurseryman. He is well up in the Cultivation of Roses under glass and out-of-doors, also Rhododendrons, Fruit Trees, Coniferæ, and General Outdoor Work.—The Rose Nurseries, Car Colston, near Bingham, Notts.

FOREMAN, or SECOND, in a Gentleman's Garden.—Age 25; twelve years' experience in Plant and Fruit Growing, Flower and Kitchen Gardening. Three years' good character.—G. H., Haling Park Gardens, Croydon, Surrey.

To Nurserymen.

MANAGER, or WORKING FOREMAN.—A. WARNE, the advertiser, is desirous of a re-engagement where plants are grown in large quantities, either retail or wholesale. He is practically a thorough good Grower of Stove and Soft-wooded Plants, also well understands Forcing of Bulbous and other Plants. Formerly employed by Mr. J. Reeves, Acton, Middlesex; Messrs Carter & Co., Forest Hill; Messrs. Felton & Sons, Birmingham; and his present employer is Mr. T. Gilbert, Springfield Nursery, Hastings, by whom any enquiries will be answered. Will be disengaged on the 14th inst.—A. WARNE, Ashburnham Road, Clyde Vale, Hastings.

FOREMAN, in a Gentleman's Garden.—Age 27, single; twelve years' experience in Plant and Fruit Growing under Glass, Flower and Kitchen Gardening. Good references.—W. J. G., 41, Adelphi Road, Epsom, Surrey.

JOURNEYMAN, in a Nobleman's or Gentleman's Establishment.—Age 24; six years' experience in Vines, Pines, Peaches, Cucumbers, Stove and Greenhouse Plants, &c.—J. BIRCH, Hewell Lane, Bromsgrove, Worcestershire.

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PROPAGATOR of Rhododendrons, Fruit Trees, Coniferæ, Hollies, &c., and Soft-wooded Stuff.—State terms to A., Mr. Beechy's, Southampton Terrace, Faringdon, Berks.

PROPAGATOR (OUTDOOR).—Well up in Budding, Grafting, Training, and general Outdoor Nursery Work. Good reference.—P. S., 71, Speke Road Clapham Junction, S.W.

To Nurserymen.

PROPAGATOR (HARD and SOFT WOODED).—Age 29; has a thorough knowledge of the Trade. Ten years' good character.—S. W., 4, South Street, Torre, Torquay.

PROPAGATOR, or PLANT GROWER, in good Market Nursery.—State wages to E. K., Post-office, Putney, S.W.

NURSERY FOREMAN, MANAGER or SALESMAN.—Thoroughly experienced in each branch; successful Propagator, Budder and Grafter, indoors and out. Undeniable character.—FOREMAN, *Gardeners' Chronicle* Office, W.C.

SHOPMAN, CLERK, or TRAVELLER.—Well up in the Retail Seed Trade.—T., Mr. Knowles, Stationer, 44, Porchester Road, Westbourne Park, W.

To the Seed Trade.

SHOPMAN (SECOND), or WAREHOUSEMAN.—Age 26; has had great experience in the Agricultural, Vegetable and Flower Seed Departments. First-class references.—X. Y. Z., Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.

Seed Trade.

SHOPMAN, or otherwise.—Age 25; eight years' experience. Good references.—B. W., 8, Lodge Street, Park Row, Bristol.

SHOPMAN (ASSISTANT).—Age 19; four years' experience. Good references.—A. B., Wavertree Nursery, Wavertree, near Liverpool.

Seed Trade.

ASSISTANT SHOPMAN.—Six years' experience.—GEORGE POLLOCK, Seed Merchant, Stirling.

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The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUT, and INDIGESTION; and the safest aperient for delicate Constitutions, Ladies, Children, and Infants.
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Cures of Asthma, Consumption, and Coughs, by

DR. LOCOCK'S PULMONIC WAFERS.—Mr. CLIFTON, 45, Fleet Street, Bury, writes:—"I have great pleasure in recommending the Wafers, knowing that they are a sure remedy, &c." In Asthma, Consumption, Bronchitis, Coughs, Colds, Gout, Rheumatism, and all hysterical and nervous pains, instant relief is given by Dr. LOCOCK'S WAFERS, which taste pleasantly. Sold by all Druggists, at 1s. 1½d.

FRUIT, FRUIT, FRUIT.

SPECIAL NOTICE.

THE GARDENERS' CHRONICLE

For Saturday next, September 15, will contain an

EIGHT-PAGE SUPPLEMENT

DEVOTED TO

HARDY FRUIT CULTURE,

AND A

BEAUTIFULLY COLOURED PLATE

REPRESENTING A SELECTION OF

"CHOICE PLUMS,"

BY FITCH.

PRICE FIVEPENCE; POST-FREE, FIVEPENCE-HALFPENNY.

NOTICE TO ADVERTISERS.

A very large extra circulation of this Number will be guaranteed. To insure insertion Advertisements must reach the Office not later than Wednesday Morning, September 12.

W. RICHARDS, 41, WELLINGTON STREET, W.C.

MAY BE ORDERED OF ALL BOOKSELLERS AND NEWSAGENTS.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, September 8, 1877.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 194.—Vol. VIII. { New Series. } SATURDAY, SEPTEMBER 15, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, 5½d.

With the present Number is presented a Special Twelve-page SUPPLEMENT devoted to Hardy Fruit Culture, and a beautifully COLOURED PLATE of a Selection of "CHOICE PLUMS."

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Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The DATES of MEETINGS of the FRUIT and FLORAL COMMITTEES for 1878 are fixed as follows, viz.:—

January 15.	May 7 and 21.	September 17.
February 19.	June 4 and 18.	October 15.
March 5 and 19.	July 2 and 16.	November 19.
April 2 and 16.	August 6 and 20.	December 17.

The SCIENTIFIC COMMITTEE will also meet on the above dates, except in August, September, and October.

The GREAT SUMMER SHOW will be held on Tuesday, May 28, Wednesday, May 29, Thursday, May 30, aod Friday, May 31. Schedules are now ready.

The GREAT PROVINCIAL SHOW at PRESTON will be held from Tuesday, July 9, to Saturday, July 13, inclusive.

CRYSTAL PALACE.—TWENTY-SECOND ANNUAL EXHIBITION of FRUIT and CUT FLOWERS, FRIDAY and SATURDAY, September 21 and 22. Schedules may be had on application to Secretary and Manager.

N.B. Rule 12 is cancelled.

THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3, 4, and 5, when Prizes amounting to upwards of ONE HUNDRED and TWENTY POUNDS will be awarded. ENTRIES CLOSE on September 25. For further particulars apply to

Mr. J. A. McKENZIE,
1 and 2, Great Winchester Street Buildings, London, E.C.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.

The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1878 will be held in The Gardens, Old Trafford, from June 7 to 14 inclusive.

BRUCE FINDLAY, Curator and Secretary.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.

NOTICE.—The Usual Meetings on the Second Monday Evening in every Month will for the future be held at the CALEDONIAN HOTEL, Robert Street, Adelphi, Strand, London, W.C.

J. F. McELROY, Secretary.
The Gardens, Moray Lodge, Campden Hill, Kensington, W.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

A. RIEMSCHNEIDER, Brandenburg-on-Havel, Germany, has to offer, per 1000:—GERMAN LILY OF THE VALLEY, blooming crowns, 36s; HELLEBORUS NIGER MAJOR, stong, 90s.; HEPATICA, double red, 25s. per 100; SHEEP'S FESCUE, new seed, 34s. per cwt.; Dried EVERLASTING FLOWERS, &c.

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SUTTON'S FLOWER ROOTS for Early Forcing.
EARLY ROMAN HYACINTHS,
DOUBLE SNOWDROPS,
SINGLE SNOWDROPS,
NARCISSUS, of sorts.

For Prices and full particulars see SUTTON'S AUTUMN CATALOGUE, price 6d. post-free, or gratis to customers.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

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EVERGREENS IN GREAT VARIETY and of all ages and Sizes, including HOLLIES, &c., in the best transplanted condition for safe removal. The largest and best stock in Britaio. CATALOGUES post-free.

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" ARBORESCENS, 4-inch pots, 9s. per dozen.
DRACÆNA INDIVISA, nice young plants, 9s. per dozen.

RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

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DENDROBIUM AINSWORTHII.—A few Plants of this magnificent New Hybrid Dendrobium. For Cut and Description, see *Gardeners' Chronicle*, August 11, p. 166 and 167. Price on application to

GEORGE TOLL, 358, Stretford Road, Manchester.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium CATALOGUES free on application.

Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

To the Trade.

ROSE BLOOMS. Price until further notice 8s. per 100, at CRANSTON'S NURSERIES, King's Acre, Hereford.

Hyacinths, Tulips, Crocus, Gladioli, &c.

OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.

ANT. ROOZEN AND SON, Overveen, near Haarlem, Holland.

Notice to the Trade.

JAMES FARRAR AND CO. beg to announce the arrival, in excellent condition, of their First Consignment of DUTCH BULBS. Wholesale CATALOGUE forwarded on application.

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To the Trade.

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JOHN MATTHEWS respectfully requests his Friends to favour him as early as convenient with their Orders for Autumn Supply of FLOWER POTS, &c.

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Common Sainfoin and Giant Sainfoin.

MESSRS. LEVAVASSEUR AND SON, SEEDSMEN, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on Commission.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

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FORCING SEAKALE.—The Subscribers offer 10,000, extra strong. Orders are now being hooked for delivery in the autumn. Price per 100 or 1000, on application to

JOHN LAING AND CO., Stanstead Park Nursery, Forest Hill, S.E.

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EAST LOTHIAN INTERMEDIATE SCARLET STOCKS, 2s. 6d. per 100, £1 per 1000. These Plants are of the same strain as grown at Battersea Park, which has been much admired.

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PRIMULA SINENSIS FIMBRIATA, Red and White, of a splendid strain; a few hundreds to be Disposed of. Strong plants, 7s. 6d.; larger, in 60's, ready for 48's, 12s. per 100. Samples sent for three stamps.

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ENFIELD MARKET, }
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Gentlemen's Gardeners, Amateurs, and Others
REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

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Price List oo application.

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UNRESERVED SALE of a large quantity of first-class HYACINTHS, fine selected roots for glasses; also thousands of choice TULIPS, CROCUS, NARCISSUS, LILIES, JONQUILS, ANEMONES, and other DUTCH FLOWER ROOTS, together with about 500 feet of INDIARUBBER WATER HOSE in lengths.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on MONDAY NEXT, September 17, at half-past 11 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Lee, S.E.

SEVENTH ANNUAL SALE.
Highly Important to the Trade.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. B. Maller to SELL by AUCTION, without reserve, on the Premises, the Burnt Ash Nursery, Lee, S.E., adjoining the Lee Railway Station, on TUESDAY and WEDNESDAY, September 18 and 19, at 11 for 12 o'Clock precisely each day, 1300 lots of STOVE and GREENHOUSE PLANTS, including 20,000 magnificently-grown Winter-blooming HEATHS, particularly well set with flower-buds, consisting of 13,000 hyemalis, Wilmoreana, gracilis, autumnalis, colorans, and other well-known varieties; 4000 small Ericas in 60-pots, 3000 Solanum capsicastrum, beautifully berried; Tea and other Roses in pots, 600 Cyclamen persicum, 1000 Adiantum cuneatum, 1000 Bouvardia longiflora, &c.

May be viewed any day prior to the Sale.

Tottenham, N.

GREAT ANNUAL SALE of STOVE and GREENHOUSE PLANTS.—Important to the Trade and other large Private Buyers.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Maller to SELL by AUCTION, on the Premises, the Brunswick Nursery, Tottenham, opposite the White Hart Lane Station, Great Eastern Railway, on THURSDAY, September 20, at 11 o'Clock precisely, without reserve, 770 Lots of unusually well-grown STOVE and GREENHOUSE PLANTS, mostly in No. 48 and 32 pots, and fit for immediate sale, consisting of 20,000 Winter-blooming Heaths in fine thriving condition, promising a profusion of flowers, including 3500 hyemalis, 3000 gracilis, 1000 Wilmoreana, quantities of ventricosa rubra, hybrida, &c., 6000 remarkably well-berried Solanum capsicastrum, fine Camellias and Azalea indica set with bloom-buds, 3000 extra fine Tree Carnations, 2000 Bouvardias of sorts, 600 well-furnished Adiantum cuneatum, Ficus elastica, 3000 Poinsettias, 300 Daphne indica rubra, 4000 remarkably fine Cyclamen, 1000 Genistas, Clematis of sorts, 300 double Primulas, 2000 Cinerarias, 1000 Dracænas, Palms, &c.

Now on view, and Catalogues had.

Exotic Nursery, Tooting, S.W.

TENTH ANNUAL SALE.—Important to the Trade and to Amateurs forming Collections of Plants.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, on the Premises, on TUESDAY, September 25, at 11 for 12 o'Clock precisely, an assortment of valuable established ORCHIDS, amongst which may be mentioned Angræcum eburneum superbum, Saccolabium guttatum and violaceum, Cypripedium caudatum, Dendrobium crassinode and suavissimum, Odontoglossum Phalænopsis and cirrhosum, Cattleya gigas, Warneri, and Mendelii, Oncidium varicosum and reflexum, Cypripedium Boxallii, Vanda cœrulea Boxallii, several valuable and rare PALMS, new and choice exotic FERNS, a fine assortment of large CAMELLIAS, also TREE CARNATIONS, ERICAS, and other GREENHOUSE PLANTS, prize specimen hardy FERNS, CLIMBERS in pots, &c.

Now on view and Catalogues had.

Stanstead Park Nurseries, Forest Hill, S.E.

IMPORTANT and ATTRACTIVE SALE of 6000 PALMS, comprising Areca lutescens, alba and rubra, aurea, crinita, Herbstii; Licuala peltata, Cocos Weddelliana, Stevensonia grandifolia, Ptychosperma Alexandræ, &c.; also 1500 strong established Pot ROSES, H.P.'s and Teas, for forcing; 500 LOMARIA GIBBA, DICKSONIA ANTARCTICA, 100 SOLANUMS, 200 DRACÆNAS, and a valuable assortment of HEATHS, CREEPERS, IVIES, and other indoor and outdoor plants.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. J. Laing & Co. to SELL the above stock by AUCTION, without reserve, on the Premises, on THURSDAY, September 27, at 11 for 12 o'Clock precisely.

Now on view and Catalogues had.

Castle Nursery, Lower Norwood, S.E.

SECOND ANNUAL SALE of ESTABLISHED ORCHIDS, including Dendrobium Wardianum, Oncidium prætexum (true), O. Marshallianum, O. Rogersii, Phalænopsis Schilleriana, grandiflora, and rosea; several species of Odontoglossums, Vandas, Pleiones, Cypripediums, Miltonias, and numerous others; also a considerable number of young and free-growing STOVE and GREENHOUSE PLANTS, fifteen handsome Eucharis amazonica, Adiantum farleyense, and other Exotic Ferns, Tree Carnations, Camellias, Azaleas, choice Tea Roses in pots, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James to SELL by AUCTION, the above carefully selected assortment of Stock, on the Premises, on FRIDAY, September 28, at 11 for 12 o'Clock precisely.

The Stock may at any time be viewed. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during September, consignments of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS arriving from well-known farms in Holland.

On view the mornings of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 18, at half-past 12 o'Clock precisely, several small COLLECTIONS of ESTABLISHED ORCHIDS from well-known growers, also some small importations of Orchids from various parts, &c.

On view morning of Sale, and Catalogues had.

To Market Gardeners and Others.

MR. TURNER will SELL by AUCTION, at the Queen's Hotel, Macclesfield, on TUESDAY, September 18, at 4 o'Clock in the afternoon, subject to conditions, all that FREEHOLD PLOT of LAND situate in Upton, near Macclesfield, containing one statute acre, together with the VINERIES, CUCUMBER-HOUSES, PROPAGATING-HOUSE, and other buildings recently constructed on the best system by the late Mr. Thomas Bayley. The Garden Plant comprises—Vineries: Four span-roof Vineries, 168 feet long inside, averaging 22½ feet wide, and 13 feet high in the centre, one of which has six rows of 4-inch hot-water pipes, and the other three have eight rows with valves complete; all have cisterns with supply of town's water, stop-taps, &c. There is also a large rain-water tank underground, with pump and trough. There are 121 choice Vines, three years old, and a quantity of Peach and Nectarine trees. Cucumber-houses, 130 feet long, averaging 12½ feet wide, and 10 feet high. In the Early house there are six rows of 4-inch bottom-pipes, and in the rest four rows, with top-heat pipes in all; cistern with hot and cold water, and 72 feet of forcing boxes. Propagating-house, 18 feet long, 9 feet wide, and 9 feet high. Frames: One span-roof 46-light frame, two lean-to roofs, each 12-light frames; three large protecting frames, two lean-to roofs, each 10-light cold frames; Rendall's patent slide span-roof cold frame, 3-light wood cold frames. Brick-built Boiler-house and Potting-house, 4 boilers; Wood Potting-house and Tool-house. Bee-house, with 3 hives of Bees. The ground is stocked with Fruit and Ornamental Trees, Shrubs, and several thousand Plants in Flower-pots. The Greenhouse is not completed; the walls are built, and the woodwork and pipes are ready for fixing. The Land, Buildings, Trees, Plants and Tools on the premises will be offered in one lot.

The Grounds may be viewed on application to the Gardener, on the Premises. Further particulars may be obtained, and a Plan of the Land seen, at the office of Messrs. PARROTT, MAY, AND SONS, Solicitors, Macclesfield.

Preliminary Announcement.

IMPORTANT SALE of PLANTS, consisting of Azaleas, Camellias, Heaths, Palms, Tree Ferns, and a large collection of Dracænas, Crotons, Amaryllis, and other Plants suitable for Stove, Greenhouse and Conservatory Decoration.

MESSRS. P. BURN, SON AND CO., AUCTIONEERS, Glasgow, beg to intimate that they are instructed by Messrs. Thyne, Great Western Nurseries, to SELL by AUCTION, the above, for which they have no accommodation, within the City Hall, Glasgow, on WEDNESDAY and THURSDAY, September 19 and 20.

Full particulars in future advertisements and Catalogues, which will be ready shortly, and may be had on application to Messrs. J. AND R. THYNE, Buchanan Street, or at the Auctioneers' Office, 108, West Nile Street, Glasgow.

N.B. In the above Collection will be offered many Choice Plants, which have been awarded first prizes at the leading exhibitions throughout the country.

TO BE DISPOSED OF, with Immediate Possession, a SMALL COMPACT NURSERY, about 2½ acres, with nine Greenhouses, Pits, six-roomed Dwelling House, Stable, Sheds, &c. Rent, £100; Lease and Stock, £200.

Apply to PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

To Strawberry and Fruit Growers.

THE LEASE to be SOLD of 3½ acres, in full bearing, of the finest sorts of Strawberries, and an Orchard of Fruit Trees. Rent, £16 per annum.

W. EATON, Chase-side, Southgate, N.

FOR SALE, a FLORIST and NURSERYMAN'S BUSINESS, under exceptional circumstances. Premises are commandingly situated, with 50 feet frontage to suburban main road, and consist of excellent Dwelling House, Six Greenhouses, hot-water heated, good Shop, &c.; grounds ¾ acre. Rent £46; annual returns, £850. Price for goodwill, eleven years' lease, fixtures, utensils, and stock, £375 only. A genuine bargain.

GARFORD AND BUCK, 212, Great Dover Street, Borough, S.

THE
IMPROVEMENT OF LANDED ESTATES,
By DRAINAGE, ENCLOSING, CLEARING,
The ERECTION of FARM BUILDINGS and COTTAGES
WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.
(Incorporated by Special Act of Parliament)
ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

THE GUARDIAN HORSE and VEHICLE ASSURANCE ASSOCIATION (Limited),
21, Lombard Street, London, E.C.,
INSURE HORSES against Death by Disease or Accident (Annual Premiums, 5 to 7½ per cent.).
AFFORD COMPENSATION for ACCIDENTAL INJURIES (Annual Premium, 2½ per cent.).
INSURE VEHICLES of all kinds against ACCIDENTS (Annual Premium, from £1 1s.).
Influential Representatives wanted.

To the Trade Only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland.—The WHOLESALE CATALOGUE for 1877-78, first part (327A) is now ready, and may be had free on prepaid application by Nurserymen, Florists, and Seedsmen. The Catalogue contains complete collections of Hyacinths, Tulips, Crocus, Narcissus, Fritillaria, Anemones, Ranunculus, Lilies, Iris, Gladiolus, Pæonies, and a selection of miscellaneous bulbous and tuberous plants. It is perhaps the most complete list ever published of these articles.

26,000 Camellias.

B. WHITHAM begs most respectfully to call attention to his unrivalled collection of the above, of all the finest varieties in cultivation, and well set with buds, all home-grown, strong, healthy plants. Price from 24s. to 120s. per dozen, according to size and variety.

Also about 10,000 fine home-grown CAMELLIA STOCKS, in pots, fit for present Grafting—First size, 28s. per 100; second size, 21s. per 100.

CATALOGUES on application.
The Nurseries, Reddish, near Stockport.

TO GENTLEMEN INTENDING TO PLANT.—In consequence of the decease of the late Mr. R. WEBB, of Calcot Gardens, near Reading, his valuable Collection of Young Prize NUT TREES, of named sorts, are offered at half the usual selling prices. Printed LISTS will be forwarded on application.

Immediate Orders are solicited, as the Trees will be supplied in the rotation in which the orders are received; delivery commencing on October 1. Apply to

The MANAGER, Calcot Gardens, near Reading, Berks.

English Yews.

SANDY AND SON beg to call attention to their superb stock of the above, ranging in height from 2 to 7 feet. All are perfect specimens, pyramids, and lift with splendid roots. The sizes of which they hold the largest quantity are from 2 to 5 feet. Any person requiring a considerable number would find it advantageous to inspect the stock. All other Nursery Stock in quantities.

Special offers made of AUSTRIAN PINES, PORTUGAL and COMMON LAURELS, TREE BOX, &c.

The Nurseries, Stafford.

Thorns.—Special Offer.

LENAULT-HUET, NURSERYMAN, Ussy, Calvados, France, begs to offer 20,000,000 1-yr. THORNS, at from 1s. to 6s. per 1000, according to strength. Great culture of seedling and transplanted FOREST and other TREES, SHRUBS, &c.

General CATALOGUE will be ready in the commencement of October, application for same from all correspondents to be addressed to my

London Agents: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, E.C.

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

Address, HENRY SHEPHERD, Manager.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

Winter and Spring Flowering Plants.

MESSRS. JOHN STANDISH AND CO.'S stock of these is unusually fine this season, and includes the following:—

AZALEA INDICA, bushy and well budded, in good variety.
BOUVARDIAS, good bushy plants
CAMELLIAS, good plants and well budded.
CARNATIONS, Miss Jolliffe and others.
EPACRIS, good plants.
ERICAS, Hyemalis, Sindryana, Wilmoreana, ventricosa, and other varieties,
ROSES, Tea-scented and H.P's., in great variety.
POINSETTIA PULCHERRIMA.
SOLANUM, well-berried plants; and other plants.

They have also a great variety of PALMS and other plants suitable for decoration; also of ADIANTUM and many other FERNS, besides a varied stock of STOVE and GREENHOUSE PLANTS and GRAPE VINES.

CATALOGUES post-free on application.
Royal Nurseries, Ascot, Berks.

B. S. WILLIAMS,

THE VICTORIA & PARADISE NURSERIES,

UPPER HOLLOWAY,

LONDON, N.

PHILADELPHIA, 1876.
The only Prize Medal awarded to English Exhibitors for New and Rare Stove and Greenhouse Plants.

COLOGNE, 1875.

This Illustration will give but a faint idea of the magnificence of the unrivalled Collection of Specimen TREE FERNS, gigantic PALMS, noble DRACÆNAS, and all other Plants suitable for Furnishing Large or Small Conservatories. They are now in excellent condition, and would well repay a visit, especially from Ladies or Gentlemen about to build new or rearrange their present Houses.

Also the large Stock of well-grown FERNS suitable for Rockwork Ferneries, including many new kinds sent out this Season, of which Illustrations and Descriptive Notes are given in my NEW PLANT CATALOGUE, which can be had, post-free, on application.

CYATHEA DEALBATA. New Zealand. **DICKSONIA ANTARCTICA.** Australia, Tasmania. **DICKSONIA SQUARROSA.** New Zealand.

Carriage Route from the West End is through Albany Street, Regent's Park, Park Street, Camden Town, Kentish Town, and Junction Road.

The North Metropolitan Tramway Cars, in addition to the Street Tramway Company's Cars, arrive at and start from the Nurseries, for the City and West End, every few Minutes. The Midland, in connection with the Metroplitan Railway, run frequent Trains during the day from all parts of London to Upper Holloway Station, which is within Three Minutes' Walk of the Nurseries.

Estd. 1844.

For the best List of Choice Hyacinths, Tulips, Crocuses, Narcissus, &c., see our Beautifully Illustrated

CATALOGUE

OF

DUTCH FLOWER ROOTS

FOR

Autumn, 1877,

Containing numerous fine Engravings and much Valuable and Original Information on the successful Culture of Bulbous-rooted Plants. Should be read by all intending purchasers before ordering. Post-free on application.

Our 21s. Collection (No. 7),

For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

Other Collections, 12s. 6d., 42s., 63s., and 84s. each.

From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

From R. PRONYCE, Esq., *Bathgate, N.B. February* 7, 1877.

"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

DANIELS BROS.,

THE QUEEN'S SEEDSMEN, NORWICH.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15*s.* to 18*s.* per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24*s.* per dozen.

,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30*s.* to 36*s.* per dozen.

,, Half Specimens, 5*s.* to 7*s.* 6*d.* each.

NEW FRENCH ROSES of 1877, 30*s.* per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36*s.* to 42*s.* per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—**CRANSTON & CO.**

NOTICE TO THE TRADE.

THE THAMES BANK IRON COMPANY,

UPPER GROUND STREET, LONDON, S.E.,

Having Bought the Entire Stock of

HOT-WATER BOILERS, PIPES, AND CONNECTIONS

OF

Messrs. ANDREW McLAREN & CO., LONDON,

(Who have relinquished this branch of their business),

WILL FOR A FEW WEEKS OFFER THESE GOODS AT

REDUCED PRICES.

HOT-WATER APPARATUS ERECTED COMPLETE, OR THE MATERIALS SUPPLIED AT WHOLESALE PRICES.

TO THE TRADE ONLY.

COCOS WEDDELLIANA.

A few thousand Seedlings, in Store-pots, of this most graceful and useful Palm for Table Decoration and other purposes, are offered at

£6 per 100.

Not less than 100 *supplied at the above Price. Special Terms per* 1000.

APPLY AT ONCE TO

JEAN N. VERSCHAFFELT,

THE NURSERIES, 134, FAUBOURG DE BRUXELLES,

GHENT, BELGIUM.

DUTCH FLOWER ROOTS.

B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HE HAS RECEIVED HIS ANNUAL IMPORTATION OF

HYACINTHS, TULIPS, CROCUS, NARCISSUS,

And other BULBOUS ROOTS, in fine condition.

CATALOGUES, containing a Select List of the above, are now ready; Also of NEW PLANTS, FRUIT TREES, ROSES, &c.;

GRATIS AND POST-FREE ON APPLICATION.

VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

DUTCH FLOWER ROOTS.

F. GALLOP (LATE GEO. PARSONS),

SEEDSMAN AND FLORIST,

Begs to announce that his Illustrated, Priced, and Descriptive CATALOGUE is now published, and may be had, post-free, on application.

IT CONTAINS A CHOICE SELECTION OF

HYACINTHS, TULIPS, CROCUS, LILY OF THE VALLEY, &c.

THE BRIGHTON SEED WAREHOUSE,

WESTERN ROAD, BRIGHTON.

DUTCH FLOWERING BULBS.

DOWNIE & LAIRD

Have to intimate that they have received their Annual Importation of the above, and are glad to state that they are in excellent condition.

To prevent disappointment and to secure the best Bulbs, early Orders are respectfully requested.

Descriptive CATALOGUES free on application.

DOWNIE & LAIRD,

Florists to the Queen, Nurserymen and Seedsmen,

17, SOUTH FREDERICK STREET, EDINBURGH:

Nurseries:—The Royal Winter Gardens, West Coates, Meadow Park, and Pinkhill.

HUGH LOW & CO.

HAVE PLEASURE IN INFORMING THEIR FRIENDS AND THE PUBLIC THAT THEIR

STOCK OF WINTER AND SPRING FLOWERING PLANTS

Is this season unusually extensive in quantity and fine in quality, and well worth the notice of intending purchasers, who are very cordially invited to an inspection of the Plants, which comprise amongst other things:—

Upwards of 30,000 ERICA HYEMALIS, of flowering size.
Many Thousands of ERICA GRACILIS.
Many Thousands of ERICA WILMOREA.
Many Thousands of ERICAS of the best varieties, including alopecuroides, colorans, persoluta alba, regerminans, perspicua nana, ventricosa in variety, intermedia, hyemalis superba, melanthera, barbata major, rubens, verticillata major, mammosa, caffra, &c.
Many Thousands of Hard-wooded ERICAS, in numerous fine varieties.
Many Thousands of GENISTAS.
Many Thousands of EPACRIS, in numerous varieties.
Many Thousands of AZALEA INDICA, in variety.
Many Thousands of CAMELLIAS, with flower-buds, various sizes.
Many Thousands of SOLANUMS, well berried, splendid stuff.
Many Thousands of BOUVARDIAS, red and white, all strong bushy plants, of blooming size.
Many Thousands of EPIPHYLLUMS, in varieties.
Many Thousands of TREE CARNATIONS, of flowering size.
Many Thousands of CYCLAMEN PERSICUM, fine varieties.
Many Thousands of the best GREENHOUSE PLANTS, such as Chorozemas, Aphelexis, Genetyllis, Dillwynias, Acacias, Polygalas, Boronias, Pimeleas, Jasminums.

Also on hand, a very large Stock of

ORNAMENTAL FOLIAGE and DECORATIVE PLANTS, PALMS, DRACÆNAS, FICUS ELASTICA, &c.

FERNS—Many Thousands of the most approved kinds. Adiantum cuneatum by the 100 or 1000.

Many Thousands of DRACÆNA RUBRA. Many Thousands of CORYPHA AUSTRALIS.

ORCHIDS.—The Stock of these is very large and healthy.

Vandas, Dendrobiums, Cattleyas, Odontoglossums, Phalænopsis, Cypripediums, Lælias, Saccolabiums, Oncidiums, &c., can be seen in large quantities, very extensive importations having been made during the season.

CLAPTON NURSERY, LONDON, E.

RICHARD DEAN'S NEW SINGLE PRIMROSES.

SEVERAL FIRST-CLASS CERTIFICATES.

Seed of the above, saved from the finest varieties, is now ready. Per packet, 2*s.* 6*d.*

NEW GIANT WHITE BROMPTON STOCK.
First-class Certificate. Per packet, 1*s.* 6*d.*

NEW PYRAMIDAL STOCK (MAUVE BEAUTY).
First-class Certificate. Per packet, 1*s.* 6*d.*

AND SEVERAL OTHER FIRST-CLASS NOVELTIES. LISTS ON APPLICATION.

CATALOGUE of PRIMROSES, AURICULAS, POLYANTHUS, BEDDING PANSIES, and VIOLAS, &c., including the New White Viola VESTAL, recently awarded a First-class Certificate by the Royal Horticultural Society; —also New and Choice POTATOS—will be published in October, and can be had on application.

RICHARD DEAN, Florist and Seed Grower, **RANELAGH ROAD, EALING, W.**

SEED GROUNDS: BEDFONT, HOUNSLOW, W.

CONSERVATORIES, ORCHARD HOUSES, &c.

Plain or Ornamental, Portable or Permanent. Estimates given to Architect's Plans.

HEATING APPARATUS ARRANGED for EVERY CLASS of HORTICULTURAL BUILDING.

PRICE LISTS free on application. A PAMPHLET, with Illustrations, Testimonials, &c., post-free, 3d.

HEREMAN & MORTON,

2, GLOUCESTER STREET, REGENT'S QUADRANT, LONDON, N.W.

MANUFACTORIES—LONDON, GLOUCESTER, COVENTRY, PAISLEY, and ABERDEEN *only.*

The Fourth Edition of a HANDBOOK of VINE and FRUIT TREE CULTIVATION, by Mr. HEREMAN, *Price* 1*s.*, *post-free* 13 *stamps.*

BEAUTIFUL FLOWERS FOR WINTER & SPRING

WEBBS'

CHOICE COLLECTIONS

OF

HYACINTHS, CROCUS, TULIPS, NARCISSUS, &c.,

CONTAIN A SUPERB ASSORTMENT OF THE BEST VARIETIES

FOR GROWING IN POTS, GLASSES, VASES, &c.
Collections 10*s.* 6*d.* 21*s.*, and 42*s.* each.

FOR OUTDOOR OR OPEN BORDER DECORATION.
Collections 10*s.* 6*d.*, 12*s.* 6*d.*, 21*s.*, 42*s.* and 63*s.* each.

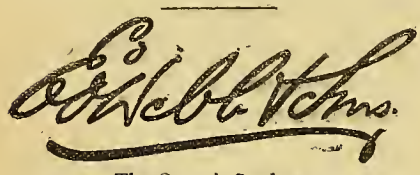
FOR GREENHOUSE OR WINDOW BOXES.
Collections 10*s.* 6*d.*, 12*s.* 6*d.*, 21*s.*, and 42*s.* each.

All Goods of 20s. value carriage free.
Five per cent. discount for cash.

Webb's Autumn Catalogue of Dutch Flower Roots, &c.,

is beautifully Illustrated and contains Original and Complete Cultural Instructions.

GRATIS AND POST-FREE ON APPLICATION.



The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

ROSES.

CRANSTON'S NURSERIES,
KING'S ACRE, HEREFORD.

(ESTABLISHED 1785.)

THE LARGEST ROSE GARDENS IN ENGLAND.

MESSRS. CRANSTON & CO.

Beg to announce that their ROSES (extending over many acres) are now in full bloom.

As considerable time will be required to inspect the whole of their Collection, Visitors to the Nurseries should take the morning trains arriving at Barr's Court, or Barton Stations, 2½ miles from the Nurseries, where conveyances are to be had.

Rose Blooms for Decoration supplied.

SPECIAL OFFER FOR AUTUMN.

CH. VUYLSTEKE,

NURSERYMAN,

LOOCHRISTI, NEAR GHENT, BELGIUM.

CAMELLIAS, AZALEAS, KALMIAS, AND RHODODENDRONS.

Upwards of 200,000 Plants of unusual beauty and strength are disposable at the following low prices :—

AZALEA INDICA, twenty-five fine named varieties, covered with buds, £5 per 100.
AZALEA INDICA, stronger and very fine, £6, £7, £8, and £10 per 100.
AZALEA MOLLIS, in twelve best named varieties, bushy, well budded plants, 24*s.* per dozen, or £8 per 100.
AZALEA MOLLIS, extra strong, full of buds, 30*s.* to 40*s.* per dozen, or £10, £12, £16, and £20 per 100.
AZALEA MOLLIS, Seedlings, varieties for forcing, strong bushy plants, covered with buds, £6 to £8 per 100.
AZALEAS, Hardy Ghent, in twenty-five choice varieties, strong budded plants, £4 and £5 per 100.
AZALEAS, Hardy Ghent, extra strong, covered with buds, £6 to £8 per 100.
CAMELLIAS, exquisite varieties, with names, two to four buds, 1 to 1½ foot high, £5 per 100.
CAMELLIAS, very fine bushy plants, 1 to 2 feet high, well set with buds, £6 to £8 per 100.
KALMIA LATIFOLIA, very nice bushy plants with buds, £4, £5, £6, and £8 per 100.
RHODODENDRONS, Hardy, fine named varieties, well set with buds, £7 and £8 per 100.
RHODODENDRONS, Hardy, extra strong, covered with buds, £10, £12, £16 to £24 per 100.

Descriptive CATALOGUE on application to our Nurseries at Loochristi, or to our Agents,

MESSRS. SILBERRAD & SON,
5, HARP LANE, GREAT TOWER STREET, LONDON, E.C.

JEAN VERSCHAFFELT'S NURSERIES, GHENT, BELGIUM.

CAMELLIAS and AZALEA INDICA

For WINTER FLOWERING.

The annual stock of the above being unusually fine this year, early Orders are solicited, and may be executed henceforth at the undermentioned low prices, viz. :—

AZALEA INDICA (my own selection), good plants £5 per 100; stronger, and very fine, £6, £8, £10, £12, to £20 and upwards per 100.
None but first-rate varieties, all to name.

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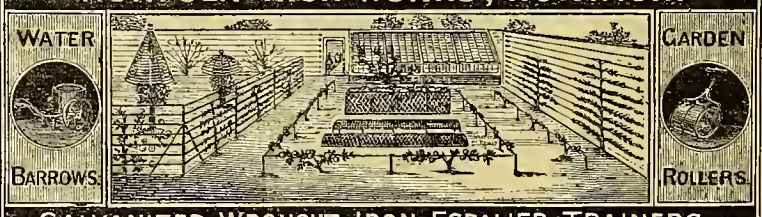

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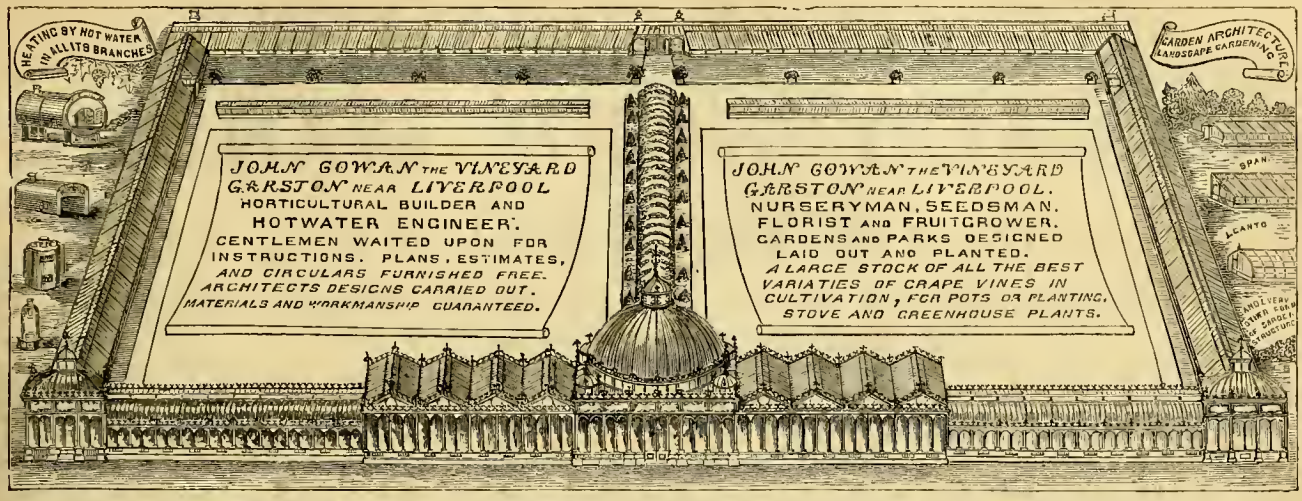

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"*Dear Sir,—You ask me my opinion of the Buffalo Horn Dust. I give it you. Early in* 1876 *Messrs. Taylor & Co., of Clapham, sent a good sample of it here for trial as manure. It has been tried and tested in various ways—in comparison with ordinary stable manure, guano, other patent manures, &c., with most satisfactory results. We have used it, mixed with soil, for potting plants, such as Vines, Peaches, Cucumbers, Fuchsias, Pelargoniums and various others, and as top-dressings in the same manner. Also in the formation of a new Vine border last autumn.*

"*In each and all cases, the deep green hue which the foliage soon assumes, and the great vigour which is imparted, is very striking and notable. Its light, fibry componency makes it most suitable for mixing with the soil for potting, and when used as top-dressing the roots are soon seen to permeate the entire mass. In the case of the orchard-house trees and Vines so treated the effects are astonishing.*

"*No manure that we have ever used here has produced results so decided, so apparent and satisfactory.*

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"*I am, dear Sir, yours very truly,*

"*Mr. JOHN WILLS.*" "*A. F BARRON.*"

"The Gardens, Heckfield, Winchfield.
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"DEAR SIR,—In reply to your enquiry as to what opinion I have formed of the *Horn Manure* I bought of you some few months ago I am able to report, *most favourable.* I have used it principally for Pines, Vines, and Strawberries in Pots, and in each case its effects were of the first order. I am so convinced of its superiority over other Bone Manures for Vines that I have used *this only* in a new border I had to make, and the Vines are making the most magnificent growth. I shall be happy more fully to report results in due course.—I remain, dear Sir, very truly yours, W. WILDSMITH, Gardener to Viscount EVERSLEIGH."
"J. WILLS, Esq"

"June 30, 1877.

"DEAR SIR,—I have the pleasure to inform you I have tried your Horn Manure, and the results are most satisfactory. I have it mixed in the soil with such things as Fuchsias, Pelargoniums, Geraniums, Gloxineas, Humea elegans, Neapolitan Violets, and in each case it could be seen at a glance, amongst others that had not any of the mixture, by their stronger and robust habit, a much more green and healthier appearance.—Yours very truly, F. RUTLAND, Gardener to the Duke of RICHMOND and GORDON."
"Mr. WILLS."

"The Gardens, Syon House, Brentford,
May 16, 1877.

"DEAR SIR,—I consider your manure an excellent fertiliser; it is clean to use, and, I believe, will be lasting in its effects.—Yours faithfully, JOHN WOODBRIDGE, Gardener to the Duke of NORTHUMBERLAND."
"Mr. J. WILLS."

"Victoria and Paradise Nurseries, Upper Holloway,
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"DEAR SIR,—I have tried your Horn Manure on Dracænas, Crotons, Ixoras, Grape Vines, and consider it one of the best Manures we have used.—Yours faithfully,
"Mr. J. WILLS." "B. S. WILLIAMS."

"The Gardens, Crewe Hall, June 2, 1877.

"DEAR SIR,—I have tried the New Manure you were so kind as to send me on Fuchsias, Pelargoniums, Marantas, Caladiums, Anthuriums, and other Stove and Greenhouse Plants; and found its effects to be most beneficial wherever it was used. I consider it to be a most excellent Manure, and if it could be supplied in quantity at a reasonable price, would (I have no doubt) be a valuable Manure for Vine Borders, as well as Fruit Trees and Pot Vines, Pines, &c.—I am, dear Sir, yours very truly, WM. WHITAKER, Gardener to Lord CREWE."
"Mr. WILLS."

"Castle Gardens, Arundel, July 20, 1877.

"MY DEAR SIR,—I don't think I could do better than enclose you the report I had from my foreman about the Manure you kindly sent me. I must tell you that I use a good deal of night soil mixed with the best loam for two years. You should see our Strawberries and French Beans grown in it.—Yours faithfully, JOHN WILSON, Gardener to the Duke of NORFOLK."
"Mr. WILLS."

"Balsams, scarlet Geraniums, Fuchsias, Crotons, Chrysanthemums, and Coleus made a rapid and vigorous growth, combined with healthy foliage: the Geraniums having a marked improvement in the flowers.—July 20, 1877."

"Cricket Gardens, July 4, 1877.

"DEAR SIR,—I feel great pleasure in sending to you the result of my experience with the Manure you sent to me for trial. I selected four plants, equal in size, of the following sorts:—Geraniums, Fuchsias, French Beans, Cucumber, Balsams, Cockscomb, &c.; two of each sort I potted with a mixture of your Manure, and two of each sort I potted in the usual good soil generally used for such plants. It was quite wonderful to see the difference in the habit and growth of the plants where the Manure was used to the other. I have no hesitation in saying it is by far the best Manure I have ever tried for plants in pots.—I remain, dear Sir, yours faithfully, D. D. DAVIES, Gardener to LORD BRIDPORT."
"Mr. WILLS."

"The Gardens, Coombe Lane, Kingston-on-Thames,
June 29, 1877.

"DEAR SIR,—In answer to your enquiry as to the Horn Manure, I beg to inform you that I applied it to some early forced Muscat Vines that have their roots confined in a very narrow inside border, and the result has been a magnificent crop of Fruit, or what appears to a casual observer perfectly exhausted canes.—I am, dear Sir, yours very truly, WM. DENNING, Gardener to Lord LONDESBOROUGH."

"The Gardens, Harewood House, August 2, 1877.

"DEAR SIR,—I have had great pleasure in giving the sample of your Horn Manure a fair trial. Having potted a many varieties of Greenhouse and other Plants with the quantity you advised me to do, I have noticed them doing well, foliage healthy and green. I don't hesitate the least in saying, the Manure will become a great acquisition to gardeners when better known.—I am, Sir, yours respectfully, JAS. FOWLER, Gardener to the Earl of HAREWOOD."
"Mr. WILLS."

"Leyton, Essex, June 30, 1877.

"DEAR SIR,—In reply to your letter concerning the Horn Shavings you were kind enough to send me for a trial, I found a marked effect on Fuchsias (the only plants that I could try it on, as the others were all shifted). I believe it will prove a powerful Manure, as the quantity I used was only one-eightieth.—With kind regards, I remain, yours very truly,
"Mr. J. WILLS." "JAMES SWEET."

"Mentmore, Leighton Buzzard, July 3, 1877.

"DEAR SIR,—I consider your Horn Manure a very valuable material for mixing with soils for potting purposes. I have used it for various kinds of plants, and the effect is very apparent in the dark green of the foliage and robust health of the plants, which were potted in soil mixed with your Horn Manure.—I am, dear Sir, yours truly, J. SMITH, Gardener to Baroness ROTHSCHILD."
"To Mr. WILLS."

J. WILLS BEGS TO SAY THAT HE HOLDS THE ENTIRE STOCK OF THIS MANURE.

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„ WARNERI
CŒLOGYNE BARBATA
„ GLANDULOSA
CYPRIPEDIUM BULLENIANUM
„ LONGIFOLIUM
DENDROBIUM ALBUM
„ AMŒNUM
„ BARBATULUM
„ CRASSINODE
„ CRYSTALLINUM
„ FALCONERI
„ NOBILE
„ THYRSIFLORUM
„ WARDIANUM
EPIDENDRUM TIGRINUM
„ VITELLINUM
HELCIA SANGUINOLENTA
HOULLETIA BROCKLEHURSTIANA
LÆLIA ANCEPS
„ AUTUMNALIS
„ CINNABARINA
„ MAJALIS
„ MARGINATA
„ PURPURATA
LYCASTE SKINNERI
MESOSPINIDIUM VULCANICUM
ODONTOGLOSSUM CITROSMUM
„ CORDATUM
„ HALLII
„ HASTILABIUM
„ INSLEAYI LEOPARDINUM
„ MACULATUM
„ CIRRHOSUM
„ ROSEUM
ONCIDIUM AURIFERUM
„ AUROSUM
„ CRISPUM
„ FUSCATUM
„ LEUCOCHILUM
„ MARSHALLIANUM
„ ROSTRANS
„ STELLIGERUM
„ TIGRINUM
„ VARICOSUM
„ „ ROGERSII
PHAIUS GRANDIFOLIUS
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DENDROBIUM BENSONIÆ
„ JAPONICUM
„ PIERARDII
LÆLIA ALBIDA
LIMATODES ROSEA
MESOSPINIDIUM SANGUINEUM
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From the COURT CIRCULAR, *September* 1, 1877.—"Sutton's Autumn Catalogue of Flowering Bulbs is one of the neatest and prettiest books of the kind yet published, and contains a vast amount of valuable information on the cultivation of bulbous flower roots, which is sufficient to commend it to the notice of all who are fond of floral beauties. Messrs. Sutton & Sons, the Queen's Seedsmen, have long enjoyed the enviable reputation of standing in the foremost rank of floriculturists, and the painstaking care evidenced in the production of this year's catalogue deserves the warmest commendation."

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

SATURDAY, SEPTEMBER 15, 1877.

FRUIT.

IN continuation of our remarks at p. 295 it may be said that in respect to fruit culture under glass, if we go back even no further than the commencement of the present century, there has been a great advance both in the improved character of the structures in which it is grown and the immense increase in the quantities produced.

With Pines, the heat at command frequently consisted solely of dung linings for successions, wherein they lingered on, making little progress through the winter, with the fruiters in the central pit of a dark lean-to house, often still further darkened by Vines overhead, the leaves weak and drawn up, and the fruit frequently taking a couple of years before arriving at maturity from the time the small suckers usually employed were put in. Subsequently Hamilton's system came into fashion, and then planting out was adopted by many, but the majority of growers have now returned to pot culture. In all cases the great improvement that has taken place in the construction of Pine-houses, and the still greater advance in heating them, has made Pine growing a very different affair from what it once was. Growers have so far learnt the advantage of allowing the suckers to acquire plenty of strength before taking them off, and of keeping their plants going, that Pines are now produced in twelve or fifteen months superior to those that used to take nearly double the time. The collective weight of fruit from any given number of plants, fair representatives of modern Pine growing, is also no doubt much greater than it used to be.

Vine culture under glass from the first was more in accordance with the natural requirements of the plant than was the case with Pines. From the fact of their being trained up near the glass they were in a position to receive that most indispensable of all elements to vegetable life—light. The general estimation in which the Vine, above all other fruit-bearing plants, is held has naturally caused more study and attention to be paid to its general requirements. Its wants have long been fairly understood, although from what has been achieved of late years he would be a bold man who would say that there was nothing more to be learnt in Vine culture. Speechly's bunch of the coarse Syrian, grown at Welbeck, was for well nigh a generation held up as the crowning evidence of what it was possible to accomplish in the way of big bunches, yet we have seen his weight a long way beaten with the naturally smaller-bunched Black Hamburgh; and though we cannot look upon these enormous bunches, invariably deficient in finish, as the highest evidences of skilful Grape growing, still they unmistakably point to the fact that those who produce them have hit upon a mode of treatment that imparts to the Vine a combination of powers, without which these monster bunches could not be produced. The late Dr. Lindley used to frequently urge fruit growers to further exertions by reminding them that they did not keep pace with the plant growers in the improvement of their productions. In this he lost sight of the fact that very much more study and attention had been paid to fruit growing under glass, and a higher standard of cultivation arrived at for half a generation before more was done in the way of plant growing than merely

keeping them alive, consequently there was not the same room for the improvement in fruit. It is not through any sensational advance but by the production of Grapes in medium-sized bunches, more perfectly finished than they were met with in times past, that the great progress in Grape growing consists. It is shown also in the large number, now to be met with in most parts of the kingdom, who can grow this fruit well.

The cultivation of Peaches, Nectarines, Figs, Strawberries, Melons, and Cherries, like everything else grown under glass since this article became cheap, has increased to an extent that previously would not have been credited as possible, and the general standard arrived at in the growth of these fruits has equally improved. The better varieties of Plums now frequently met with in splendid condition, the result of indoor cultivation, are also an acceptable addition to the dessert-table.

Within the last thirty years a great number of new varieties of fruit have made their appearance, amongst which a few acquaintances so very old and almost forgotten that it would have been refreshing to have again seen them had they been content to appear under their old names, but when they have ushered themselves before us, re-christened, the interview has been somewhat perplexing. Of the new kinds, as might have been expected, the majority have not turned out equal to the high character with which they came before us; but a few have been proved to be decided acquisitions. Amongst Pines Charlotte Rothschild is no doubt an excellent and most desirable kind, and an acceptable addition to this so-called king of fruits. In Grapes, Madresfield Court, as an early (not a late keeper as it was first said to be) is equal in quality to its good looks, and is deserving of general cultivation; Lady Downe's and Alicante have both become established favourites for late keeping, and are too well known to need any comment. As to most of the newer varieties, if their good properties outweigh their defects they will ultimately make their way. In Peaches and Nectarines the greatest gain has been in a few of the early varieties of both home and American origin, which are no doubt improvements, taking quality, appearance and bearing capabilities into account. Amongst Apples, Pears, Plums, and Cherries, the gain in any new kinds that have appeared during late years is doubtful, taking all properties into consideration and comparing them without prejudice with the large number of good sorts that are well known and proved. Of Apples that have become more generally known of late years, although there may be some doubts as to how long they have been in existence, Lord Suffield and Ecklinville Seedling are deserving of all that can be said of them. The same applies to Doyenné du Comice Pear, of which it would be difficult to speak too highly.

Every year brings out new Strawberries, both home raised and foreign; but very few of them, after being fairly tried, have succeeded in establishing their superiority over older, well-proved varieties. In bush fruits there has been little advance. Lee's Black Currant we believe to be a very good useful sort, that most likely will supplant the older kinds.

The above enumeration of fruits of comparatively recent introduction will no doubt to many appear a very meagre affair, but there is only one safe way of estimating these new-comers, that is, by putting their collective properties in comparison with proved kinds. *T. Baines.*

LANCASHIRE SHOW GOOSEBERRIES.

THERE are many parts of the kingdom where the conditions of both soil and climate are much more favourable for gardening than any Lancashire can boast of, yet in no county has there been evinced such a general inclination to excel in the growth of some one or other of the many outdoor productions of the garden, the cultivation of which are within the reach of the toiling portion of the community, as exemplified by the hundreds of artisans and others who have spent and continue to spend their spare hours in growing Auriculas, Polyanthus, Carnations, Pinks, Pansies, Tulips, Celery, Onions, as well as many other things, and last, but not least, big Gooseberries. I have often been asked by individuals connected with gardening pursuits who reside in other parts of the country why the Gooseberry was taken in hand by the Lancashire cottager in preference to other hardy fruits, some of which would seem to be more deserving of his attention. The explanation is very simple. In the manufacturing districts, where these gardening hobbies are most pursued, the soil, and often the climate as well, is not suited to the growth of many species of hardy fruits, and the Gooseberry, coming sooner into bearing, and being more influenced by high cultivation than most fruits, suits the conditions of these gardeners with limited means better than any other. The principal aim of the cultivator is weight, consequently the whole practice is directed to the production of a few large-sized fruit. When the power of the trees is concentrated in supporting from half-a-dozen to a dozen berries each it will be obvious that a much greater size will be attained than when the ordinary course of growing for a crop is followed, just as the immense examples of culinary Pears grown in the Channel Islands are produced by the small trees thinned to a few fruits each. The show Gooseberry trees are kept quite small, generally consisting of not more than ten or a dozen branches trained in a horizontal position from the main stem at some 9 or 10 inches above the ground, the whole tree often being under 2 feet in diameter. Where the land is not naturally good, soil of better quality is brought in and formed into raised beds about 3 feet across, usually supported by hoards. As is well understood by cultivators many kinds of fruit attain a larger size for being grown in close proximity to the moist surface of the earth—for instance, dwarf Apples grown goblet shaped on trellises; the lower parts of the branches are necessarily for some 2 feet in a horizontal position, not more than a foot from the ground. The Apples produced from the bottom of the branches so placed will generally be found to grow to a much larger size than those higher up. It is for this same reason that the show Gooseberry grower keeps the branches of his trees closely trained down. In the spring the surface is heavily mulched with rotten manure; to still further keep the top damp, and moisture continually rising from it to the fruit, a thick covering of Chickweed is encouraged to grow so as to almost reach the branches. The fruit swells to a much larger size under the moist exhalation thus secured than it otherwise would do, but, as is well known by any one who has noticed the effect of a heavy shower upon ordinary Gooseberries when ripe in causing them to split, it behoves the grower of show fruit to take means for keeping his berries from getting wet when nearly ripe; for this purpose hoops are fixed over the trees, and to these laths are tied longitudinally, or twine is fixed, to carry canvas or similar material for throwing off the rain. In this matter the fruit needs considerable watchfulness when about ripe, and the story is told of a Middleton silk-weaver who on the night of an impending thunderstorm just before the show laid in bed awake thinking of his Gooseberries, and when the rain did come he rushed out into the garden with the bed-quilt as an additional covering to protect his favourites. Some of the largest berries that have ever been grown have disappointed the hopes of the cultivator by splitting before the time for exhibition came. Some of the largest varieties are shy growers and comparatively shy bearers, and are nothing particular as to flavour; on the other hand, there are some that possess all the properties that go to constitute a good Gooseberry in addition to size.

Amongst red varieties are:—

London	Dan's Mistake
Wonderful	Lion's Provider
Slaughterman	Clayton
Conquering Hero	Duke of Sutherland
Companion	

Green Kinds.

General	Stockwell
Over-all	Turnout
Gretna Green	Shiner
Thumper	Telegraph
Queen Victoria	

Yellows.

Catherine	Stella
Leader	Leveller
Pilot	Railway
Drill	Gunner
Criterion	

Whites.

Queen of Trumps	Snowdrop
Freedom	Antagonist
Eagle	Hero of the Nile
Snowball	Careless
Lady Leicester	

The general routine of cultivation in the case of these show Gooseberries differs little from the ordinary practice, except so far as I have named. They are always liberally fed with manurial stimulants, especially in dry seasons, as any check from a deficiency of moisture would be fatal to their afterwards attaining the requisite size. The branches are usually secured in the horizontal position they have first been trained in, the old wood from time to time cut away and replaced by new as this is produced. *B.*

AMATEUR GARDENING.

MAKING CUTTINGS.—In studying the methods of propagation by cuttings it will be of some use first to consider the peculiar circumstances of the case. We have to deal with a fragment deprived of most of its powers of obtaining food, but which has got to support itself, to heal a wound and put out new roots from these diminished supplies, and to do it pretty rapidly, or the wounded extremity would probably either decay or shrivel and the cutting fail. We want active, rapid growth, and therefore we take young wood, and choose the season of the year when there is most growing power; we sever the cuttings through a joint or beneath a leaf, because there lies the most active circulation, we frequently leave a film of more matured wood at the extremity, because it is less liable to decay than the soft and sappy growths above; and we place the cuttings under glasses or in the shade, that they may not be exhausted by evaporation, and (in many cases) in warmth, to stimulate their growth.

With regard to the choice of fragments, take a small bit (fig. 64). However long the piece may be it will still have only just the same quantity of surface at its base to feed through, and if this does not supply fluid enough the cells will soon be emptied, they will contract for want of the moisture that should expand them, and the cutting, fallen down and flabby instead of upright and crisp, will show what is going on inside. Therefore 2 or 3 inches is commonly enough, or more than enough, and the pieces should be furnished with some healthy leaves to carry on the circulation.

The part of the plant from which the cuttings may be taken varies much. In many soft-growing things, such as Petunias, Dahlias, Pansies, Verbenas, and others, it will do very well merely to take the tip of the shoot. With proper care these will grow so fast that roots will be put out before there is time for decay, but with a large proportion of plants it is better to choose the small stocky shoots growing either near the root or from the sides of the lower branches. Such shoots are to be found in plenty on Fuchsias, Pentstemons, Wallflowers, Antirrhinums, and a large proportion of our perennials, with every qualification for good cuttings—young and growing, yet with a more matured base, without flower, flower-bud, or seed, but with leafage, healthy and moderate in size, and not too much for the power of the cuttings. Flower-stems which are simply such should never be taken, but in such plants as the double Rocket, where the flower-stem is leafy also, and puts out shoots near the ground, this part will do very well for the purpose.

In evergreen exotics the wood should be a little ripened, but the rule to follow is to take the cutting during the growing season.

The roots have got to be formed by the action of the live sap in the cells, and whether they are simply protruded from the cambium region at the extremity of the cutting (fig. 65A), or from a well-defined "callus" (that is, a mass of young cells forming the ring or lump often noticeable at the end of the cuttings about to root, and merely the first stage of the operation (fig. 65B)—or whether, again, as is occasionally the case, they start from the bark of the buried part—if the sap in the cells is not active they cannot be formed, and the cutting will perish.

TO PREPARE THE CUTTING

a few of the lowest leaves should be removed, for if buried in the ground they could not act properly, and might do harm by their decay. All flowers, flower-buds, and seeds should also be cut away, because they would exhaust the supplies, but sufficient leaves should be left to draw up the sap necessary for the plant life; and if the shoot is weakly, it is often best to nip off the top, and when all else has been done the base of the cutting should

be cut cleanly across with a sharp knife below a leaf, or below or through a joint.

Great care should be taken that this clean-cut base is not subsequently injured, or any rough, torn edge left near, which might induce decay. In Heaths this should be especially attended to, where it is recommended to snip off all the leaves that have to be removed with a sharp pair of scissors.

Cuttings of succulent plants, such as Cactuses, Crassulas, and the like, should be put aside for awhile, that the severed extremities may dry. If planted at once, with the sap from the cut cells still running out, they would be very apt to decay. In some plants exuding a deal of viscid juice it answers to put the cutting in at first the wrong way up (leaves and all), with only the severed base sticking out of the ground. The exudation in this way gradually ceases; what remains of it on the end of the cutting may be wiped gently away, and the cutting itself being then planted the right way up, will probably do well.

STRIKING CUTTINGS.

In setting cuttings, the object is to place them firmly in a soil where they will have sufficient food, but nothing likely to promote decay; therefore, there should be thorough drainage, plenty of broken "crocks," potsherds, or brick rubbish at the bottom of all cutting pots, and the hole should on no account be stuffed up with a cork, obstructed by a bit of slate put flat over it, or otherwise closed. Above this there should be a layer of broken peat, rough turf, or something that will let water pass away, but not allow earth to slip down amongst the drainage, and above, silver sand, or sand and garden earth mixed, or common garden earth, or possibly peat, according to the nature of the plants.

Heaths require, or at least greatly prefer, pure white sand. A large proportion of plants will do well in sand and garden soil mixed; some, as scarlet Pelargoniums, require nothing more than common garden soil, and succulents, such as Sedums, Cactuses, &c., prefer a mixture of brick rubbish, with peat and sand.

Brick rubbish pounded fine answers well by itself for many plants—Heliotropes, Fuchsias, &c—but from its power of absorbing moisture must have extremely good drainage, and pounded charcoal may also serve as a more nutritious substitute for sand; but farmyard manure or anything in process of decomposition should be carefully avoided as likely to cause decay.

The cutting should always be inserted in a hole made for it with a smooth, sharp-pointed stick, and never on any account be shoved down to make its own way through undisturbed ground, risking injury and consequent decay. Except with the very easiest rooting plants) only enough of the cutting should be buried to allow of it being fixed firmly in the ground. The sap has to travel to the leaves before it is elaborated, and there is no use lengthening the journey.

A firm position, however, is quite necessary for the safe rooting of the cutting, or in wriggling to and fro it would probably greatly injure its own rootlets; and unless the earth is packed firmly there may very likely be a cavity beneath where the newly protruded rootlets would wither. It should also be borne in mind that cuttings in pots do best planted against the side, so as to have the full benefit of air and water, and what air and water bring with them conveyed to them

FIG. 64.—A CUTTING PREPARED FOR INSERTION.

through the porous materials. Though stagnant moisture is ruin to most cuttings, yet such a supply of water as may ensure them from flagging will hasten rooting in the case of water-loving plants, and the old-fashioned plan of putting a small pot with a cork in the bottom on the drainage layer in the centre of a larger one, filling in between with the proper soil, and after planting the cuttings in it as usual (fig. 66), pouring water into the central pot, and keeping it

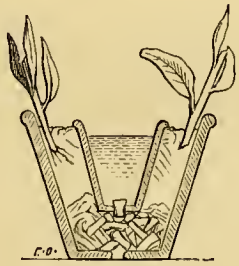


FIG. 66.—CUTTING POT.

supplied till the cuttings are rooted, is simple and successful.

Another serviceable plan is putting the inner pot wrong way up (this time without a cork in the bottom) on the floor of the larger one, filling in between of course, as usual; the hollow up the centre makes a chimney that draws warm air up from the hotbed, and the changing air and moisture appears to do good.

For common purposes it is best to plant the cuttings upright and right way up, but as the circulation is carried on by the sap currents passing through the cells to the leaves that are working above-ground, either end of the cutting may be planted, for the leaves at either end of the cutting will do the necessary work, and in hollow-stemmed things, such as Honeysuckle, where water is apt to lodge, it is a good plan to cut a moderately long piece and insert both ends, as in fig. 65 B. There is a double chance of success, and sometimes both extremities will escape decay and root.

The variety of methods in forming cuttings or planting them is endless. The cutting, if flexible, may have the extremity curved upwards: it may have vertical slits run up just through the bark to cause greater emission of roots from the cut cambium region; or, again, ligatures may be tightly tied round the branchlet, or a ring of bark may be removed to cause emission of roots at any wished-for spot before separation from the tree, the rootlets being preserved in damp material tied round for their reception, and the "slip," the morsel torn down from the parent plant near the root, with or without a few rootlets belonging to it, and then planted as a cutting, is a form of growing very successful in some hands, but rather bad for the parent stem.

In the treatment of the cutting after planting it must be remembered that the morsel, having little power of supplying itself, should not be allowed to become exhausted by evaporation, and should be induced to make new roots as rapidly as it healthily can.

Therefore we put bell-glasses over cuttings to keep a damp air round them, we shade them from excess of sunlight, and we give them warmth, or take advantage of natural warmth of weather to spur on their growth.

A frame on the ground in a neglected corner may be damp and shady, yet do no good for want of warmth; sunlight may kill for want of damp, but, taking the two requirements together, the amateur may root many of his cuttings by the simplest contrivances without the aid of bottom-heat, frames, or other expensive appliances, though these are desirable where they can be procured. He may sink three or four pots in a hole in the ground with a hand-glass over, he may put his cutting-pot at the bottom of another with a large piece of glass above to confine the moisture, or he may put a large pot with a piece broken out of one side as a partial shade to cuttings planted in the ground, and with a little ingenuity he may probably succeed with a large number of plants as well as with the most correct apparatus. The great enemy of cuttings is decay, and, therefore, warmth is desirable to stimulate their vital powers into action, and every decayed morsel or cutting should be at once removed.

Root cuttings sometimes, as in the Cydonia japonica, are more adapted for propagation than the branchlets: in this case morsels of the root 2 or 3 inches long and about as thick as a pencil, placed in very slight warmth, and just covered with earth, will root easily. Roses also thus treated will sometimes root more rapidly than the regular shoot-cuttings. Leaves also will form roots from their stem, or from the main rib (as in the Lily), if just notched or broken and laid on the ground, but the operation, except in the case of certain special things, as Begonias, &c., is rather one of curiosity than for practical purposes.

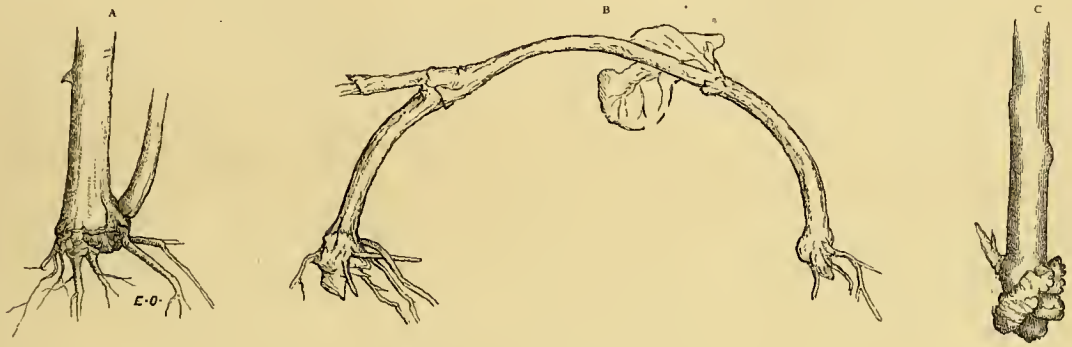


FIG. 65.—ROOTING OF CUTTINGS.

Layering.

The layer is merely a cutting attached to the parent plant till its own roots are formed; a cut should be similarly made, slanting a little upwards, beneath a leaf or through a joint, allowing it to run a little way up the stem, and the portion being firmly fixed (by a hooked stick generally) beneath the roots will fall as in the cutting from the cambium region, and the rooted fragment carefully cut off forms a new plant.

In this case it is necessary to take care that the several portions are kept apart, or they might join instead of rooting; and a little bit of wood in the wound or care in pegging down will ensure this, and decay from the slit running on or other cause should be guarded against.

The varieties of detail are too numerous to be entered on here, but if the amateur will bear in mind that he must choose his cuttings and layers in such active life that they may grow, and so husband their resources by shade, preserve them from decay by soil and drainage, and urge them into growth by warmth, he will be able to arrange his own methods of operation with every chance of success. *O.*

ORCHARD HOUSES: TWENTY YEARS' EXPERIENCE OF THEM.

"*Eheu fugaces!*" The years have indeed slipped by since the inventor of the "ground vinery" and myself, old schoolmates, following the excellent idea of their inventor, became the earliest Orchard-house workers.

Since then, strange to say, little real modifications have been imported into the original idea, and the first old "glass shed," for it was little else, can even now be used with fair profit. No doubt the inventor's first conception had been well-matured before it became public.

On the whole, however, complete and workable as the orchard-house model has become—with, as was said, no material change of idea being introduced—it cannot be considered either as final, nor can it be stated that it has been received without an amount of objection which is hardly realisable. It is not final, because it was not ever supposed to be so, and immense changes have taken place in horticultural ideas during twenty years—everything has developed considerably, and so important in fruit culture are orchard-houses that these must partake of the universal law of progress. Still it has been small—smaller than it ought to have been. Again, some of our very best gardeners have hardly given the subject sufficient attention, and, having such a command of time, means, influence, and opportunities, they might, and I think were expected by the public to, have already made more use of these structures than they have done.

Generally speaking, it is among the class of gentlemen amateurs, and also among those of limited means, that the subject has been most enthusiastically received, and it is here that the best results have followed. The advance in scientific training and pruning, and in the knowledge of suitable sorts of fruit trees hitherto unknown even in name, and in the consequent stimulus given to trade to procure new and, above all, earlier varieties, has been prodigious. Quite a new development of the fruit trade has occurred not only here, but in America and on the Continent, where, but for orchard-houses, the very early Peaches, for example, would not have been raised, for it was for them and in them that they were born and first fruited. Not only so, but even now they constitute the chief item of value of such structures, whose essential quality it is to hold an intermediate space between the old and valuable forced Peach-house and the still older open wall.

Advantages of Orchard Houses.

Our uncertain climate must always necessitate the use of glass, and nowhere is it better employed than in orchard-houses. I consider glazed walls of every description, however well worked, as mere toys compared to a good house of glass. These walls are more costly, cover less area, are subject to more baneful alternations of temperature, are more unhealthy for the gardener, are even less pretty, and are more difficult to manage than their rivals. Glass copings are certainly the best form of such adjuncts to gardens, but even these have many defects. They require tiffany screens under them, necessitate great care and attention, and are liable to injury in windy localities.

As yet, upright glass walls have not realised any expectations conceived by sanguine inventors, and, as to small peacheries or vineries, well—myself an inventor of several—I must honestly warn amateurs against them, as a rule. This short paper could not be of profit to the general amateur, for whom it is specially written, did it not state the writer's candid experience. And this is certainly one. Avoid all small glazed structures, unless you can devote continual care to them. They are always either too hot or too cold—at any rate they are seldom of a good growing temperature, or of a safe one for mere protection and rest. If they are neglected for a short time during burning heat, everything is scorched up; if they are opened too suddenly, draughts favour mildew. In short, the amount of skill for managing them is equal to what would secure good results in very grand hothouses, and can only be considered valuable as a school of severe training. If an amateur has little else to do, and has them ever under his eye, then they will be useful and serviceable.

How to Build an Orchard-house.

But, in ordinary orchard-houses, all this excessive care is not really needed. Almost any one can make them repay ordinary care. But let the amateur endeavour to get them of a fair size at first, and rather abstain from them altogether than have them too small. At first, twenty years ago, we all thought that, the smaller they were, the better. We also thought mere "glass sheds" of wood, or hedges on one side, were quite sufficient. Both of these ideas proved fallacies. A small glass house heats too rapidly, and also cools too quickly at night. It is also stifling, and if plunged somewhat, so as to economise walls and glass, it becomes a mere pit, unfit for human pleasure therein, and a nursery of red-spider.

The houses must also be solidly built. If not, they become dangerous in storms, and apt to warp. They also, being thin, do not store up any heat for the long winter; and then they require stoves and lamps to save the heat, and few of these are free from objection. Most of the pretty small orchard-houses have gradually been enlarged, much to their advantage. Of course, with increased care they can be made useful. A lean-to house of, say, 20 feet by 12, can be worked with profit, but one of 30 by 12 is much easier to manage. My first house was of this size, and has been good these twenty seasons. It was far too low (only about 4 feet) at the front, and, for this reason, must now be condemned. Potted trees, even plunged, soon reached too near to the glass, and it was impossible to go round them, as the front was so low. The glass was always too broad, and was much injured in our tremendous winter gales. They have, however, survived 45 lb. pressure to the square foot, when the squalls took them aslant. At other times they cracked under only 25 lb. pressure, but this occurred from back currents of air. These last cause most breakage of glass. Open a door to leeward, during a gale, and the chances are that some badly puttied pane will break.

On the form and size of orchard-houses there is much of course to be said. I will now describe some which I have found the very best of these. For a lean-to, 13 feet (inside or clear measure) back wall, 6 feet 6 inches for the front, and 15 feet width in the clear; the length about 80 feet or 100 feet; the back wall very solid, the front all of glass except 2 feet, and the ventilators all to open simultaneously; glass ditto in the back wall, sides of glass, with any ventilation thought proper. The height of back wall insures the proper growth of single diagonal cordons of Peaches and Nectarines; these should be in pairs, and arranged as to order of ripening. For the distance between each cordon I used to think 18 inches enough, now I consider 24 inches at least necessary. The trees last longer in this fashion than was once thought. This season has seen the death of the two last of the "original cordons." Having introduced this style of training into England, about twenty-two years ago now, I had till lately the old trees on which my experiments were made, and from which *Cordon Training* was derived. This, the original work on a now well-known subject, was published by me in 1866—the *Modern Peach Pruner* was issued in 1866, and contained later experience. These diagonals have done immense work, and been very successful. Nothing that I have seen has surpassed, few equal them.

For the central border I have large standards, and conical trees between. This was to save watering, otherwise three rows of tall cones in pots are easily placed in this border. A walk near the diagonals, and one narrower along the front, allows all the access needed. Pots with vertical cordons along the sides. The watering is done by troughs, with openings at every 2 feet, easily closed. These answer well, provided no careless servant rests any heavy pots on them. The front ventilation is easily done by means of leaden weights (2 lb. each) suspended on 6-inch iron points from the top of the frame of each window. This brings the top downwards, and an iron bar with short ropes attached to the lower part of each window by means of a rack and pinion wheel as it slides forward or is drawn back opens or shuts all the windows simultaneously. This plan saves expensive iron bars. No house can be better than such a one, and some fine houses have been modelled on it, especially one by M. André, of Paris.

Another arrangement for a span-roofed house of my design has never as yet been described. Some grand houses are, however, built on this plan. Say a house 120 feet by 30 feet, the sides 9 feet high, and the apex 16 feet; five walks down the whole length, and rows of diagonal cordons between them, and also cordons against the glass sides. Anything would grow thus, and the appearance is very fine.

As to ordinary span-roofed houses, I consider those of Mr. Rivers as of the best dimensions—say, 100 feet by 30. Central standards in the border, and potted trees around them. Walks as you please to place them. In reality this does not matter. Once I thought it did, but experience shows that almost anything will succeed.

What to Grow in It.

Nothing but Peaches and Nectarines should be grown in small houses; all the rest is a mistake. This was an error which I never committed, but which I see many do. If you need Plums, Pears, or Figs, these should be grown separately—on the open wall, or, if need be, be purchased. Plums are very tempting to grow in orchard-houses, and so are Apricots. Pears and choice Apples also bear freely in pots, but unless in very large or in separate houses they should never be attempted. The same may be said of Vines. Even sparsely trained to the rafters they are out of place: either they or the staple (Peaches and Nectarines) must suffer. Cherries and Apricots are impossible, save in immense houses—they need too much air.

I consider the early Peaches to be the especial objects to grow in orchard-houses. By this means you obtain fruit in July, and the open wall then comes in. Again in October the orchard-houses should supply the family or the market. All the above remarks apply well to market-growing, for it is evidently the interest of the producer to grow the finest and the earliest fruit, so he must thin out boldly; far too much is left on. In any locality the earliest Peaches are the best to grow; many now are very fine and large. Nectarines are easier to transport, can be gathered when less ripe, are more prolific; but Peaches always sell well.

I add no list of names, as these are so often and so well given in periodicals, and in treating of orchard-houses I have considered Peaches and Nectarines as their staple. They were meant to grow there, and they are by far the most profitable to cultivate.

How to Manage an Orchard-house.

To conclude, as space forbids enlarging on a charming theme, the main things for the amateur to be positive in his own mind about are—not to overcrop his houses for any consideration, for this is the reason of so many failures; the other matter is to give abundance of water during the spring and summer months. Few people know how much water trees will take in. In the open air they endure days of rain, and it does not hurt them, but the contrary. It is the cold winds, the frosty springs, the sunless autumns, that kill the crop, not the rainfall. Sometimes it does wash away the pollen when the bloom is out, but seldom. No overcropping; plenty of air and of water; constant overlooking.

I have found also by experience that to recommence syringing after the fruit is gathered is proper to do; also that very strong doses of liquid manure can be given for a short period in June and July with advantage. A little water at intervals during the winter is also beneficial. All this may be abundantly known to the

amateur, but the candid recital of a score of years' experience must be of value. I have wavered greatly at times, and returned generally to fixed rules. Among these I have found that rules for pruning and training which appear empirical at times to all of us, have their use, and that is, to recal our minds to certain facts in vegetable physiology long ascertained to be true. At times we grow neglectful of these, but often to find some loss has taken place. For example, I do not consider him a good pruner who does not count his leaves as he cuts the young shoots. *Thomas C. Bréhaut, Richmond House, Guernsey.*

Garden Operations.

PLANT HOUSES.

Greenhouse Hard-wooded Plants.—In the colder parts of the kingdom it will not be safe to leave hard-wooded plants exposed in the open air after this time, as we often get frost more or less about the third week in the month. In the more favoured localities they may be allowed to stay out till towards the end of the month, or even a little later, if there is a temporary covering over them that can be let down at night. Where they can thus be protected from drenching rains and any frost that may occur they are quite as well out. Where there is sufficient convenience Heaths are much best kept away from the general stock of hard-wooded plants, as they will bear a lower temperature with more air. With the Heaths may be placed any others that are not subject to mildew, such as Eriostemons, Polygalas, Acacias, and anything of a similar strong vigorous habit, which, if kept during cold weather a few degrees above freezing, will be safe. So low a temperature as this does not answer for any of the more tender greenhouse stock, which, if all have to be accommodated together, should occupy the warmest end of the house. The whole previous to getting in should be closely examined to see that it is free from insects or mildew. It will be much less trouble to free any that are thus affected before they are placed in their winter quarters than afterwards. In the case of large specimens it will be much better to stand every plant as it is brought in in the position it is to occupy during the winter than to crowd them in anyhow, as is sometimes done when there is little room. The most delicate growing subjects should always occupy the best positions, and in all cases large specimens ought to be so elevated that their heads will not be far from the roof. When not thus placed, as a natural consequence the base of the plants get very little light. The deficiency of light has a certain tendency to prematurely destroy the vitality of the leaves on the lower branches which it is so desirable to retain. Beginners in the cultivation of these plants often appear to rely for success exclusively upon some particular soil in which to grow them. Satisfactory results are, however, quite as much dependent upon attention to the minute details of their general requirements. We frequently, for instance, see one individual succeed, while another will fail under conditions which seem exactly alike. The want of success can only be traced to the not having placed every plant under the full influence of light so far as the house in which it is grown will permit of. Plants of comparatively little value that make quick growth, raised annually or cut down every year, may be arranged under the eye, so as to have the most effective appearance; but with valuable slow-growing subjects this must be a secondary consideration. Though they may not look so well, it is necessary that they be elevated near the roof glass. There are always numbers of things that may be stood during the winter, when little growth is being made, amongst and partially under them: that will be so much gain in space.

Azaleas.—The earliest flowered plants will now in most cases be about completing growth and setting their flower-buds, and it is in all cases well to get them tied before the wood is fully hardened up, as after this the leaves, which inevitably get more or less moved from their natural position, have not the power to right themselves before growth is completed. Previous to tying destroy any thrips or red-spider there may be. In the case of the former insect, washing with simple tobacco-water is still the most effectual remedy; and where red-spider exists, an addition of 2 oz. of Gishurst Compound to each gallon of the wash will destroy it. This is a better plan than that of dusting the leaves with sulphur, as it is much more certain to reach all the affected parts, and the danger of the sulphur getting into the soil is avoided. Where these plants are only required for home decoration many sticks are not required. To keep the growth of Azaleas properly balanced at the base as well as at the top, it is imperative that from the first the strong branches be kept tied down towards the bottom, leaving the weaker ones to assume a more upright position. In this there should be no more twisting of the shoots than is absolutely necessary. We frequently hear much said against its being done at all, but where it is carried out so as to keep the strong shoots bent down in the way above indicated near the base of the plants, the certain result is that as they get older they become naked and bare at the bottom. If Azaleas are intended for exhibition, it is necessary to carry the tying further, but on no account should those wire and wooden trellises which we often see be employed. They give the plants a most unnatural appearance, and there is nothing gained by using them, as the labour involved by this method of training is as much or more than where a moderate number of sticks are used. There should never be an attempt to make the specimens look too big, that is to stretch the shoots out thinly so as to make the plants seem larger than they really are. Even when in bloom they have a meagre appearance, and if to be shown never travel well. Where the flowers are produced as closely as will just permit of their expansion, they will always be found to suffer the least even if conveyed long distances. For home decoration they are equally desirable. The latest flowered plants will in many cases yet be some time before the buds are fully matured. The more plump and prominent condition they attain during the autumn the finer their flowers will be in the spring. In houses so constructed that it may have been found necessary to give a little shade earlier in the season, this should now be dispensed with. The generally poor condition of Azaleas as now exhibited, is due to an insufficiency of light during the time the growth is made and matured, and to allowing the plants to become infested with thrips and spider so that their leaves are permanently injured. Potting soil should at once be got in, both loam and peat. At no season of the year are they in such good condition, or will they so long retain the requisite properties for the roots of the plants as if dug at the present time. I should never recommend more being got in than will last for a year's supply. *T. Baines.*

FRUIT HOUSES.

Vines.—Vines from which it is intended to cut Grapes in April and May should now be ripe and fit for pruning, as they will have to be started early in November. Let all the glass and woodwork be thoroughly cleansed, and painted, if necessary, in order that it may become dry and hard before the houses are closed. If the old mulching has not been removed from the inside borders every particle of loose inert matter must be taken off and replaced with good turly loam and bone-dust to the depth of 2 to 3 inches. Where the principal roots are established in outside borders they should also be top-dressed as an inducement to the formation of surface-roots, and some kind of covering should be kept in readiness for putting on when a change to wet weather is apparent. Glass lights, if available, best answer the purpose, as they allow sun-heat and air to act upon the surface. The cold sunless summer, having been unfavourable, late Grape-houses in which the fruit is still unripe will require steady firing with plenty of air by day to hasten maturity of fruit and wood. Stop all laterals, as young growth after this season only encourages damp and keeps the roots in a state of activity. Remove all laterals and extension growths from intermediate houses as the crops are cleared, but carefully preserve the old leaves at the base of the buds on the fruiting wood. Cleanse the foliage of dust and insects with clean water, and throw open the ventilators. Pot Vines which have been some time at rest may now be shortened back to the required length. Keep the pots protected from heavy rain, and expose the rods to the influence of sun and air. Look over Hamburghs and other thin-skinned Grapes twice a week for decaying berries. Ventilate freely with gentle fire-heat in fine weather, to keep the house close and dry when the atmosphere is charged with moisture. *W. Coleman.*

Cucumbers.—As days decrease in length, and the nights become colder, the syringe must be more sparingly used, and then sufficiently early for the leaves to get dry before nightfall. If the plants in pits and frames are still producing sufficient for the demand, all maiden plants now approaching the fruiting state may be divested of young fruit and male blossoms as a means of increasing their strength, but care must be taken that they do not become too vigorous, as many otherwise promising plants go off about Christmas through over-forcing and feeding. Winter Cucumbers, like Melons, should have a sound, sweet soil, rich enough to produce vigorous growth without the aid of manure. When they commence bearing feed well with tepid liquid manure, and crop lightly. Dispense with fire-heat as much as possible, particularly at night, but see that firm, short-jointed growths with some chance of going through the winter are secured by giving sufficient fire-heat to admit of a free circulation of air on all favourable occasions. A night temperature of 70°, with a rise of 10° by day, will answer for the present. Make another sowing for plants to take the place of late Melons, and strike cuttings of shy-seeding favourite kinds. If inserted in small pots, and plunged in bottom-heat under bell-glasses, they soon root, come into bearing quicker than seedlings, and being hardier often stand the winter better. A good stock of light, fibry turf must now be kept under cover for top-dressing and potting as the plants require it, always bearing in mind that "little and often" is the best rule with Cucumbers. Where extensive growers have to depend upon tan for their bottom-heat, no time should be lost in getting it together to drain and ferment; but if thoroughly sweetened Oak leaves, with a little ammonia from a small proportion of short horse-dung, can be procured for plunging in or planting upon, a most genial atmosphere in which Cucumbers revel will be produced. *W. Coleman, Eastnor Castle Gardens.*

KITCHEN GARDEN.

Autumn-sown Onions, such as the Giant Rocca and the various sorts of Tripoli, should now have particular attention, as it is an important crop, and more appreciated every year. It is not well to let them stand too thickly in the seed-bed. As soon, therefore, as they are large enough for transplanting, they should be partially thinned out, and the thinnings transplanted into beds at 3 inches apart; this will allow every alternate plant to be drawn young in the spring, leaving the remainder to form large bulbs. The seed-beds should have a final thinning in the spring, and the overplus used for the kitchen, or be planted out as the case may require. If required very large for exhibition purposes, the soil must be greatly enriched, well trenched up some time before sowing, and the plants thinned out in the seed-bed to 9 inches apart. Transplanted specimens very seldom acquire the size of those grown on the seed-bed and thinned in time.

The present is a good time to make Mushroom-beds in a sheltered situation out-of-doors. The composition of these beds is an open question, and success may be attained in various ways. The simple requisites are a rather brisk temperature below, having 80° as a maximum, and a moist and temperate atmosphere above. We have had very good success here by mixing up the fresh droppings and the very shortest of the straw from the stable manure, with about one-third of tree leaves, fresh, if possible, frequently turned to bring it into condition, and at the last turning throwing in a few barrow-loads of chopped turfy loam when ready. Throw up the beds in a sheltered place; if under the shade of trees, so much the better. They should be in the form of a ridge, from 4 to 5 feet wide at the base, and about 3 feet high at the ridge. Beat the material down very firmly, and throw some mats over the ridge. Watch well the progress of the heat, and as soon as the rankness has passed off the beds may be spawned and soiled. The soil being well beaten down, cover with mats as before, and after a time add thereto a covering of straw laid on both sides of the ridge, and some of the longest bent over the top of the ridge, and confined in position by a long strand of rope-yarn from end to end along each side of the ridge, and fastened to stakes driven in at each end.

Too much attention cannot now be paid to the earthing-up of Celery, as the forwarder the operation is brought on during fine and dry weather the better for the future welfare of the plants, as we cannot in the autumn always expect very dry and favourable weather for the operation. The haulm of Peas is an excellent material to dry off and keep in reserve to cover the ridges of Celery in severe weather.

Continue the planting out of the various sorts of Endive and Lettuces, and take frequent opportunities of tying-up the latter for blanching when quite dry.

The large breadths of Turnips lately recommended to be sown will now be ready for thinning out, and should have immediate attention to prevent them from drawing up weak. Whether sown in drills or broadcast, from 7 to 9 inches is a sufficient distance to leave them.

The flowering stems of Globe Artichokes should be constantly removed after the heads are cut. On no account let the heads run away to seed, as it weakens the plants very much. It is by some thought to be a good thing to thin out the suckers at this season, and no doubt it may be done with safety in mild localities, but as a general rule spring is the safest time.

The removal of all dead and decaying matter amongst the Brassica family will require frequent attention, as they are not only unsightly but frequently cause unpleasant smells. Every opportunity should now be taken to stir the ground deeply amongst all advancing crops, which will disturb vermin and keep down weeds. Should slugs be troublesome let them have frequent sprinklings of quicklime. Whatever ground becomes vacant now, and which is intended to lie fallow through the winter, should at once be trenched deeply and thrown up roughly, to benefit by atmospheric influences. This is particularly applicable to those plots which in the ensuing season are intended for Carrots, Parsnips and red Beet, all of which require deeply trenched and well pulverised soil, to obtain which in strong soils is a work of time, and is best secured by frequent forkings over in the winter and spring; but deep trenching for other crops besides the fusiform-rooted must not be neglected, and it is well to bear the subject in mind as the season advances. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 15, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept. 17—Sale of Dutch Bulbs at Stevens' Rooms.
TUESDAY, Sept. 18—Sale of Orchids, at Stevens' Rooms.
WEDNESDAY, Sept. 19—Sale of Dutch Bulbs at Stevens' Rooms.
FRIDAY, Sept. 21 { Royal Horticultural Society of Aberdeen: Autumn Show. Crystal Palace Fruit Show (two days).
SATURDAY, Sept. 22—Sale of Dutch Bulbs at Stevens' Rooms.

LOOKING upon the vast quantities of FRUIT annually disposed of in the markets of Great Britain, it may appear strange to say that fruit is not appreciated by the mass of the British people; yet such is the case, if we look upon the manner in which it is employed in the alimentation of the population. Vast as are the quantities grown and imported, comparatively little, and that only of an inferior quality, reaches the poorer classes; the bulk of the fruit—all, in fact, that is worthy of the name—goes to swell the vast number of luxuries which are the daily fare of the upper and middle ranks of society. Fruit is thus diverted from its proper and healthy use as food, and made to take the place of an extra dainty upon the tables of the well-to-do.

While the best fresh fruit commands such prices as it now does this must necessarily be the case. What we would wish to see is fruit produced so inexpensively and retailed so cheaply that it might become a portion of every person's daily diet.

The more extensive production of hardy fruits was treated in a recent number of this journal, but no amount of fruit could be of any benefit to the nation at large until the people are taught that fruit partaken of at a proper time of the day, and in due season, forms in combination with other substances one of the healthiest of nourishments for both adults and children. At present, fruit is purchased as something in addition to the daily supply of nutriment. We have not yet learnt, as the greater number of Continental nations have done, to take fruit as part and parcel of our necessary food.

In France, fresh fruit when it can be obtained, dried fruit when fresh is out of season, forms no insignificant item in the daily bill of fare among all classes. *Les quatres mendiants* are well known to every school-boy and girl in France, as they form with dry bread a part—and no inconsiderable one—of his or her breakfast or dinner two or three days in the week. *Les quatres mendiants*, or four beggars, are Figs, Filberts, raisins, and Almonds, which have received their humiliating appellation from the very low price at which they are retailed. The four beggars are, of course, only used during the winter season when other fruit is scarce. During summer Cherries, Currants, Apples, Plums, Pears, Peaches, and Grapes are abundant, and one or more of these fruits with bread forms a course at the second breakfast and dinner of most French families. Nor do they appear to have paid much heed to the old Spanish proverb which tells us that fruit is gold in the morning, silver at noon, and lead at night, for in Paris an epergne of fruit is often stood on the dining-room table, and after a return from the theatre or an evening visit some of this fruit, with bread and a glass of claret, forms no bad supper. Setting aside the use of fruit at evening meals, which we could not look upon as a beneficial innovation, considering its consumption at such a time as unwholesome as is its general use in England after a heavy, late dinner, it is certain that fruit might enter much more largely into the daily fare of the people with very great advantage, and will doubtless do so when we have learnt to appreciate the different substances forming our daily diet at their proper value, neither too greatly considering their cost, their taste, nor their bulk, save in regard to the amount of nourishment to be derived from them.

Although the amount of food taken, and the physiological conditions necessary for the healthful assimilation of such food is a matter of great moment, we will not discuss the subject here; most of us know that to keep the body in health it is necessary to consume a certain amount of carbon and nitrogen each day. How to obtain these in the most economical and pleasant manner is surely worthy the study of all having the provision and supervision of food supplies under their care.

In the late Dr. SMITH'S *Practical Dietary* are several suggestions for arranging cheap, yet wholesome meals. Subjoined is a table of two meals, showing how much greater an amount of force may be obtained at the same cost. "Breakfast of tea, bread and butter.—Tea, $\frac{1}{3}$ oz.; sugar, $\frac{1}{2}$ oz.; skimmed milk, $\frac{1}{4}$ pint; water, $\frac{1}{2}$ pint; bread, 6 oz.; butter, $\frac{1}{2}$ oz. Amount of carbon, 1081 grains; nitrogen, 46 grains. Breakfast of oatmeal brose, treacle, bread, and bacon.—Oatmeal, 5 oz.; skimmed milk, $\frac{1}{2}$ pint; water, $\frac{1}{4}$ pint; treacle, 1 oz.; bread, 3 oz.; bacon, 1 oz. Amount of carbon, 1990 grains; nitrogen, 88 grains." By increasing the quantity of bread to 8 oz. (pure whole-meal wheaten bread, of course, is necessary), and supplying the place of the various other above-mentioned articles with fresh ripe fruits, as wholesome and cheap, a much more easily-prepared meal could be obtained, and one which most people would prefer during the hot days of summer. Sufficient is now known of the relative nutritive value of our home-grown fruits, while practical experience shows that in their season and at a proper state of maturity they should form a very important part of our daily food.

Children are particularly fond of fruit, and were it given to them during the early hours of the day, for breakfast or lunch, with sufficient pure home-made bread for a meal, it would prove of undoubted benefit to their general health. The prejudice which at present exists against a free and plentiful consumption of fruit arises, among other things, from two primary causes: the common habit of indulging in fruit when a sufficiency of other food has already been taken, and the no less common and dangerous habit of eating fruit before it is nearly ripe, or when it has begun to decay. Any one with the slightest knowledge of chemistry is acquainted with the fact that fruits possess different properties at different stages of their growth; and thus what in a state of perfect development is health-giving and nourishing, may, during its progress towards that stage, prove injurious, if not actually poisonous.

That bread and fruit with a draught of water from some crystal stream, form sufficient nourishment for the human frame in our temperate climate has been testified by history, nor need we turn to the lives of anchorites and hermits alone for confirmation of the truth of this statement. Within our own experience a learned botanist and naturalist, a practical horticulturist and agriculturist, and, above all, an indefatigable pedestrian, would set out on long journeys from home from sunrise until sunset, and frequently, for several days together, furnished in the way of food with but plain biscuits, or bread cakes, and dried fruits, raisins, Figs, Dates, or French Plums. In England, as little attention appears to be paid to the medicinal as to the nutritive properties of fruit; in France, both are more generally studied, and more universally considered than with us, and fruit in its various forms enters largely into the diet of convalescents, each description being considered and prescribed according to its predominant properties. Vegetables of different kinds are also employed with discriminating knowledge in cases of ill-health, and those who have submitted to the *régime* can speak of the benefits to be derived from the system. Before quitting the subject, we may refer to the vast numbers of Oranges eaten by the Spaniards, it being no uncommon thing for the children of a family to consume ten or a dozen Oranges each before breakfast, gathering them from the Orange groves, where they hang like the veritable golden fruit, which they are metaphorically supposed to be. Such wholesale consumption of what we look upon as a luxury appears to have no ill effect. The testimony of a late eminent physician authorises the use of fruit as most wholesome immediately upon waking in the morning; he, in fact, prescribed such a *régime* to a friend as the only invigorating and permanent cure for indigestion, facetiously remarking that he gave her a piece of advice which, if it were known to his dyspeptic patients, would cost him his practice, as they might prefer so simple a remedy to his professional visits.

WE are glad to learn that the latter days of the CARLISLE SHOW proved more propitious than the opening day. The weather cleared up, and many thousands of people poured into the show from southern Scotland and elsewhere. We need add nothing to the report published in our last, but we think, in justice to the committee, and especially to Sir WILFRID LAWSON'S gardener, Mr. HAMMOND, and Messrs. LITTLE & BALLANTYNE, with whom the idea of holding so great a show originated, and upon whom fell so much of the labour involved in carrying out so large an undertaking, that a full measure of praise should be accorded to them, the more so as all did their best under most trying circumstances. Sir WILFRID LAWSON'S comments on the state of things are worth quoting:—

"There are some gentlemen here," said the hon. Baronet, "who were present yesterday at the luncheon of the International Horticultural Society, and I don't think they will forget that luncheon to the latest day of their lives. There we were shivering under a tent with the rain pouring down upon us with a noise like thunder, our bread was moist with rain, our soup was cold, our salt turned into putty, and our liquor was adulterated with the most pernicious of materials—in many people's eyes—with pure water. It was, indeed, a piteous scene. There was the Lord-Lieutenant of the county scrambling for luncheon under a dripping umbrella; there was the Bishop of the diocese with the water running down his back, bearing it all with the Christian serenity and fortitude one would expect from his lordship; there was the High Sheriff, fallen from his high estate, sitting on a damp bench, and trying to look unconcerned; and last, perhaps I may say the least, there were half-a-dozen members of Parliament more dirty, damp, and disreputable looking than any other six statesmen of equal worth and importance were ever seen before in this world. Then a rumour went round the tent that if the flood continued much longer the Eden would rise, and there was no distant prospect of the Lord-Lieutenant, Bishop and clergy, nobility and gentry, fruit, flowers, and vegetables being swept away in one heterogeneous mass, seething and surging down to that Solway which is under the special protection of my friend, Mr. STAFFORD HOWARD. I am glad to tell you that I afforded a great deal of pleasure to many of my friends. It is impossible to tell you how many people came to me and made this little joke—'Sir WILFRID, there is too much water here to-day, even for you.' I felt happy that I could be the cause of so much innocent mirth to the gentlemen who could indulge in that pleasantry."

—— We have received a copy of the schedule for the great SUMMER SHOW of the Royal Horticultural Society on May 28—31 next. We have also received complaints about the opening of this and the Provincial

Show at Preston on a Tuesday. The inconvenience to exhibitors is such that in many cases they will have to send their plants away from home on the Saturday previous and not get them back till the Monday week. In reference to the country show, there is, moreover, a feeling abroad that before hearty support is forthcoming, some assurance that the surplus expected will be really secured as a guarantee fund for future shows is needed; but as yet, on this point, the oracle —that is the Council—has not spoken.

—— We learn that on their way to the recent exhibition at Antwerp some of Mr. B. S. WILLIAMS' finest specimens of NEPENTHES were destroyed on board ship by a RAT. Was this a Nemesis-like revenge on the fly-catching, insect-digesting plant, or was the sea-sick rat in want of a pitcher, such as is furnished by the attentive steward to bipeds on similar occasions?

—— We learn that a new work on TABLE DECORATION is in the press. Messrs. WYMAN & SONS announce early in October *Floral Designs for the Table*, being plain directions for its ornamentation with cut flowers and fruit, with classified lists of suitable plants, berries, and leaves. The work will be in folio size, and will contain twenty-four original coloured designs (executed in chromo-lithography), showing the best and most attractive method of decorating the breakfast, luncheon, dinner, and supper table at a moderate cost. Descriptive letterpress will accompany the plates.

—— From Mr. BARR we have received a flower of LILIUM NEILGHERRENSE 9½ inches long. Much larger flowers might be produced, but the present plant has had no special cultivation but was left to take its chance. For conservatory decoration this is one of the best Lilies, not only from its beauty but from its exquisite fragrance.

—— We are informed that Mr. S. TAYLOR, late of Crichel House Gardens, Wimborne, has succeeded Mr. BURNS in the management of the gardens at Loughcrew, Oldcastle, the seat of J. W. L. NAPER, Esq., County Meath, Ireland. Mr. TAYLOR is, we hear, a good plant grower and decorator, and otherwise a clever and enthusiastic gardener.

—— The CRYPTOGAMIC SOCIETY OF SCOTLAND propose to hold its third annual conference at Dunkeld, on October 10, 11, and 12. The following provisional programme has been arranged:—Tuesday, Oct. 9.—1 P.M. Meeting of Council in City Hall. An excursion will be made after the business is concluded. Wednesday, October 10.—10 A.M. Meet at City Hall, and proceed on an excursion. [The locality for this and other excursions will be fixed according to circumstances.] 7—10 P.M. Conversazione and examination of the "finds" in City Hall. 8.30 P.M. Business meeting. Thursday, Oct. 11.—10 A.M. Meet at City Hall, and proceed on an excursion. 7—10 P.M. Conversazione, and arrangement of specimens in City Hall. Friday, 12.—9 A.M. Arrangement and examination of specimens in City Hall. 2—10 P.M. Show (open to the public) in City Hall. All Fellows of the Society are requested to endeavour to attend the conference. Other botanists are cordially invited to attend. Fellows and others who purpose coming will oblige by communicating with the Secretary. The Council hopes that all Fellows who can will furnish papers and communications, to be read at the business meeting. The show will be restricted to specimens from the district; but novelties from other districts will be very acceptable. The secretaries will be happy to furnish any further information that may be desired. The Society is now prepared to issue a first century of *Fungi Scotici Exsiccati*, which will contain many of the new species and rarities recently discovered. The subscription price is £1 1s.

—— COCKROACHES have become so numerous in some parts of France, especially at Rive-de-Gier, that the inhabitants are obliged to resort to extraordinary measures to get rid of them. The gardener's friend, Joey, the toad, is admitted into dwelling houses and permitted to roam about as he pleases. In other parts the people find a more elegant and musical ally in the nightingale, which they raise in numbers and feed almost exclusively on these disagreeable insects. These facts came out on the occasion of one of the members of the French Acclimatisation Society reading a paper on the domestication of insects of this class, referring more particularly to the big American "kakerlac," Periplaneta americana. This species is so abundant, it is asserted, in Havana, as to have become a real plague in the houses. And there toads are carefully preserved indoors, and ladies even tolerate them beneath their dresses for the service they render in protecting them from the bite of this voracious insect. We reproduce this anecdote to strengthen our appeal to gardeners on behalf of Joey, whose good services once known cannot fail to be appreciated. He is often very useful in a greenhouse or forcing-house, as well as out-of-doors; and he should be respected and encouraged accordingly. He is of a retiring and reserved disposition, and rarely obtrudes himself upon the notice of diurnal visitors. But if you enter the house at dusk you will find him very active. When Joey discovers, by long acquaintance, that your intentions are peaceful, he shows symptoms of attachment. In some parts of this country toads are very rare, whilst in others they are abundant. If our memory serves us, toads are unknown in a wild state in Ireland. But we have seen them by thousands in some parts of the south of England after a warm shower; so numerous, indeed, that it was difficult to walk without stepping on them. It is marvellous where they all come from, in short, and it has given rise to the superstition that it sometimes rains frogs and toads.

—— The following particulars respecting the effects of 12°.6 of frost on some Australian plants may interest some of our readers in the South and West. They were communicated to the French Acclimatisation Society by Mr. NARDY, of Hyères, and refer to a place called Puech Blanc, near Vendres, and are published in the Society's *Bulletin*. During the past winter there was a sudden change from warm growing weather to cold, and the thermometer (Centigrade) indicated a minimum of 7° below zero. This frost came when vegetation was active, and thus its traces were more permanent than they would otherwise have been:—

Acacia dealbata, uninjured
" lophantha, foliage damaged
Casuarina tenuissima, young shoots killed
Eucalyptus bicolor, hardier than E. globulus
" colossea, killed
" cornuta, killed
" globulus, young shoots frozen, old wood and leaves unhurt
" zoniocalyx, two varieties: one with Poplar-like leaves withstood the cold well; the other, which resembles tereticornis, very much cut
" hemiphloia, less tender
Eucalyptus siderophloia, less tender
" paniculata, more injured than globulus
" rostrata, badly cut
" tereticornis, very delicate
" urnigera, slow grower and very hardy
" viminalis, quite unscathed
Grevillea robusta, leaves slightly browned
Hakea eucalyptoides, unharmed
" suaveolens, young shoots frozen, older leaves browned

—— Mr. ROBERTS, late gardener to Lord BOLTON, Bolton Hall, Yorkshire, has, we hear, been appointed to the management of Baron L. DE ROTHSCHILD'S extensive gardens at Gunnersbury Park.

—— Fortunately the PHYLLOXERA is not likely to cause serious losses in this country, simply because Vine-growing is not carried out on a large scale, and therefore it is not difficult to stamp out the insect wherever it makes its appearance. But there seems every chance of our having to suffer from the incursion of the ten-striped beetle which has committed such ravages on the other side of the Atlantic, if our climate will suit its constitution. Certain people seem to have conceived a morbid desire to possess this plague of an insect in a living state, and our obliging cousins send them over by post. Some sent in this way and detected by the postal authorities were quietly done to death before being delivered up to the addresses; but it is too much to hope that they will, in all cases, suffer the extreme penalty before being given up.

—— According to a report of the Agricultural Department of Washington, United States, Australian GUM TREES are being extensively planted in the Southern States. General F. STRATTON, of Oaklands, has planted 130,000 of these trees, some of which have attained in four years a height of 40 feet, with trunks 1 foot in diameter. Companies have been formed for purchasing land and planting it with Gum trees. Large areas have been planted with the Iron Bark on the banks of the Sacramento. This species (? Eucalyptus siderophloia, as there are several species popularly called Iron Barks) is said to be hardier than E. globulus. Experiments on a small scale have been made in Texas with little success. At New Orleans, trees 8 to 15 feet high were destroyed by frosts. In Florida seedling Blue Gum grew 5 feet in four months, or on an average more than one-twentieth of an inch per hour. It is thought that the Gum trees will thrive in most parts of Florida. It is to be hoped that this Gum tree mania will not be carried too far, for although these trees are useful, of rapid growth, and will flourish in a soil in which few other timber trees will succeed, they lack the beautiful, refreshing verdure of the majority of the trees of the temperate and sub-tropical regions of the northern hemisphere. It is fortunate that Gum trees will not grow everywhere.

—— After working without intermission night and day for a week the first fires were lighted in the new HEATING APPARATUS of the PALM STOVE, KEW. Three of the six new furnaces are now in working order, but much remains to be done.

—— The first portion of the Herbarium was moved into the new building at Kew on the 7th inst.

—— The freedom with which statesmen of the highest rank, and bearing on their shoulders burdens of responsibility and cares of the most anxious kind in affairs of State, can find REST AND RELAXATION IN their GARDENS and amid the peaceful surroundings of their plants, flowers, and other pets, is well exemplified in the life of that most eminent but, alas! now deceased Frenchman, M. THIERS. In the excellent sketch of his life, published in the columns of a daily contemporary, we are told that during his onerous term of office as President of the Republic he used to walk in his garden, holding there informal *levées* of his friends, and visit his greenhouses and his aviary. He keenly appreciated the beautiful in the animal and vegetable worlds, and he tended his flowers as though they were living things. "Tears of joy one day burst from his eyes at Versailles as during the terrible days of the Commune CHARLES BLANC took out of his pocket some tiny pots of Ferns which FONTAINE had allowed him to carry off from M. THIERS' house in the Place St. Georges." These incidents indicate a mind and temperament that could at all times characteristically detach itself from the cares of State and the turmoil of public life to find pleasure and happiness in those surroundings which horticulture so liberally provides. A CINCINNATUS at his plough, and a GLADSTONE with his axe, felling the giant trees that have done their part in vegetable life and are now to serve the more practical uses of humanity, are evidences drawn from modern and ancient history of that capacity to find recreation in the midst of Nature so beautifully exemplified in the life of the greatest and most illustrious of modern Frenchmen.

—— It is understood that Sir JOSEPH HOOKER will return from his American trip about the 28th inst.

—— The reports of the OLIVE PRODUCE in different parts of TURKEY are anything but satisfactory. From Prevesa we learn that up to the beginning of November the trees seemed to groan under the weight of the fruit, but warm weather having set in shortly after, nearly half of the crop fell to the ground, and in such a damaged condition that many of the proprietors abandoned it altogether. This of course will be severely felt, as the proceeds of the Olive harvest in the production of oil is the principal support of the inhabitants. It is estimated that the whole produce of oil will not exceed 4000 barrels, of the value of £8570.

—— There seems to be a good prospect for the more general introduction of ALGERIAN WINES into Europe, for Consul PLAYFAIR reports that the Vine cultivation has been more than usually successful. From 1872 to 1875 the area under the cultivation of the Vine had increased nearly 4000 hectares, the quality of the wine also had much improved. He considers that a new impetus will be given to this cultivation on account of the immigration of French wine growers, many of whom have been ruined by the Phylloxera in their own country, and have consequently established themselves in Algeria.

POTASH FOR VINES.

In some experiments made by M. Ville at Vincennes, and of which a notice is given in a recent number of the *Révue Horticole*, the importance of potash as a fertilising agent in the growth of Vines is clearly shown. A number of Vines were planted under like conditions, each in a separate plot, divided from its fellows by a pathway rather more than 3 feet in width (1 metre). The whole area covered was 100 square metres, each square metre being planted with one variety of Vine only, each plant thus being at a distance of 1 metre from its fellows. Each square plot received every year the same treatment, except as to manure. One plot was treated with the complete manure, while from each of the others was successively eliminated one of the constituent elements of the manure in question. Thus while the one plot received the complete manure, nitrogen was taken from the second, phosphates from the third, potash from the fourth, lime from the fifth, and one of the plots was left without manure of any kind. This treatment was continued from 1860 to 1875, with the results illustrated in our woodcuts. Fig. 68 shows a Vine which received the complete manure, fig. 69 received the complete manure with the exception of potash, and fig. 67 received no manure at all. The result is sufficiently striking, but the experiments also showed that where potash was applied and the other

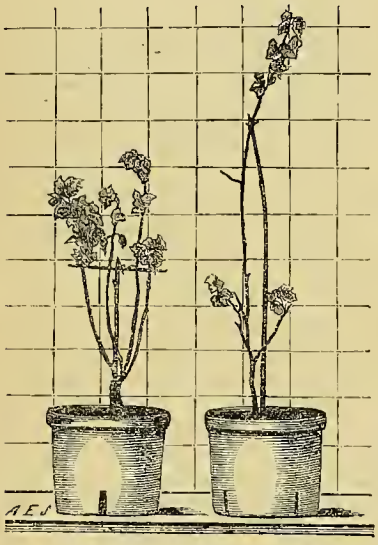


Fig. 67.—UNMANURED VINES.

elements successively eliminated, the growth of the Vine, and the yield of the crop presented no sensible difference—a circumstance showing that potash is indispensible to the Vine. Other substances may be omitted and yet the Vine may flourish, but, if the potash be omitted, the Vine simply exists without producing a crop, so that after thirteen years the Vines not only produce no Grapes but scarcely any leaves, and those leaves so weak as not to be able to resist the action of the wind or exposure to the sun, and, in consequence, become a ready prey to mildew. Similar experiments have been made with reference to Potatos, and with the like results.

The use of wood-ashes, then, which contain much potash, is sufficiently justified by both theory and practice.

Florists' Flowers.

New Dahlias.—It is very probable that never before was such a grand lot of seedling Dahlias raised and exhibited by one man as those Mr. John Keynes, of Salisbury, presented to the notice of the Floral Committee of the Royal Horticultural Society on Wednesday, September 4. Altogether there were sixteen seedlings, all of which bloomed for the first time in 1876, and have been subjected to further trial in the present year, and all proved too good to be rejected. If such splendid development can be the lot of flowers in a season not at all favourable to the production of good flowers, what might they not be in a season fitted to bring out their admirable qualities to the best possible advantage? Five First-class Certificates were awarded, as follows:—Henry Bond, bright lilac, deepening to a glowing tint, of what might best be described as violet-cerise, deeper in the centre of the flower than in the circumference; very fine shaped petal and centre, full substance; a superb flower that promises to be very constant. Louisa Neate, pale apple-blossom on a creamy sulphur ground, a delicate and beautiful flower, of fine shape and substance. Bessie Ford, very soft lilac, deepening to pinkish lilac on the edges, fine outline and centre; distinct and very attractive. Countess, pale ground tipped with bright purple, good petal, but the flowers were somewhat flat and inclined to be coarse; and I think the award must have been a surprise to Mr. Keynes. All the foregoing belong to what is very inadequately termed the "show" class. The same award was also made to one of the most beautiful fancy Dahlias ever raised—Mr. Keynes terms it the best fancy flower he has yet produced—viz., Charles Wyatt, the ground colour a kind of fleshy lilac, striped and flaked with scarlet and crimson; and in regard to size, outline, petal, and centre, all that could

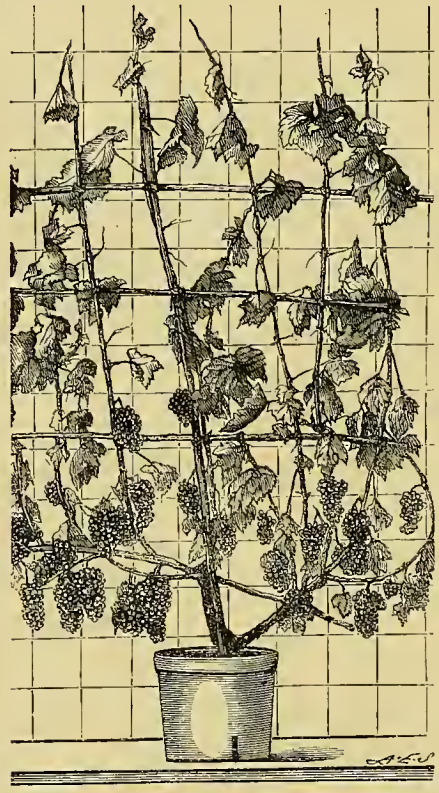


Fig. 68.—VINES MANURED WITH POTASH.

well be desired by a raiser. Mr. J. Wyatt, Mr. Keynes' experienced Dahlia grower, regards this flower as "the finest I ever had to do with, either as a fancy or in a self colour;" and it is, indeed, a most accommodating flower, for it will also come as a beautiful pale purple, and also as a charming lilac self; and in all its characters it is perfect as an exhibition flower. We have at last a fancy flower equal in point of quality to the best show flower yet produced; and so fortune crowns, with well-deserved honours, the declining years of the most successful and genial of English florists. Another beautiful fancy, George Barnes, well deserved the First-class Certificate it failed to obtain. It has a bright lilac ground slightly flaked with crimson, with fine build, substance, and petal. It came near to Charles Wyatt, and perhaps that was the reason it was not awarded floral honours, but it was sufficiently distinct to merit them. None of the foregoing flowers, as well as the succeeding ones, had been shaded. Let the opponents of "getting up" in the case of exhibition flowers find comfort in this fact. Other show flowers were Cleopatra, brilliant pale red, brighter in colour than Chris. Ridley; Empress Maude, pale ground tipped with bright purple, fine form petal and outline; Diligent, orange-buff, with pale gold on the circumference, good shape and petal; Admiration, golden ground tipped with crimson lake, flat, and a little irregular in outline, but promising to be useful as a show flower; William Dawkins, pale yellow ground tipped with deep purple-red, wanting in outline, but yet likely to be a useful variety; Rifleman, a remarkably striking flower, much too good to be rejected, colour brilliant crimson, with a shaded centre, wanting in outline; and Enchantress, really a fancy variety, but shown on this occasion as a pale ground flower, heavily tipped with magenta-purple: the purple tip breaks out into stripes, and then it becomes a fancy—it also takes the form of a pale Carnation-striped fancy, in which character it is very attractive.

Mr. Keynes' fancy flowers comprised Robert Burns, pale purple ground, flaked and striped with maroon; Maid of Athens, dark crimson, tipped with pale red and white; and Cuckoo, sulphur ground, tipped and flaked with rosy red, fine substance, but wanting in outline.

Mr. G. Havies, Orpington, Kent, had promising flowers in fancy Cavalier, lively brownish buff ground, flaked with crimson, small as shown, but good petal, centre, and outline; and fancy Magpie, maroon, heavily tipped with white, small, and appearing as if there was reason to fear coarseness would come with increased size.

Messrs. Rawlings Bros., Romford, had Mars, bright

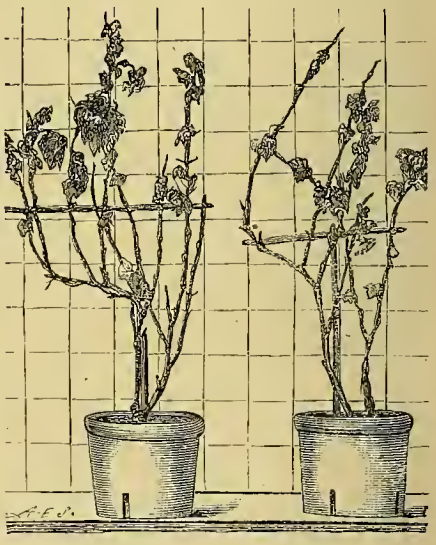


Fig. 69.—VINES MANURED WITHOUT POTASH.

orange-red, small, but looking as if it would make a good flower; James Willing, crimson, tipped with very bright purple, good form, petal, and outline; and O. E. Coope, a deep shaded crimson self, small, good centre and petal.

Mr. C. Turner, Royal Nursery, Slough, sent Charles Lidgard, gold ground, tipped with claret-red, deepening in colour with age, and becoming more dense over the petals, good petal and outline; Philip Frost, an orange-crimson self, a little deeper in colour on the circumference, small, but promising; and Wizard, a very distinct-looking fancy, blush ground, edged and suffused with brownish yellow, and flaked and striped crimson, good form and substance, and likely to be seen in much better size and character.

Dahlia cultivators will therefore have a choice of many new flowers, among which are some of undoubted high class quality. "The lumpish and inelegant Dahlia" is a flower of necessarily formal character, but to very many it displays a peculiar beauty that will make it highly popular for years to come. *R. D.*

Natural History.

A Patriarchal Bird.—In the possession of Mr. Charles Marett, of West Quay, Southampton, is a large white Cockatoo, the age of which is literally unknown. It has been in the possession of the family for more than fifty years, and at that time had the reputation of being a very aged bird, indeed it is currently believed that it is at least one hundred years old. It has now fallen into the senility of age, and is

getting helpless. Not long since it used to call the name of a favoured old domestic, and recognised her freely long after she had left the service of the family. Probably there are few living birds in the kingdom so old as is this one. *D.*

WASPS.—These obnoxious insects are very abundant this season, and seem to be driven hard to procure food, because of the comparative scarcity of fruit. Although naturally frugiferous, yet they when hard pressed can also be exceedingly carnivorous, as was exemplified in a butcher's shop recently, the owner drawing my attention to the way in which they had scooped out holes in the lean of mutton joints as large as walnuts, being careful in all cases not to touch the fat, and preferring the tenderest and most juicy parts. The meat is not eaten on the spot, but is cut out and rolled as the insect proceeds into pieces as large as peas, and with a load almost beyond their powers they fly off to regale themselves in safety. *D.*

Home Correspondence.

Soil and Locality.—I have noticed in the *Gardeners' Chronicle* differences of opinion as to the merits of various kinds of fruits and florists' plants, "particularly Roses." My experience leads me to consider that in many instances the difference arises from soil and locality. I have seen fruits (Pears and Apples particularly) vary so much in different places as to be scarcely recognisable; the same with Roses, &c., leading kinds in one place being in a manner worthless in another. I was some time since supplied to order with a number of Roses, from a noted grower: I selected from prize-lists of different shows, where I was certain there was a first-class collection. Many of the flowers I had seen. A great many of these (with me) turned out worthless, and if I were not certain that they were true to name, and that I had faith in the respectability of the person who supplied them, I would consider I was imposed on. Much unmerited censure is passed on nurserymen and gardeners from this cause. The same remark, I find, applies to agricultural produce—locality and soils making great difference. From the reasons I have stated, I think it hazardous to give lists of names of kinds of fruits, &c., recommended as certain to succeed. *John J. Geoghegan.*

Lilies.—If Lily growers in different parts of the country were to record their experiences of the season now drawing to a close, I think we might get some useful hints. I now give my experience. In most years there are disturbing causes which interfere with experiments however carefully conducted, but in this year the 10° of frost in the beginning of May, when many of the Lilies were in strong growth, gave a check sufficient to account for all manner of failures. A well-known nurseryman told me that he had seen even the old white garden and orange Lilies, L. candidum simplex and L. aurantiacum, cut to the ground. We had a large bed of the hardy L. umbellatum without a perfect flower. In most years, at least in the South, I believe almost all Lilies thrive best in shelter and shade; this year this has been especially the case. With us many Lilies, including L. auratum, L. Krameri, L. superbum, L. canadense, L. Martagon dalmaticum, and L. Szovitzianum have flowered well and seeded, where, from their situation, they were kept back and protected from high wind and rain. In other positions they have more or less failed, in some even where vigorous growth has been made both leaves and flowers show injury. L. giganteum, which had its lower leaves browned by frost, flowered fairly well and has seeded. Having sufficiently looked over our own Lilies, I paid a visit to my friend and neighbour, Mr. McIntosh. In his garden, as is well known, L. auratum is grown under the most favourable possible conditions, natural and supplied; the action of the frost can be well studied there, though he has been let off very easily, many of the Lilies are as healthy and beautiful as usual (except possibly to the owner's eye); many others show only a very slight check, and others have suffered severe checks, though I doubt if in any case the bulbs have been injured. The more backward Lilies and those least exposed to the cold winds seemed to be the most flourishing. I hear sometimes from friends who have lately begun Lily growing that they are discouraged; some of their bulbs have made no sign above ground, the growth of others has been weakly, others have suffered from "spot." I should advise in these cases to try again in different positions, to plant where there is more shelter, and in very cold gardens to try on sheltered sunny spots. I believe that in ordinary seasons there are but few Lilies that cannot be grown thoroughly well with but little trouble when the right position is once hit on. Not long back in a beautiful garden in the Isle of Wight I saw a large bed of Lilies in a situation where scorching seemed to be inevitable. Very early Lilies, like L. longiflorum, are, except in very favoured situations, likely to be caught by spring frosts; and very late ones, like L. Wallichianum and L. nilgherrense, bloom so late as to run risk from Autumn frosts. These, therefore, will probably be always the better for some artificial protection, but all other sorts only require a little practice how to grow them (that is, of course, where there is a garden with shelter) The two Lilies we had most trouble with are L. candidum simplex and L. chalcedonicum, which in many gardens grow luxuriantly with little care or attention. It is, I think, a great fact that with Mr. McIntosh in even such a very exceptionally bad year so many L. auratum should have preserved their usual healthy and vigorous growth. *George F. Wilson, Weybridge.*

A New Hyacinth Glass.—We have the pleasure of enclosing to you a photograph of a new Hyacinth glass we have just registered for five years. It combines elegance with utility, and can be used at all seasons of the year (when not used for Hyacinths) as a vase for cut flowers, &c. The rod can be applied to the glass in a moment without hooks or screws, being fixed with a spring outside the cup, thus not interfering with the bulb. The support for the leaves, also the one for the flowers, are made of brass bands, which are flat against the leaves and the stems, thus not bruising them, and they are fixed in such a manner to the rod as to slide up and down at will. The top support is so made that the spike of flower can be put in without any difficulty, at the same time that it is very firm and capable of upholding the largest Hyacinth.

FIG. 70.—HYACINTH VASE.

The fittings have an ornamental appearance. They are made in best flint, blue and green glass, and neatly engraved, as shown (fig. 70). *Stevens & Williams, Brierley Hill Glassworks, Staffordshire.*

Ornamental Fruit.—Perhaps one of the most ornamental of our shrubbery fruits is that of the single-flowered Boursault Rose. The heps upon wild Roses are well known for their bright red colour; their very abundance has given to them a low place amongst ornamental berries; however, this cannot be said of the long fruits of this variety, of which I send fresh examples. They are very ornamental, produced, as they are, so very abundantly upon old and young bushes alike. They lend quite a charm to our Rose hedges, and sundry huge bushes we possess are bright with them. We are not quite sure whether the fruits themselves are not equal to such kinds as the Eugenia, Cape Gooseberry, Whortleberry, and others, which are used exceptionally—more probably for curiosity's sake and variety than for any palatable merits. Speaking of Rose fruit, Gerarde has said:—"The fruit when it is ripe maketh most pleasant meats and banqueting dishes, as tarts and such like, the making whereof I commit to the cunning cook, and teeth to eat them in the rich man's mouth." *William Earley, Valentines.*

Tomatos.—These are largely grown in the Fulham market gardens. At present they are the principal paying crop, bringing £1 per bushel in Covent Garden, large growers gathering as many as from 70 to 80 bushels per week. They are as highly prized by the Londoner as Mushrooms. The seed is sown early in February in a gentle heat. As soon as fit to handle they are potted singly into small pots, kept pretty close to the glass to keep them from drawing. In April they are again potted into 4 or 6-inch pots, in good turfy loam, with a little decayed manure added to it, grown on stiffly during May. According to the weather, they are planted out the last days of May or the first of June, on well-prepared soil, in rows 2½ feet apart and 2 feet from plant to plant. As soon as they begin to grow they are staked with good, stiff stakes, 3 feet out of the ground, to which only one stem is tied. The side shoots are well pinched back, and as soon as the stem gets to the top of the stick it is stopped. They are kept regularly stopped all the season, and when the fruit begins to colour they receive rather a severe thinning of foliage, to let the fruit get all the sun. It hangs all the length of the stakes as thickly as ropes of Onions. This is what is called a great year for Tomatos. They began to ripen about the first week in August. As soon as they show signs of colouring they are carefully cut, and placed in frames under glass till fit for market. This is considered a great assistance to the fruit left on the plants, and it is coloured sooner under the glass than on the plants. The variety grown is known as the Fulham Large Red, and it is a very fine strain. Market gardeners have their own strains of all they grow, and they are carefully selected. In Cauliflowers and Cabbages, when the piece is at its best, it is looked over, and a stake placed beside all the selected ones. *E. W.*

Drosera Flowering.—I have just seen in an old number of the *Gardeners' Chronicle* a letter stating the rarity of seeing a Drosera flower fully expanded. This summer I have had this pleasure twice, after long watching. My first attempt at growing Sundews was in Ireland, in July, where I found quantities in blossom, the finest specimens covering the sides of a railway cutting in County Limerick, which ran through a bog—only Drosera rotundifolia though, and no flower open. I kept some for three weeks in vain, carefully moving it from window to window with the sun; some leaves I fed with meat throve, but others to which I gave bread and butter turned yellow, and then shrivelled up. My next attempt was in Cornwall, in August, with D. longifolia, but I never saw the very large flowers fully open, though sufficiently so for the bright red stamens to be visible. I despaired of further success till I went to the bog one hot day when the sun was hid by thunder-clouds, and there to my delight I found numbers of D. rotundifolia, each spike with its top flower wide open; some I observed were more yellow than white. I carefully dug up a fine plant, and placed it, still expanded, between the leaves of a book to form an extempore press. A few days after, when it was again one of those sultry, oppressive days, with an occasional gleam of sun, I saw a flower open on a plant growing in my saucer of Sphagnum, and at about the same hour, *i.e.*, from 11 to 12.30. This I at once drew. Besides the Sundews the bog was covered with Anagallis tenella, Pinguicula lusitanica, of all sizes—from some with flowers no bigger than a pin's head to large plants with half-a-dozen blossoms, and tiny seedling Osmundas; whilst a profusion of seed, spikes of bog Orchis, Buckbean, and Asphodel grew among the Sweet Gale and Erica Tetralix. *M. Conybeare, Tonbridge, Sept. 9.*

The Flow of the Sap.—There is one feature connected with the interesting illustration furnished by "A." at p. 309 that seems to bear more closely upon this subject of the flow of the sap than, it would appear, occurred to the writer. Whilst generally supporting the view I put forward a few weeks since, and in his illustrations of the rung Ash trees showing exactly the same results as I referred to in the branch of the Cherry tree, he also assumes that the results of the ringing proves the ascent of the sap of no inconsiderable amount by the bark. Now it is a curious fact if such is the case that that peculiar excrescence-like growth of bark which is seen at the bottom of the upper bark is not seen at the top of the lower bark, and the same is found in all cases of ringing. I further find if a limb of a tree is cut clean off with a knife or saw, 1 foot from the main trunk, it does not callus over but ever remains as cut. On the other hand, if the bark be taken off close to the side of the main trunk, it will in time become covered with new bark, because there is no entire severance between the upper and lower covering. Similarly I have found that having cut clean away the heads of old Apple trees on stems 6 inches in diameter and put in next the rind strong grafts, that if the grafts grew a gradual covering of new bark spread over the surface of the stock, but if the grafts did not take no such results followed even though strong growth broke out below. I infer from this that bark can only be made by the sap that has first passed through the leaves, and that the ascending sap has no constructive power of itself; further, that these facts either tend to show that the sap does not ascend through the bark, but rather by means of the vascular wood, whilst also they tend to show that there is a return flow through the bark, and that the addition of new wood is so furnished. The method by which the operations

of both budding and grafting are done support this view, because it is not the practice to bring bark and bark into contact, but rather wood and wood. If the sap ascended through the bark, we could imagine the work of the operator would be simplified by merely scratching the outer bark, and affixing the bud thereto; but we all know that this mode of budding would result in failure. Although the eye of the rosebud remains attached to the bark, it is yet in reality a portion of the wood, and if the connection of all shoots or branches, great or small, be traced, it will be found that these originate from, or are centred in, the hard wood of the main stem. It would appear that "A." deduces from the gradual diminution of growth above the ring in the bark during the three years his experiment was being tested, that it is proof of the partial ascent of the sap through the bark; but if such be the case, is it not marvellous that not only did the tree above exist, but also continued to make growth of any kind. Could not an explanation be found in the supposition that, because of the cutting off of the descending channels, the sap-vessels above the ring become gradually choked, and thus the starved growth? *D.*

Pines at Orton.—During a visit to Orton Longueville, the seat of the Dowager Marchioness of Huntley, in August, I observed a collection of coniferous trees of fine growth and of great variety. Among others I more particularly noticed the following:—Pinus ponderosa, North America; Picea nobilis, California; Picea bracteata, California; Torreya myristica, California. This Pine was bearing fruit in some quantity; at first the fruit is of a green colour, but as it becomes mature it changes to a purplish colour, with a powerful Nutmeg odour. This I observed in the Botanic Garden at Hobart Town, Tasmania, where I first saw it growing and in fruit. Cedrus Deodara robusta, Himalaya; Thuja gigantea, the Arborvitæ of California; Pinus Montezumæ, North America; Cupressus excelsa, Guatemala; Pinus Laricio, Corsican Pine; Sequoia (Wellingtonia) gigantea. There is a beautiful avenue formed of these noble Californian trees, nearly the whole of which are of some size and in a perfectly healthy condition. Thuja Lobbii, California; Pinus macrocarpa, California; Librocedrus decurrens, which is often confused with Thuja gigantea, and although belonging to another genus is closely allied to Thuja. Picea Douglasii, California; Picea Pinsapo, Andalusia; Pinus lasiocarpa, California; Picea cephalonica, Cephalonia; Picea Nordmanniana, Crimea. There were also some magnificent Spanish Chestnut trees in full flower, and in the conservatory a small plant in flower of the "Christmas tree" of New South Wales, the Ceratopetalum gummiferum, just commencing to change to a red hue by the persistent calyces. *George Bennett, M.D., F.L.S., &c., of Sydney, New South Wales, Sept. 9.*

Hardy Bulbs.—Gladioli are now within the reach of every one. Varieties which a few years ago were prohibitive as regards price may now be had at so low a rate that these persons wishing to cultivate this plant cannot prefer the objection that the price is a hindrance, and as to cultivation nothing can be more simple. When we have done selling, generally about May 10 to 15, we trench our ground deeply and manure heavily, planting the bulb thickly. If the weather sets in very dry we occasionally give the beds a soaking of water, and the specimens sent are a sample of our produce, not exhibition flowers, but nothing to complain of. This season has been peculiarly favourable. We have not required to give any water, and for the last fortnight we have been cutting flowers two or three times a week from the same beds for our window, and we shall go on cutting for the next four or five weeks. Where a sufficient quantity are planted you may "cut and come again" for many weeks. Those who cultivate hardy bulbs can begin cutting Daffodils in February, giving a succession to May, and then Lilies give a succession till the Gladioli come in, and these last continue flowering till the frost destroys them. Just now we have our beds of Tiger Lilies superb, and our auratums have been flowering since July, and will continue as long as the weather permits, but more on this subject when I can find time. L. speciosum has been grand, and will continue for some time. Autumn Crocuses have commenced flowering, also autumn Scillas. The Colchicums are in bloom, and will continue so till the cold weather is too much for them. *P. Barr.*

The Roseless Autumn.—I am glad to discern from the Rev. J. B. Camm's letter that the West of England has fared better in the matter of autumnal Roses than the East; but over large areas of country, as abundantly shown by my correspondence, there has been an extraordinary dearth of Roses this autumn. It is, however, refreshing to hear of so many and so good Roses at a distance. Nevertheless the mere fact of a large grower carrying off 1st prizes at different places, is no proof that Roses are either plentiful or good. I managed to carry off the 1st prizes at our own local shows—all that were offered in fact (for six and twelve), with creditable flowers; but for one Rose we have been able to cut since July this year we could have cut hundreds in ordinary seasons, and my neighbours are in the same plight. The buds are now showing more freely, and we may have a good show in October, possibly to the endangering of the safety of the Rose trees and bushes. *D. T. Fish, East Anglia.*

The Giant Sawfly.—The insects sent herewith were discovered a few days ago since under a new Brussels carpet that has been down about nine months; some were alive, others were dead. On examining the floor, which is yellow Pine, I found several round holes the size of the insect, in which they were situated. In every case they were found immediately above the Oak sleepers on which the floor is laid; so, if the insects are from the wood, it appears that they come from the Oak. The floor and sleepers were put down new about three years since. Several holes similar to those in the floor are eaten in the carpet. I found two or three fine living specimens in the windows of the same room about a year since. *J. K.* [The insects sent are the same as those figured in our columns last week—Sirex gigas—whose boring-rod is a marvellous production, but not likely to excite the unmixed admiration of the housekeeper. We can only suggest capturing and killing the insects. Washing the floors with carbolic acid might be of service, taking care that the solution gets into the holes. EDS.]

Fruit Trees.—In looking through a fruit nursery during the growing season, it is particularly interesting, where very large collections are grown, to notice the young healthy trees in large quarters, especially of Apples and Pears. It is quite remarkable to see, as you view row after row, the difference of the habit of growth of the various sorts under cultivation; some are erect and very vigorous, with scarcely a lateral shoot, others bushy and pyramidal. The true and distinctive character peculiar to its kind can be plainly seen; so much so, that an experienced man could detect an incorrect sort. But the most important and principal object I have in making these remarks is to name some of the most prolific and early-bearing kinds that have come under my notice in the young quarters. I have seen in favourable seasons good crops of fine fruit, of Apples, especially those worked on Paradise stocks, Pears (on Quince), and Plums on small trees, but two or three years old. This year it is not the case, being the worst fruit season I ever remember. Plums are quite a fallure, Pears nearly so; Apples are better. The following sorts are bearing a good crop, as pyramids worked on the free or seedling Apple stock:—Manks' Codlin, Keswick Codlin, Lord Suffield, Old Hawthornden, New Hawthornden, Frogmore Prolific, Old Golden Pippin, Court Pendu-Plat, Braddick's Nonpareil, Cellini, Northern Greening, Stirling Castle. I must here draw particular attention to the last named sort. I consider it one of the very best early cooking Apples grown. It is a regular and most prodigious early bearer. The fruit is of good size, heavy, and solid, and bears carriage well. The tree is a nice healthy moderate grower, and well adapted for bush and pyramid culture. It has never failed to bear large crops for many successive years, and I can, therefore, recommend it to be largely grown, especially for market. It succeeds best on the free or seedling Apple stock, as also does Lord Suffield, Manks' Codlin, Keswick Codlin, Hawthornden, &c. Undoubtedly the Paradise stock is the best upon which to work most kinds required for espalier, bush, or pyramid culture, as it produces early bearing, and a moderate growth and fine fruit; but I do not recommend any sort to be worked on it which bears freely when worked on the free or seedling Apple stock, such as the above mentioned, as the dwarfing and fruiting influence of the Paradise stock on such free-bearing sorts dwarfs them too much, and the trees become stunted and the fruit small; at least I find it so here. *G. Cannon, Lee's Nursery, Ealing, Sept. 12.*

Foreign Correspondence.

SPRING ON THE EAST COAST AND IN THE NORTH OF SPAIN (*continued from p. 688, vol. vii*).—On May 17 I left Palma, in the afternoon, on a fair-sized steamer, arriving at the port of Valencia, two miles from the city, at mid-day on the 18th. The sea was very calm. On board we had 200 or 300 soldiers, whose dress presented an example of all but inconceivable folly. They wore, one and all, fashionable boots with heels 2 inches high! When walking the body was necessarily thrown on the toes and the knees bent. I subsequently saw several companies of soldiers marching, knees bent, in Valentia, wearing these same foot-destroying boots, a perfectly ludicrous sight.

I had previously visited Valencia in May, 1869, and have described the spring vegetation of the city and its vicinity in my work, *Winter in the Mediterranean.* I once more turned my steps to the Botanic Garden, and surveyed it with care, only to find previous conclusions confirmed. As I have stated, the garden appears to be viewed and managed more as a pleasure garden than as a scientific establishment. The plants and flowers I found on May 6, 1869, I again found on May 18, 1877, only more advanced. They are the common English garden flowers of June and July—monthly and Bengal Roses, with a few hybrid and Tea Roses, Delphinium, Antirrhinum, Iberis, Iris, Stocks, Silene, Jasminum revolutum, Ranunculus, Eschscholtzia, Sweet William, Verbena, Spiræa, Habrothamnus, Pæonies, Nasturtiums, Pinks, Carnations, Aquilegia, Petunia, Collinsia, Viburnum, Convolvulus major and minor, Tritonia crocata, oak-leaved Pelargonium, Virginian Stock, Aubrietia, Hydrangea. On the more sheltered spots of the Genoese Riviera all these plants flower in April.

There was a glass house, in which I found Bougainvilleas, Lantanas, Vincas, Heliotropes, Pelargoniums, Cinerarias, and Coleus, all of which grow in the open air, anywhere, in my Riviera garden. In this glass-house were also the Palms and Cycadaceæ which are generally grown in the open air on the Riviera, with the exception of some large Chamærops humilis, a Phœnix leonensis, 15 feet high; and some large Latania borbonica, planted out in a sheltered spot, and flourishing. The glasshouse contained Corypha australis, Caryota, Dion edule, Thrinax, Cycas revoluta, Cordylines, Dracænas, Yuccas, Ficus repens, Pereskia, Aralia, Philodendron, Russelia juncea, Cyperus alternifolius, Bananas. There were Abutilons and Oleanders in the garden, the former in flower, the latter with large flower-buds.

The garden contained many fine specimen trees and shrubs, a Yucca filamentosa, 18 feet in circumference; a Podocarpus latifolius, 30 feet in circumference; a Sophora pendula, also 30 feet round; Cupressus Tournefortii, 50 feet high; very fine Acacia lophantha, and a bush of Plumbago Larpentæ, 30 feet in circumference. In the public market, which I always visit in foreign lands, the vegetables were Peas, broad Beans, Onions, Potatos, Tomatos, green Salad, Artichokes; the fruits Oranges, Apricots, small, poor, grown on standards; and Loquats, with a few small and poor Cherries.

The principal cut flowers were white Lilies and Carnations, with both of which the market was supplied in profusion. The Spanish seem to have a perfect passion for Carnations, which the women wear in their hair, the men in their button-holes. In May they are seen in profusion everywhere—indeed Carnations, growing in all kinds of old pots and pans, adorn nearly every balcony or window.

In the gardens of the squares were some very fine specimens of the Araucaria excelsa. This tree seems to flourish in all the milder and more sheltered regions of the Mediterranean near the sea, and will eventually contribute much to their ornament.

The above botanical and horticultural facts lead unmistakably to the conclusion that Valencia is a colder winter climate than the more sheltered parts of the Genoese Riviera, from Nice to San Remo. Evidently the cold winter winds fall down upon it from the mountains that shelter it north and west.

On May 19 I left Valencia by rail for Castillon, a town some 30 miles distant, on the eastern shore, where I intended to sleep. The railway runs parallel to the coast, but generally a few miles from it, through a delta-like plain, bounded at its base by the sea, and on its two sides by mountains.

Very little rain falls on the east coast of Spain, its renowned fertility being confined to the valleys and to their outlets, through which rivers come from the mountains of the interior. These rivers are generally, or all but entirely, used up for irrigation during the greater part of the year. Thus, I have twice in May visited Valencia, and found no water at all in the wide river-bed, spanned by bridges of a dozen arches. Irrigation had absorbed it all. Where there is no irrigation-water accessible, the land is all but uncultivable—a mere waste or scrub.

The first few miles from Valencia we were still in the far-famed Vega, or Valley of Valencia, which, thanks to abundant irrigation and to the southern sunshine, produces several crops each year, and is really a market garden. The crops then growing were Beans, Onions, Artichokes, Vines, bearded Wheat,

yellowing; Potatos, Mulberry trees, pollarded, despoiled of their leaves for the silkworms; Pomegranate trees near houses, with a few solitary Date Palms here and there. Then we passed through a rocky limestone ridge, and entered the delta plain of Castillon, which with its protecting mountains is well seen in the panoramic map of Spain in my work, *Winter in the Mediterranean*. This plain, irrigated by mountain streams, is a forest or orchard of Orange trees, and I was thus able to study the conditions under which the Valencia Oranges are grown. *J. H. Bennet, Mentone.*

(*To be continued.*)

Reports of Societies.

Alexandra Palace: *September* 13, 14, *and* 15.—The autumn fruit show, which opened here on Thursday last, proved to be one of the best metropolitan exhibitions that we have seen for the last year or two. Most fruits are well represented, and the more hardy kinds especially so. Vegetables, too, are a thoroughly good show, though not very extensive; and cut flowers, especially Dahlias, are a very fine feature. Amongst the Dahlias, Mr. Keynes came out in fine form; and in the fruit department the remarkable feature was the wonderful manner in which Mr. Coleman, of Eastnor, came to the front.

FRUIT.—Three capital collections competed in the class for sixteen sorts of fruit. Mr. Coleman, gr. to Earl Somers, Eastnor, had first-rate dishes of Muscat of Alexandria, Black Hamburgh, Madresfield Court, and Lady Downe's Grapes; large Eastnor Castle and Golden Gem Melons; fine fruits of the Smooth and Black Cayenne Pines. Splendidly-coloured Early Crawford and Violette Hâtive Peaches, and Pineapple and Oldenburg Nectarines; good Brown Turkey Figs, Green Gage Plums, Morello Cherries, and Pitmaston Duchesse d'Angoulême Pears. Mr. J. H. Goodacre, gr., Elvaston Castle, had a nice fruit of the Smooth Cayenne Pine, good Alicante, Foster's Seedling, and Muscat of Alexandria Grapes, Apricots, Cherries, finely-coloured Violette Hâtive Peaches, Jargonelle Pears, Victoria Plums, &c. Mr. T. Bannerman, gr. to Lord Bagot, Blithfield, included beautiful samples of Gros Colman and Black Hamburgh Grapes, and also one of Duke of Buccleuch, good Queen and Black Prince Pines, a splendid dish of Barrington Peaches, another good one of Morellos, Brown Turkey Figs, and of Williams' Bon Chrétien Pears, &c. The prizes were awarded to Mr. Coleman, Mr. Bannerman, and Mr. Goodacre, in the order named. Only two competed in the class for twelve sorts—Mr. J. Neighbour, gr. to G. Wythes, Esq., Bickley, and Mr. G. Rushmore, gr. to Sir C. R. Rowley, Bart., Tendring Hall, Stoke. The first-named, who took the 1st prize, had small but clean and nicely finished samples of Black Hamburgh, Foster's Seedling, and Muscat of Alexandria Grapes, Peaches and Nectarines, Plums, Pears, Figs, a scarlet-fleshed Melon, and white Currants. Black Frontignan Grapes, Morello Cherries, Violette Hâtive Nectarines, Bellegarde Peaches, and Brown Turkey Figs were the leading sorts in the second collection. There was only one collection of twelve sorts, and that came from Mr. Cox, gr. to Earl Beauchamp, Madresfield Court, to whom the 1st prize was awarded. All the sorts staged were of good quality, but especially so in regard to dishes of Crawford's Early Peach, Goliath Plums, Downton Nectarines, Morello Cherries, and Jargonelle Pears.

The three classes for Pines brought out sixteen fruits of a fair order of merit. In the class for two Smooth Cayennes the 1st prize was withheld; the 2d being awarded to Mr. C. Ross, gr. to C. Eyre, Esq., Welford Park, whose specimens weighed together 14 lb. 13 oz. The best pair of Queens, handsome fruits, weighing collectively 8½ lb., came from Mr. J. Churchfield, gr. to H. Littleton, Esq., Westwood House, Sydenham.

The display of Grapes was a very good one. The 1st prize for a collection of eight varieties went to Messrs. Lane & Son, Berkhamstead, and the 2d to Mr. Wildsmith, gr. to Lord Eversleigh, Heckfield Place. These were the only collections staged. The Messrs. Lane had exceedingly good bunches of Pearson's Golden Queen, Muscat of Alexandria, and Bowood Muscat, Gros Colman, and Trebbiano, the other sorts staged being Muscat Hamburgh, Alicante, and Black Hamburgh. The 2d prize collection was not so large nor so well coloured, with the exception of Black Hamburgh, a fine bunch in all respects. Foster's Seedling, Barbarossa, White Tokay, and Muscat of Alexandria were the finest of the others—and very good too.

Seven good collections competed in the class for four sorts, and the 1st prize went to Mr. Coleman, who had splendidly finished bunches of Madresfield Court, Black Hamburgh, Muscat of Alexandria, and Lady Downe's. Gros Colman and Black Hamburgh were splendidly shown by Mr. Bannerman, who came in 2d. The best of nine dishes of Black Hamburghs came from Mr. Coleman, whose bunches were fine in size, very compact, and the berries well coloured and carrying a beautiful bloom. The finest of five samples of Buckland Sweetwater came from Mr. James Bain, gr. to Sir C. Rouse Boughton, Bart., Downton Hall, Mr. Miles, gr. to Lord Carrington, and Messrs. H. Lane & Son, all being of good quality, though not large in bunch. Three dishes only of Madresfield Court competed, but they were all good except in the point of colour, and the awards went in the following order—to Mr. Chard, Cleveland Park Gardens; Mr. Charles Tyler, gr. to R. Gosling, Esq., Hassobury, Bishop's Stortford, ; and Mr. W. Toomer, gr. to W. Knowles, Esq., Ribblesdale, Streatham, Surrey. Three large, compact, and well-finished bunches of Black Alicante, contributed by Mr. J. Freeman, Beechwood Park, Dunstable, were the finest in a very good class for that variety. The Lady Downe's class was a good one, and the 1st prize lot, from Mr. W. Wright, Thurleston Lodge, Whitton, Ipswich, though small in bunch, were nicely finished and finely coloured. The Muscat of Alexandria class was an exceedingly good one. Mr. Coleman again came in 1st with very perfect bunches of good size; and Messrs. Lane & Son came in a close 2d, their bunches being larger than Mr. Coleman's, but not so well ripened. The classes for single bunches call for no special comment, and we need only say that Mr. Wildsmith was 1st, with Black Hamburgh; Mr. Thomas Taylor, gr. to J. Johnstone, Esq., Upper Terrace House, Hampstead, with Foster's Seedling; Mr. J. Peed, with Madresfield Court; and Mr. J. Peed again, for Black Alicante. The finest-flavoured black Grape was Black Hamburgh, shown by Mr. Bannerman; and in the corresponding class for whites, Muscat of Alexandria, shown by Mr. W. Coleman, was 1st. The heaviest black bunch was one of Barbarossa, weighing 5½ lb., shown by Mr. J. Peed. The heaviest white was a bunch of White Nice, weighing 6 lb. 14 oz, shown by Mr. Wildsmith. Mr. Coleman had the best basket of 12 lb. of black Grapes, and the same of white—a grand lot of Muscats.

Out of eight dishes of Peaches, twelve in a dish, the finest sample was one of Princess of Wales, a fine white fruit, shown by Mr. C. Haycock, Barham Court, Maidstone; and in another class, for six fruits, the best was Royal George, exhibited by Mr. Thomas Toomer. Pitmaston Orange, shown by the last-named, was also 1st in the class for twelve Nectarines; and Mr. Coleman was 1st for six with the same variety in high condition. The best of nine dishes of Figs was contributed by Mr. W. Chisholm, Boughton Place, near Maidstone. Mr. Pragnell had the best Jefferson Plums; Mr. G. Murrell, gr. to A. R. Allerton, Esq., Coleman's, Prittlewell, the best Kirke's; Mr. James Fry, gr. to L. J. Baker, Esq., Haydon Hall, Eastcott, the best Green Gages; and for twelve of any other sort Mr. C. Haycock came in 1st with Transparent Gage. Mr. James Bain showed the best scarlet-fleshed Melon—a nice fruit of Reid's; and Mr. W. Holder, gr. to W. Balston, Esq., Springfield, Maidstone, sent the best green—the old Bromham Hall. The competition was very strong in both classes.

HARDY FRUITS, as represented by Apples, Pears, Plums, &c., were shown in considerable quantity, and considering all things, the season especially, there was much of good quality amongst them. Mr. Jones, gr. to Her Majesty the Queen, Frogmore, contributed a very fine collection of Apples and Pears, consisting of sixty dishes of the former, and thirty-six of the latter. Messrs. Paul & Son, the Old Nurseries, Cheshunt, also sent a superior collection of Apples, including about eighty dishes, three fruits in each. The same firm also contributed an interesting collection of dwarf Apple trees, all bearing fine crops of fruit. Amongst the prize winners in the classes for Apples and Pears of various kinds we noted Mr. W. Holder, Maidstone; Mr. Coleman, Eastnor; Mr. C. Haycock, Maidstone; and Mr. C. J. Goldsmith, gr. to H. T. Lambert, Esq., Sandhills, Bletchingley. The best collection of twelve sorts of Pears came from Mr. C. Haycock, and the same exhibitor was also 1st for six and twelve dessert Apples. For six sorts of baking Apples Mr. C. J. Goldsmith was 1st.

VEGETABLES were remarkably well shown as regards their quality, and fairly so as to quantity, the whole display being a very creditable one. There were seven collections of sixteen sorts, and the 1st prize went to Mr. Pragnell, gr. to G. D. W. Digby, Esq., Sherborne Castle, who had finely-developed, smooth, and cleanly-grown examples of Parsnips, Celery, Cauliflower, Early Nantes Carrots, Model Potatos, Scarlet Runner Beans, fine white Spanish Onions, Tomatos, Ne Plus Ultra Peas, Vegetable Marrows, Cardoons, Veitch's Improved Beet, Cretan Leeks, Sutton's new white Turnip, and a fine lengthy brace of Tender and True Cucumber. Mr. Oliver Arkell, gr. to A. J. Skinner, Esq., Cheltenham, and Mr. G. T. Miles, were respectively 2d and 3d. Nine collections of six dishes came into competition, and a capital lot of produce was shown. Mr. W. Iggulden, gr., Orsett Hall, Romford, came in 1st with large Globe Artichokes, Cauliflowers, Intermediate Turnips, Snowflake Potatos, Veitch's Perfection Peas, and Hathaway's Excelsior Tomatos. Along with the vegetables were two or three excellent collections of salads, and the prizes in this class went to Mr. Hepper, The Elms, Acton, Mr. Pragnell, and Messrs. G. Smith & Son.

DAHLIAS were much better than might have been expected, considering the persistent wet weather and the dull sunless days. The flowers in the winning stand in the class for forty-eight varieties were large, clean, symmetrical, fresh, and well coloured. This came from Mr. John Keynes, nurseryman, Salisbury, and included grand blooms of Bessie Ford, Charles Wyatt (as a crimson self), Miss Large, John Bennett, Vice-President, Ovid, Royal Queen, Ethel Newcome, George, Good Lad, James Service, seedling bright dark red, a very fine show flower; Lady G. Herbert, Leah, Prince Arthur, a fine yellow self; Henry Walton, Henry Bond, Herbert Turner, J. N. Keynes, Mrs. Stancombe, seedling, pale lilac; Flora Wyatt, Louisa Neate, John Wyatt, Mrs. J. Downie, Cremorne, Mrs. Boston, W. Lucas, and King of Primroses, altogether a fine lot of show flowers. 2d, Mr. S. Dobree, The Priory, Wellington, with some good flowers mingled with others a little below the mark as exhibition flowers. The leading blooms were Monarchy, Herbert Turner, Acme of Perfection, H. Walton, red Dr. Moffatt, Peri, Vice-President, Thomas Goodwin, James Service, Flora Wyatt, Mrs. Stancomb, Black Knight, Drake Lewis, fine in colour but rather coarse; John Standish, J. N. Keynes, J. Downie, Christopher Ridley, very fine; W. Eckford, Lord Derby, Countess of Pembroke, Criterion, Dauntless, Royal and Purple. 3d, Messrs. Rawlings Bros., Old Church, Romford. Here the blooms were generally below size, but fresh and clean; the best blooms George Critchett, Willie Eckford, John Saunders, Leah, Vice-President, Thos. Goodwin, John Standish, James Willing, Lord Derby, James Cocker, Annie Neville, Arbitrator, O. E. Coope, Acme of Perfection, and Monarch. One flower, Baron Taunton, caused the judges a little anxiety, as a pin was put through the eye to lengthen the stem. As it was not done with the intention of giving a fictitious value to the flower, the judges felt they could not disqualify.

Seven stands of twelve fancy Dahlias competed in the class allotted to them; the best came from Mr. J. Keynes, who had fine blooms of Singularity, Enchantress, Hercules, Mons. Chauvière, Flora Wyatt, Charles Wyatt, Fanny Sturt, Henry Glasscock, Letty Coles, John Saunders, Mrs. Saunders, and Maid of Athens. 2d, Mr. S. Dobree, with Egyptian Prince, a fine and distinct fancy; Laura Haslam, Parrot, Eccentric, Attraction, J. Saunders, Hercules, Miss Bond, Viceroy, J. Carter, and Leopardess.

New Dahlias were numerously represented, and Mr. John Keynes received First-class Certificates for Bessie Ford, bright pinkish lilac; Louisa Neate, Fanny, and Maid of Athens. Mr. Charles Turner, Royal Nursery, Slough, for Charles Lidgard and Lady Golightly, white, tipped with delicate lilac; and Mr. G. H. Harris, for Constancy, yellow, and slightly tipped with lake. The same award was made to Messrs. Rawlings Bros., for James Willing, crimson, tipped with magenta-purple.

ASTERS, &c.—The best stand of thirty-six French Asters came from Mr. J. Morgan, gr. to Major Scott, Wray Park, Reigate, and with but very few exceptions consisted of the Victoria type, thereby demonstrating its high value for exhibition purposes; 2d, Mr. R. Petfield, Orpington, Kent, and here the best flowers were Victorias. With twelve French Asters, Messrs. Saltmarsh & Son, Chelmsford, were 1st with some splendid blooms of Truffaut's Pæony-flowered, very fine indeed; 2d, Mr. John Morgan.

In the miscellaneous class, fourteen boxes of cut Roses were exhibited by Messrs. Cranston & Co, King's Acre Nurseries, Hereford, which included boxes of Baroness Rothschild, Alfred Colomb, Senateur Vaisse, and a general collection of the best varieties. Messrs. Paul & Son, the Old Nurseries, Cheshunt, had six boxes of Roses in four blooms of each variety—an innovation to be commended, as it displays each variety to much better advantage than where only three blooms are shown. Mr. W. Cross had some excellent flowers from the seedling Brier in threes; Mr. Rumsey had cut Roses also, and Mr. C. Turner sent some Lilium auratum in pots, and also Lilium tigrinum splendens. Mr. Turner also contributed blooms of show, fancy and bouquet Dahlias. Some good cut blooms of Verbenas were shown by Mr. Dobree.

In the classes for table decorations Mr. W. Soder, gr. to O. Hanbury, Esq., Weald Hall, Brentwood, was 1st, with a table displaying flowers and fruit set forth to the best advantage. The best wedding bouquet came from Miss E. Stuart, 84, Seven Sisters Road, Holloway.

Botanical and Horticultural of Northumberland, Durham, and Newcastle: *Sept.* 12 *and* 13.—This old established Society held its autumn exhibition in the Town Hall and Corn Exchange, New-

castle, on Wednesday and Thursday last, when the good prizes offered brought together what was in all respects a highly creditable display, many well-grown and well-flowered specimens being exhibited. The morning broke clear and fine, giving every prospect of a bright day, which was enjoyed till about noon, when it became overcast and dull, and a perfect downpour of rain fell, but after a good soaking it cleared off, and the sun again shone out, bringing in large numbers of visitors.

Beginning with the plants, we find that for the six plants in pots, distinct, Mr. J. T. G. Williams gained the 1st prize of £10, conspicuous among his plants being Anthurium Scherzerianum, Allamanda nobilis, and Ixora Dixiana, all good, well-bloomed specimens. Mr. T. Wilson, gr., Normanby Hall, made a good 2d, having a fine plant of Allamanda nobilis, &c. For three plants in bloom, distinct, Mr. W. Moult, gr. to the Earl Ravensworth, took the higher award, his plants being Erica retorta major, Cassia corymbosa, and Ixora javanica; Mr. J. Thompson, nurseryman, Ravenside, taking the 2d and 3d. For six ornamental-foliage plants Mr. J. T. G. Williams again came 1st, with Dracæna australis, Latania borbonica, &c. For three ornamental foliage plants, Mr. A. Methven, gr. to Mr. T. Lange, Gateshead, took 1st and 2d. For six Ferns, Mr. E. Tudgey was 1st, having good plants of Gymnogramma peruviana, &c.; Mr. J. Brogdon, gr. at Jesmond Park, taking 2d. For three Ferns, distinct, Mr. A. Methven was again 1st, with three noble plants; Mr. T. Wilson, gr., Normanby Hall, and Mr. Jas. Thompson, Ravenside, being 2d and 3d. In the class for three Ericas, Mr. W. Moult, gr. to Earl Ravensworth, was placed 1st, with neat plants of E. tricolor Holfordii, E. Jacksoni, and E. Austiniana; the 2d was also awarded to Mr. Moult. For six Coleus, Mr. W. Moult was again the premier prize-taker, conspicuous among his lot being Madame Lemoine, Golden Gem, and Crown of Jewels; Mr. G. Stockley was 2d, and Mr. R. Mather 3d—all showing neat bushy plants. For four Fuchsias, Mr. E. Sanders took the higher award. For want of tickets we could not determine who were the 2d and 3d prizetakers. Among the exhibitors for three pots of Liliums, Mr. W. Moult was placed 1st, with nicely done plants of L. auratum, &c. For six table plants, pots not to exceed 6 inches, the specimens were not quite up to the mark. Turning to the cut flowers, we find Mr. W. Boston, Manor Farm Nurseries, was 1st, taking the county prize with twenty-four Dahlias, distinct, having fine blooms of Cremorne; Mr. Dix, Royal Queen, &c.; Mr. Charles Rylance, florist, Ormskirk, being 2d, having amongst others a good bloom of Criterion. Mr. H. Clark and Mr. J. Jackson took equal 3d. For twelve Dahlias Mr. Fletcher, nurseryman, Charlestown, was 1st, having good John Bennet, James Cocker, and others; Mr C. H. Feukes taking both 2d and 3d. For twelve Dahlias, distinct, fancy, Mr. W. Shaw, Birmingham, was 1st; Mr. C. Rylance, Ormskirk, 2d. In the class for twelve Asters, feathered, Mr. W. Spoor, jun., Swalwell, was 1st, with a very good stand; Mr. J. Wardle, Netherwitton, 2d. In Globe Asters Mr. Spoor was again 1st, Mr. Wardle taking both 2d and 3d. Next come the twelve Zonal Pelargoniums, for which Mr. T. Flowdy, florist, Gateshead, was 1st, with good bright specimens; Mr. A. Brown, gr. to L. Barnes, Esq., Whitburn, 2d; Mr. Flowdy was again 1st for twelve Picotees, with very good examples; Mr. R. Scott, florist, 2d; Mr. Flowdy was also 1st for twelve Carnations, being well seconded by Mr. R. Scott, Newcastle. Coming to the French Marigolds, we find Mr. Atkinson, of Winlaton, 1st; Mr. C. Laws being next in order of merit. The Pansies, though not so good as we anticipated, gained a deal of attention. Mr. J. Wardle gained the 1st, Mr. T. Oliphant, Low Fell, being 2d. The spikes of Gladioli were very fine, Mr. W. Spoor, jun., taking 1st for six, having fine spikes of Horace Vernet, Colbert, Thalia, &c., the 2d falling to Mr. Gardener, Swalwell. For twelve spikes, Mr. T. Fenwick was 1st, with a magnificent stand; Mr. A. Brown, gr. to T. Barns, Esq., and Mr. J. Jackson, Kidderminster, making good 2d and 3d. The competition for twenty-four Hollyhocks, twelve varieties, brought out a good show, Mr. J. Stairman, gr., Public Park, Darlington, taking the higher award, with good blooms of nobilis, Venus, Sanspareil, Queen of Yellows, &c. The amateurs' plants, cut flowers, &c., though very good of their kinds, only need a passing notice, being quite eclipsed by their more favoured neighbours.

The FRUIT SHOW was, for the season, tolerably good. For one Pine, Mr. J. Brown, gr., Whinney House, Gateshead, took 1st and 3d, Mr. T. R. Jowsey being 2d.

In the class for two bunches of black Grapes Mr. J. Witherspoon was 1st, with Black Alicante; Mr. R. Westcott, Raby Castle, 2d, with Black Hamburgh. For two bunches of white Grapes, Mr. R. Westcott, gr. to the Duke of Cleveland, Raby Castle, was 1st, with good examples of Golden Queen; E. H. Bradley, gr., High Barnes, Sunderland, 2d. For heaviest bunch of Grapes, Mr. J. R. Jowsey, gr., Sedbury Park, York, came 1st, with Barbarossa, 7½ lb. (Mr. Jowsey's original idea of suspending the bunch from a small spring balance is well worthy of attention by future exhibitors in like classes); Mr. R. Turnbull, gr., Jermond Grove, 2d, with Trebbiano, 3½ lb.

For eight dishes of fruit Mr. R. Westcott, Raby Castle, was 1st, with Pitmaston Orange Nectarines, Black Hamburgh, and Golden Champion Grapes, Waltham Cross Melon, Barrington Peach, transparent Green Gage, &c.; Mr. T. R Jowsey, gr., Sedbury House, Richmond, York, being 2d.

For six dishes of hardy fruit Mr. W. Shaw, gr., Blakbrook, Kidderminster, was 1st, with Morello Cherries, Damsons, Cob nuts, King of the Apples, &c.; Mr. R Westcott, Raby Castle, being 2d.

For six Peaches Mr. T. Shield, gr. to Colonel Reed, Kenton, was 1st and 3d; Mr. J. Simon, gr., Scots House, West Boldon, being 2d, both showing very good fruits.

The show of small fruit, single dishes of hardy fruit, &c., was tolerably good, though not calling for any special comment.

A brace of Cucumbers gained Mr. Armstrong the 1st place; Mr. Lawson, Whickham Lodge, Gateshead, being 2d.

For trays or baskets of vegetables, which were not of very great merit, Mr. Jas. Gardener, Swalwell, was 1st, Mr. T. Battensby and Mr. W. Pringle taking 2d and 3d.

In the class for table decorations, Mr. W. Moult took the President's prize, £7, being, we must say, tastefully arranged, the centre-piece being especially worthy of remark, though we fear there would be but little room for the guests; Mr. A. Methven, gr. to T. Lange, Esq., Heathfield, Gateshead, was 2d—the note on the preceding will apply with considerable force here also.

The baskets of cut flowers were tastefully arranged, Mr. C. Rylance, florist, Ormskirk, being placed 1st; Mr. F. Edmondson, gr., Whickham Park, 2d, with a rather tightly packed basket.

For vase or epergne of cut flowers for drawing-room, Mr. T. Ramshaw, Dryburn, Durham, was awarded 1st for a remarkably tasteful arrangement; Mr. E. H. Bradley, gr. to Mr. T. G. Turnbull, High Barnes, Sunderland, making a good 2d.

In a class for a bouquet for the hand, Miss Bolam, Gateshead, was 1st and 2d; they were neat, and tastefully arranged, though quite large enough we think. For eighteen groups of cut flowers, Mr. J. T. G. Williams, was 1st; Mr. C. Wass, Jesmond Cottage, taking the 2d. The stands of twelve groups of cut flowers were rough and rather heavy, and not in our opinion worthy of further mention.

Miscellaneous groups not for competition were contributed by Mr. J. Harrison, North of England Rose Nurseries, Catterick Bridge, who sent five large stands of fine Roses. Mr. J. Thompson, Ravenside Nursery, Newcastle, showed some good stands of Gladioli. Messrs. Stewart & Mein, Kelso, sent a very neat floral design constructed almost entirely of Everlastings which was beautifully finished. Mr. John Bowman, Newcastle, showed a neat and cheap amateur's greenhouse, as well as various other specimens of woodwork of general excellence. Mrs. Leaderthong, Gateshead, showed a glass stand of beautifully modelled wax flowers. Mrs. Usher, Harton, South Shields, showed some curiosities in butter-working, consisting of butterflowers, vegetables, &c. Messrs. James Robson & Son, Bank Foot, Hexham, sent a nice collection of small Coniferous plants; and Messrs. Rivers, Sawbridgeworth, Herts, a large collection of Apples, Pears, Peaches, &c.

Bury Horticultural: The autumnal meeting of this Society was held on Friday last in the Corn Exchange. The display, taking it as a whole, was quite up to the average in point of merit, and some of the classes were remarkable for their excellence. The flowering Begonias attracted much attention, the plants from Hardwicke (B. intermedia, B. boliviensis, B. Vesuvius, and B. Stella), exciting great admiration. Mr. Fish also sent a remarkably fine B. intermedia as a specimen plant, and it formed a striking object on the centre table. A fine collection of Coleus charmed the eye with the brilliant and harmonious tints of their foliage, and the Fuchsias from Hardwicke were still very beautiful, although the season is far advanced. In the Orchids Mr. Powell, of Bury, was 1st with Dendrobium chrysanthum; Mr. Fish was 2d with Saccolabium guttatum, and also exhibited a specimen of Peristeria elata. Mr. Squibb, gr. to the Marquis of Bristol, was 1st in the new or rare plants, and Mr. Stanley 2d, with a specimen of Bertolonia Houtteana. Some well-grown Selaginellas from Hardwicke were good examples of skill in training and of general good cultivation. To turn to the cut flowers: the Dahlias were in strong force, the Gladioli were unusually varied and abundant, and the Phlox Drummondi (which is to a great extent superseding Verbenas as a bedding plant) was well represented, the Ickworth display being undoubtedly the best. There was a fine show of Asters, the Roses were good for the time of year, and the trusses of Pelargoniums were superb. Two blooms of Dr. Denny Pelargonium, raised by Mons. Jean Sisley, of Lyons, were placed upon the table by Mr. Grieve, who had received them by post that morning: the blooms were purple in colour, the lower part of the two upper petals being an intense scarlet.

There was but a short supply of fruit. The Peaches were not very good: the Nectarines were better, but not first-rate. The 1st prize black Grapes (from Ampton Hall) were very good, and remarkably well coloured; the white Grapes were not so good, and there was only one exhibit besides those shown for the dessert prizes, which were taken by Mr. Squibb and Mr. Fish. The Cherries were remarkably fine, and there was an excellent show of Apples, a crop which varies exceedingly this year, accordingly to locality and circumstances. There were plenty of excellent Filberts, it being a good year for Nuts of all kinds.

The vegetable classes were well filled, both by the members and by the cottagers. There was a great show of Potatos, of excellent quality. The cottagers' Apples and Onions were exceedingly good: the latter were perhaps better than those shown on the opposite side of the hall. The baskets of vegetables were as usual excellent, a credit to the district from which they chiefly come; and though it is not a good honey year there were some capital skeps on the cottagers' table. *(From a Correspondent.)*

AUTUMN PLANTING.—We are nearly at the end of the summer. If the fates are propitious and Dame Nature endeavours to make some atonement by granting us a fine warm, sunny September, then the summer will last well into the autumn, and gardeners will be generally thankful; but present evidences point rather to unsettled wet rather than to settled fine weather. The cold north-easterly winds have gone, and the chilly days which made us long for fires have passed away with them, and warm southerly winds now rule, but they bring rain and attendant dulness with them.

A Villa gardener wishes to have in his small garden as many pretty floral pictures as he can present to view all the year round; but some forethought is required to arrange this so that the succession may be as completely secured as possible. He must now begin to think what he shall do to secure something gay and winsome in early spring. We remember once seeing some charming results worked out in early spring on the sloping grassy banks at the foot of the Round Tower at Windsor Castle. The turf was lifted in autumn in a few places and some good soil was put in where the earth had been taken out, and in this Snowdrops were planted in clumps and various designs. By-and-by, when the awakening spring called into action plants that had remained inactive or at rest all the winter, the Snowdrops thrust themselves up through the grass, and unfolded their white blossoms amid the green foliage around and beneath them. This fancy of the royal gardener [was it not the late General Grey?] was a good one, and many lingered by the stone parapet, gazing over at the white blossoms that looked like snowflakes resting on the emerald turf. We made a similar attempt on our own grass plot, and the first year the Snowdrops and some early Crocuses put in with them bloomed well, but then arose the necessity for cutting the grass, and away went the foliage of the bulbs before the scythe. This ruthless but necessary cutting away of the growth eventually caused the bulbs to die away, and so the idea of floral pictures on the grass plot died away also.

But charming effects can be had by planting Snowdrops and Crocuses just within the grass, or Box, or other edging to beds or borders. Now, and on to the end of November—the sooner the better, because the bulbs are plumper—such plantings can be made; and if they are properly done they can remain for five or six years, and they will be most attractive in the early spring-time.

As the effectiveness of the bloom will depend in a great measure on the mode in which the bulbs are planted for permanent service; it is recommended that a kind of trench be dug out by the side of the edging, 8 or 9 inches in depth by 6 inches in width. Then lay in the trench a few pieces of rough fibry

turf, and in this a mixture of dung, loam and leaf-mould, with a thin layer of sand on the top, altogether about 4 inches in depth. Plant the bulbs in the sand, and fill up with a little good soil, and then fill up to the surface with the earth removed when the trench was dug. Then press all firmly down, and the work is done. In selecting these regard should be had to duration of bloom and variation of colour. Such autumn-flowered Crocuses as the Colchicum, and the pretty deep lilac C. speciosus, should find a place for the sake of their autumn flowers. These will bloom in September and October, and onwards. We have Crocus speciosus in flower now, and a very beautiful thing it is, and we can commend it highly. Then, to have some flowers as early in the year as possible we would recommend a few Snowdrops, the Cloth of Gold Crocus, which is also known as C. reticulatus, and the pretty early Scotch Crocus, C. biflorus. All three of these will find their way into bloom before any of the ordinary spring Crocuses are on the move. The Scotch Crocus is marked with lines of dark purple, and it with the white Snowdrops, and the golden and purple-streaked Crocuses, make a pretty combination. Lastly, to make up the latest display, such fine varieties as the large yellow, the striped Sir Walter Scott, and Pride of Albion—the first faintly, and the last heavily striped, the white Mont Blanc, and the purple David Rizzio. These are all fine large-flowered varieties, of moderate price.

Great objection is sometimes made to a verge of Crocuses of this character on the ground that the foliage looks unsightly while making its growth in spring; but the head of bloom—doubly welcome because there is so little else in the way of flowers to bear them company—amply compensates for any drawback of this kind, and some nimble fingers could soon plait the grass together, and make it look neat, until it dies away.

Lines of Crocuses so planted are worthy of and should have a little attention during summer. The bulbs are greatly helped if about thrice during the summer the soil be loosened a little on the surface, and a good soaking of liquid manure given. The results will be seen by-and-bye, in larger flowers, in brilliancy of hue, in duration of bloom, and in an effect that will give unbounded satisfaction and delight to the planter.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, SEPT. 12, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Sept.	In.	In.	°	°	°	°	°	°			In.
	29.76	−0.15	63.9	42.9	20.0	54.7	− 3.7	43.9	66	S.W. : WSW	0.00
7	29.66	−0.25	65.1	47.8	17.3	54.2	− 4.2	48.3	80	S.W. : S.E.	0.00
8	29.79	−0.12	61.3	44.5	16.8	52.4	− 5.9	43.1	71	E.N.E.	0.00
9	29.81	−0.10	65.8	47.1	16.7	56.7	− 1.4	47.1	70	E.S.E. : E.N.E.	0.00
10	29.82	−0.08	63.2	51.1	11.1	56.2	− 1.8	53.8	92	E : E.S.E	0.00
11	29.60	−0.30	71.6	53.0	18.6	62.6	+ 2.8	57.6	93	S.E. : S.S.E	0.09
12	29.72	−0.19	67.2	53.8	13.4	59.3	+ 1.7	52.1	78	S.S.W.	0.02
Mean	29.73	−0.17	66.2	48.9	17.3	56.3	− 1.8	49.4	78	variable	sum 0.11

Sept. 6.—A very fine day. Cloudy in evening. Cloudless at night.
— 7.—Fine, bright, cloudy till evening, then cloudless.
— 8.—A fine day, cloudy and cool. Strong wind.
— 9.—A fine day, partially cloudy. Windy.
— 10.—Dull and cloudy till evening, then clear. Slight rain fell at 7 A.M.
— 11.—A fine day, but generally cloudy. Overcast from 2 to 4 P.M., with showers of rain.
— 12.—Generally fine, but dull and cloudy at times. Showers of rain at about 4 P.M. and 8 P.M.

LONDON: *Barometer.*—During the week ending Saturday, September 8, in the neighbourhood of London the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29.67 inches by the morning of the 3d, increased to 30.36 inches by the evening of the 4th, decreased to 29.84 inches by the afternoon of the 7th, and increased to 29.99 inches by the end of the week. The mean reading for the week at sea level was 30.02 inches, being 0.12 inch above that of the preceding week, and 0.09 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 69° on the 6th to 58° on the 3d; the mean value for the week was 64½°. The lowest temperatures of the air ranged from 42° on the 5th to 48° on the 3d, the mean for the week was 45¼°. The mean daily temperature of the air for the week was 191°, the least range in the day being 10°, on the 3d, and the greatest 26°, on the 6th.

The mean daily temperatures of the air were as follows:—2d, 55°.8; 3d, 52°.1; 4th, 52°.5; 5th, 53°.3; 6th, 54°.7; 7th, 54°.2; 8th, 52°.4, and the departures in defect of their respective averages were −3°.5, 7°, 6°.3, 5°.3, 3°.7, 4°.2, 5°.9. The mean temperature of the air for the week was 53°.6, being 5°.1 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 128½° on the 6th, 127½° on the 2d, 122° on the 5th, and 120¾° on the 4th; on the 3d the reading did not rise above 80°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34½° on the 5th, 36° on the 6th, and 38½° on the 2d and 8th. The mean of the seven low readings was 39°.

Wind.—The direction of the wind was variable, and its strength moderate. The weather during the week was fine but cool. Heavy rain fell on the 3d.

Rain fell on two days during the week; the amount collected was 0.85 inch, 0.83 inch of which fell on the 3d inst.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 69° both at Blackheath and Cambridge, and 68° at Truro and Sunderland; the highest temperature at Liverpool was 59½°, and at Wolverhampton, 60¾°; the mean value from all stations was 64¾°. The lowest temperatures of the air observed by night were 34¼° at Bristol and Eccles, 35° at Truro, and 36½° at Cambridge; the lowest temperature at Sunderland was 46°, and at Portsmouth 43¾°; the general mean from all stations was 40°. The range of temperature in the week was the greatest at Truro, 33°, and the least at Liverpool, 17°; the mean range of temperature from all stations was 24¾°.

The mean of the seven high day temperatures was the highest at Cambridge, 65°, and Blackheath, 64½°, and the lowest at Liverpool, 57¼°, and Wolverhampton and Bradford, both 58°; the mean from all stations was 61°. The mean of the seven low night temperatures was the lowest at Bristol, 39½°, and Eccles, 40¾°; and the highest at Portsmouth, 48½°, and Sunderland, 48°; the mean value from all stations was 44¾°. The mean daily range of temperature in the week was the greatest at Bristol, 23½°, and the least at Liverpool, 10½°; the mean daily range from all stations was 16¼°.

The mean temperature of the air for the week from all stations was 51¼°, being 5° lower than the value for the corresponding week in 1876. The highest was 54¼°, at Sunderland, and the lowest 48°, at Eccles.

Rain fell on two or three days at most stations, but at Hull and Bradford it fell on five days. The amounts varied from 2 inches at Hull, 1¾ inch at Norwich, and 1¼ inch at Bradford, to half an inch at Sunderland; the average fall over the country was 1¼ inch.

The weather during the week was generally fine and cool. Frosts on the grass were recorded at Bristol on the 4th, 5th, 6th, and 7th. Thunderstorms occurred at Portsmouth and Norwich on the 3d.

SCOTLAND: *Temperature.*—The highest temperatures of the air observed by day varied from 65° at Dundee to 59° at Aberdeen; the mean value from all stations was 60¾°. The lowest temperatures of the air observed by night ranged from 33° at Perth to 41° at Leith; the mean value from all stations was 37½°. The mean range of temperature in the week was 23¼°.

The mean temperature of the air for the week from all stations was 50°, being 3° lower than the value for the corresponding week in 1876. The highest was 51°, at Dundee; and the lowest 48¾°, at both Paisley and Perth.

Rain fell at Dundee to the amount of 1 inch; at Glasgow, Edinburgh, and Leith four-tenths of an inch fell; at Paisley no rain fell. The average fall over the country was half an inch.

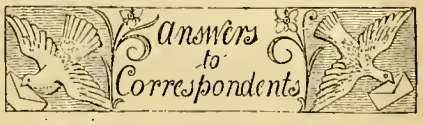
DUBLIN.—The highest temperature of the air was 67¼°, the lowest was 36½°, the range was 30¾°, the mean was 53½°, and the fall of rain 0.08 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

204. *J. A. E. A.* asks: "Can any one tell me of a small bright plant that would keep evergreen all the winter? It is to plant on a memorial stone in a village churchyard, and must be low and compact."



ANNUALS FOR SPRING-FLOWERING: *J. M.* Sow Silene and other annuals for spring-flowering at once, in the best situation you can give them, well exposed to light, but sheltered from winds.

CRITICISM: *J. M.* should be a little more modest in his criticism of others.

CUCUMBERS: *W. D.* We cannot answer your enquiry very definitely without knowing your object in making it. If you wish to know whether you could properly show Cucumbers in a collection of vegetables, we say Yes; if in a collection of fruit, we say No. Yet the Cucumber is undoubtedly a fruit. There is a common-sense meaning to be attached to these terms, vegetables and fruit, when used as supplied to exhibitions, and in the absence of definitions you should be guided by these.

EVERGREENS: *C., Newcastle.* If Conifers will suit your purpose, take Cupressus Lawsoniana erecta viridis, the finest of all evergreens; and Libocedrus decurrens, or Thujopsis borealis. The Libocedrus you will probably find under the name of Thuja gigantea. If you do not wish for Conifers, a good variety of Rhododendron (catawbiense breed) and the Aucuba japonica may be recommended; or a pair of Hollies, either green or variegated, such as Hodginsii and Golden Queen. Any of these would make a specimen suitable to adorn a grass plot.

FRUITS TO NAME: *C. Ford.* If you send us six good samples we will name them for you. We cannot undertake to name florists' flowers. If you are a Fellow of the Royal Horticultural Society, you can do as you propose.

GLADIOLUS: *Subscriber.* These flower fairly well in 6-inch pots. They should be potted in spring, and started in a greenhouse pit, removing them outside and plunging the pots as spring advances into summer.

HARES AND RABBITS, TO PROTECT THE BARK OF TREES FROM: *H. & Co.* We refer you to p. 342 of our last volume (vol. vii., new series), where you will see that a Belgian gardener recommends his *confrères* to use a wash of dog's-dung, which he says he has himself successfully employed. Try this easy remedy, and report the result.

INSECTS: *J. James.* Chrysalis of the puss moth, Dicranura vinula. *A.M.*

INSECT IN POTATOS: *Arcanum.* The small white insect was not to be found among the Potatos when received.

NAMES OF PLANTS: *A. Tuck.* Dianthus chinensis.—*H. King.* In the absence of flowers we cannot be quite sure, but it looks like Vaccinium maderense.—*E. R.* Nerine curvifolia.—*D. D.* Rhus Cotinus, the Wig-plant.—*A. L. J.* Calla palustris, a near ally of the Trumpet Lily so called, and of the Arum of our hedgerows.—*W. B.* 1, Glaux maritima; 2, Glaucium luteum, Horned Poppy; 3, Sinapis tenuifolia; 4, Pyrethrum fruticosum; 5 and 6, next week; 7, Sempervivum arachnoideum.—*P. H. Gosse.* If your Epidendrum bears a panicle, why do you send a single flower? Since it is unknown, a single flower is good for nothing. A, is E. stenopetalum, Hook., a plant that is a candidate for death in Europe. *H. G. Rchb. f.*—*G. Palmer.* Your plant is probably O. microchilum—too much crushed to say with certainty.—*Irish Sub.* Spiræa ariæfolia.—*J. Mosse.* Apparently Tritonia miniata or T. crocata.—*C. W. D.* Erica vagans.—*Constant Reader.* 1, German Ivy, Senecio mikanoides; 2, Cephalotaxus drupacea; 3, Bryonia dioica.—*Omega.* 1, Centrostemma multiflorum; 2, Anomatheca cruenta.—*J. Mel.* Herniaria glabra.

PETUNIAS: *Subscriber.* We are not aware that the striped varieties "bear little or no seed." In fact, seeds of Messrs. Hender's striped Petunias, some of the finest in existence, is advertised freely at a reasonable price, so that it must be plentifully produced.

POPLAR LEAVES: *G. C.*—The Poplar leaves are attacked by a fungus—Melampsora populina, Léveillé. It has nothing to do with the Potato disease. Since Du Bary produced the disease directly from the spores of the Potato fungus, it is useless to attribute it to atmospheric influences, though that may favour the development of the fungus. *M. J. B.*

SCHIZOSTYLIS COCCINEA: *Subscriber.* This is best planted out in moderate sized tufts in a bed of light, rich soil, and taken up towards autumn and potted for flowering indoors. A tuft of six or eight stems might be got into a 5-inch pot.

VINES: *W. D.* They might doubtless be lifted now, if the operation is carefully performed, but the "fruiting next year" depends on their present condition.

*** Correspondents are specially requested to address, post-paid, all communications intended for publica-

tion to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

ERRATUM.—In the report of the Carlisle show, for "Bramhan" read "Bramham." Mr. Bramham gained the 1st prize for wirework, and a certificate of merit for the Allerton Priory Boiler.

CATALOGUES RECEIVED.—S. Brown (Weston-super-Mare), Autumn Catalogue of Bulbs and Flower Roots.—W. Rollisson & Sons (The Nurseries, Tooting, London, S.W.), Catalogue of Cape, Dutch, and other Bulbs, Fruit Trees, &c.—Messrs. Dick Radclyffe & Co. (129, High Holborn, London), Catalogue of Dutch Flower Roots, Trees, Garden Requisites, &c.—James Yates (Underbank, Stockport), Illustrated Catalogue of Flower Roots.—Messrs. W. Clibran & Son (Oldfield Nursery, Altrincham), Descriptive Catalogue of Dutch Flower Roots, Roses, Conifers, Fruit Trees, Herbaceous Plants, &c.

COMMUNICATIONS RECEIVED.—Messrs. Rutley & Silverlock (we will try it).—P. B.—E. L. (with thanks).—H. H. D.—E. W. C.—D. T. F.—M. D.—H. N. E.—L. Hartley.—W. B.—J. James.—G. C. E.—Max Leichtlin.—G. N., Slough.

*** Numerous communications are unavoidably deferred.

DIED, on September 8, JOHN FRASER, aged 55, for twenty-two years gardener at Norley Hall, near Frodsham, Cheshire.

Markets.

COVENT GARDEN, September 13.

Our market does not show any improvement, the greatest activity being amongst foreign produce, of which a large quantity, principally Pears and Plums, is now reaching us, and making exceptionally high prices. Peaches and Pines are in demand, and will make good returns; Grapes are bad, and likely to be worse. Kent Cobs have met with a ready sale at advanced rates. Trade quiet. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Oranges, per 100	12 0–20 0
Grapes, per lb.	0 9– 6 0	Peaches, per doz.	6 0–15 0
Lemons, per 100	8 0–12 0	Pears, per doz.	1 0– 3 0
Melons, each	2 0– 5 0	Pine-apples, per lb.	4 0– 8 0
Nuts, Cobs, per lb.	0 4– 0 6	Figs, green, doz.	1 0– 3 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Horse Radish, p. bun.	4 0– ..
Aubergines, p. doz.	2 0– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per bushel	8 0– ..	Lettuces, per score	2 0– ..
— Scarlet Runners, per bushel	4 0– ..	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Brussels Sprouts, p. bush.	8 0– ..	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos:—Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	3 0– 9 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	0 6– 1 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	2 0– 9 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	4 0–12 0
Gardenia, per doz.	3 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0
Lilies (in var. 12 spr.	1 0– 2 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Ficus elastica, each	2 6–15 0
Begonias, per doz.	4 0–12 0	Fuchsias, per dozen	2 0–12 0
Bouvardias, do.	12 0–24 0	Heliotrope, per doz.	4 0–12 0
China Asters, dozen	3 0–12 0	Liliums in var., each	1 6– 6 0
Chrysanth., per doz.	5 0–12 0	Mignonette, per doz.	6 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargon., scarlet, p. dozen	2 0– 9 0
Cyclamen, per doz.	18 0–24 0	Petunias, per doz.	4 0–12 0
Cyperus, do.	4 0–12 0	Roses, fairy, p. doz.	4 0–12 0
Dracæna terminalis	30 0–60 0	Solanums	12 0–24 0
— viridis, per doz.	18 0–24 0	Valotta purpur., doz.	9 0–18 0
Ferns, in var., p. doz.	4 0– ..		

SEEDS.

LONDON: *Sept.* 12.—A quiet but firm feeling characterises the trade for agricultural seeds. Of red Clover seed there appears to be a fair crop in France, and quotations have consequently opened at a moderate level. If the French houses would reduce their demands some 2s. to 3s. per cwt. a good business would probably ensue. Some New York advices just received speak favourably of the prospects in America for red seed. In Alsike, both here and on the Continent, there has been some speculative business doing. White Clovers keep steady. Notwithstanding the recent upward movement, current rates are still by no means out of the way. Trefoils are rather dearer. The late rains are reported to have inflicted considerable damage on Scotch Rye-grasses; but the Irish crop is said to be satisfactory both for quantity and quality. Of foreign Italian an abundant supply may be expected from France. Winter Tares come forward more freely, and meet a good demand at slightly increased rates. Smallness in size appears to be the special characteristic of this season's growth. Good samples for the year are now obtainable on Mark Lane at a moderate figure. For sowing Rye there is a brisk request, on former terms. A noteworthy feature of the present week has been the purchase by the manufacturers of between 1000 and 2000 quarters of new English white Mustard seed. If the yield had proved an average one the rates realised would have been highly remunerative to the growers. Rape seed keeps very firm; plump black parcels are now with difficulty met with. Blue Peas are steady alike in value and demand. For bird seeds the trade is without feature. *John Shaw & Sons, Seed Merchants,* 37, *Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was firm, with an upward tendency. English Wheat was quoted from 60s. to 65s. per quarter, the higher price applying to white produce weighing quite 63 lb. to the bushel, while foreign Wheat, of which there was a full supply, realised the extreme prices of last Monday. Barley was slow of sale, but fine malting produce was scarce, and fully as dear. Malt remained steady. Oats and Maize were purchased to a moderate extent, but the liberal importation of the former rather check the upward tendency. Beans and Peas were quiet on former terms, while as regards flour no change can be reported.—Trade on Wednesday was firm, without much doing, the demand being principally confined to the better descriptions of produce, of which there was a limited supply. The best samples of new English Wheat were worth from 64s. to 65s. per quarter, while fine malting Barley of this year's crop realised close upon 50s. per quarter.—Average prices of corn for the week ending Sept. 8:—Wheat, 60s. 6d.; Barley, 39s.; Oats, 28s. 5d. For the corresponding week last year:—Wheat, 46s. 8d.; Barley, 36s.; Oats, 26s. 11d.

CATTLE.

At Copenhagen Fields on Monday trade in beasts was exceedingly dull, except for the choicest descriptions, which found purchasers at about late rates. Trade is very dull for sheep, at lower rates. A clearance was not effected. We cease quoting lambs, the season being over; the few that come make about the same as small sheep. Choice calves were rather dearer.—Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 6d. to 6s.; calves, 5s. to 6s. 4d.; sheep, 5s. 4d. to 6s., and 6s. 6d. to 7s.; pigs, 4s. to 5s. 4d.—On Thursday the tone of the market was rather quiet. Supplies were about the average. Both beasts and sheep sold steadily at barely Monday's prices. Calves steady, but not active, and pigs sold at about late rates.

HAY.

At the Whitechapel market on Tuesday, with a small supply and a brisk trade, prices were rather better than on Saturday last. Prime old Clover, 100s. to 147s.; inferior, 85s. to 95s.; good new, 100s. to 135s.; prime old meadow hay, 90s. to 124s.; inferior, 70s. to 85s.; good new, 80s. to 115s.; straw, 44s. to 57s. per load.—On Thursday only a short supply of fodder was on sale. There was a brisk trade, and prices ruled very firm. Quotations:—Prime old Clover, 100s. to 147s.; inferior, 85s. to 95s.; good new, 100s. to 135s.; prime old meadow hay, 90s. to 124s.; inferior, 70s. to 85s.; good new, 80s. to 100s.; and straw, 44s. to 57s. per load.—Cumberland Market quotations:—Superior meadow hay, 116s. to 126s.; inferior, 88s. to 105s.; superior Clover, 132s. to 140s.; inferior, 100s. to 110s.; and straw, 55s. to 60s. per load.

POTATOS.

The Borough and Spitalfields reports state that trade continues steady, at about previous rates. The supply is good, but it includes some samples very much blighted. Kent Regents, 90s. to 110s. per ton; Essex ditto, 70s. to 95s.; kidneys, 120s.; Victorias, 80s. to 90s.—The imports into London last week were very trifling, being confined to the receipt of 375 sacks from Rouen, and 10 bags from Amsterdam.

COALS.

On Monday there was no change in the value of best coals, but "seconds" advanced 6d. per ton. The prices current on Wednesday were:—Walls End—Hetton, 20s.; Hetton Lyons, 18s. 3d.; Hawthorns, 18s. 3d.; Original Hartlepool, 20s.; South Hetton, 20s.; East Hartlepool, 19s. 9d.; South Kelloe, 19s.; Belside West Hartley, 17s. 3d.; West Hartley, 17s. 3d.

BOULTON & PAUL,

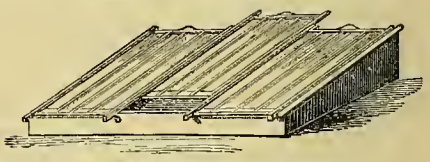
HORTICULTURAL BUILDERS,

NORWICH.

No. 75.—MELON FRAMES and FORCING FRAMES.

The largest Stock in the Kingdom, ready to be despatched on receipt of order.

These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen; 24 in. high at the back, 13 in. high in front; painted three coats of good oil colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in with putty—the best method of glazing known, and adopted by the most eminent Builders and leading Nurserymen (see *The Garden* for January 13, 1877, p. 30). Iron handles to each light, and an iron strengthening bar across. Each light is 6 ft. by 4 ft., and 2 in. thick.

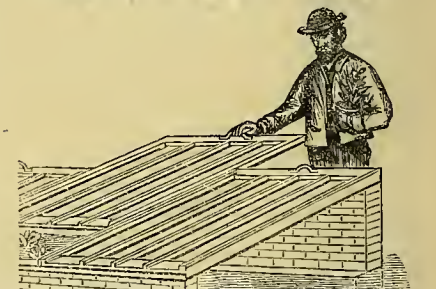


CASH PRICES (Carriage paid).

	Length.	Width.	£ s. d.
1-light frame	4 feet	6 feet	1 17 6
2 ,, ,,	8 feet	6 feet	3 5 0
3 ,, ,,	12 feet	6 feet	4 17 6
4 ,, ,,	16 feet	6 feet	6 7 6
5 ,, ,,	20 feet	6 feet	7 17 6
6 ,, ,,	24 feet	6 feet	9 7 6

Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh, on Orders of 40s. and upwards.

PIT LIGHTS and SILLS for BRICK WALLS on EARTH BANKS.



PIT LIGHTS AND FRAMES.

Complete for fixing on Brickwork, made in two sizes of lights to work 6 feet by 4 feet 2 inches thick, 7 feet 6 inches by 4 feet 2½ inches thick, lights glazed with 21-oz. British sheet glass, painted four times, sills 4½ inches by 3 inches, with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

CASH PRICES.

Carriage paid to any Railway Station in England and Wales also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.

SILLS or FRAMES.

	£ s. d.
With 2 lights, 6 feet by 4 feet, 8 feet long by 6 feet wide	2 16 0
With 3 lights, 6 feet by 4 feet, 12 feet long by 6 feet wide	4 3 0
With 4 lights, 6 feet by 4 feet, 16 feet long by 6 feet wide	5 10 0
With 2 lights, 7 feet 6 inches by 4 feet, 8 feet long by 7 feet 6 inches wide	3 10 0
With 3 lights, 7 feet 6 inches by 4 feet, 12 feet long by 7 feet 6 inches wide	5 2 0
With 4 lights, 7 feet 6 inches by 4 feet, 16 feet long by 7 feet 6 inches wide	6 14 0

Longer lengths at cheaper rates.

PRICES ON APPLICATION.

Breakage seldom occurs. Should any glass be broken, we will send sufficient to replace it, carriage free.

Catalogue of every description of Horticultural Building, post-free, 24 *stamps.*

PLANT PRESERVER LISTS. MELON FRAME LISTS GREENHOUSE LISTS, POST FREE.

☞ *Packing to be charged, and half allowed if returned carriage paid.*

BOULTON & PAUL,
HORTICULTURAL BUILDERS, NORWICH.

THE IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, the ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

THE LAND LOAN AND ENFRANCHISEMENT COMPANY,

(INCORPORATED BY SPECIAL ACT OF PARLIAMENT)

ADVANCES MONEY—

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the ERECTION of FARM BUILDINGS and COTTAGES, and for the DRAINAGE, IRRIGATION, ENCLOSING, CLEARING, and GENERAL IMPROVEMENT of LANDED PROPERTY, in any part of the United Kingdom.

2d.—To the Owners of SETTLED ESTATES in ENGLAND, for the erection or completion of MANSIONS, STABLES, and OUTBUILDINGS, and for the construction or erection of RESERVOIRS, and other Works of a Permanent Nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To Landowners generally, to enable them to subscribe for Shares in Companies, for the CONSTRUCTION of RAILWAYS and NAVIGABLE CANALS, which will beneficially affect their Estates.

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The most Powerful, the most Rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The **'Boiler of the Future.'** I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," July, 1877.

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ENDLESS FLAME-IMPACT BOILERS.

"The first intimation I had of the existence of these boilers, or of their inventor, was a pamphlet I received through the post. Its perusal satisfied me that Mr. Wright had a sounder theoretical knowledge of the subject of heating water than any author I had ever perused. I also liked the construction of his boiler better than any I had previously met with. Mr. Lewin, gardener, Drumpellier, was represented as having fixed one of these boilers, and as bearing testimony to its excellence; and as I knew Mr. Lewin to be not only a good gardener, but a shrewd, clever man. I felt satisfied that the boiler must be of the excellence which my own knowledge of such matters led me to conclude it was from its construction.

"Having occasion to be in the neighbourhood of Glasgow last February, I went to Airdrie and called on Mr. Wright, who took me to the foundry in Glasgow where the boilers are manufactured. There he put one together in a few minutes, and a closer examination of it only strengthened my preference for it over all boilers I had previously seen. I ordered a 4-C boiler, which I have fixed to heat 2600 feet of 4-inch pipe in two early vineries. One, a Muscat-house, 200 feet long and 16 feet wide, is built and planted, the other will not be built till autumn; so that at present the boiler is only heating 1300 feet of pipe, which it does with a very small fire and the damper nearly close in, burning little more than half the coal used in any other boiler I have—and I have some of the most approved, both of my own and other people's designs.

"The result of the trial I have had of Wright's boiler is, that I have ordered four more, and will pull out all my other boilers as opportunity occurs, and replace them by his, with a view both of saving and efficiency.

"No doubt many will ask wherein consists the cause of the efficiency of this boiler over others? To explain this, it may be well to observe that when fresh coal is added to the fire of any other boiler known to the writer, the first process that goes on is the distillation of the gas from the new coal, and its rapid discharge, in advance of the flame, up the chimney and unconsumed. This is not only a great evil in itself, but to effect it the heat is extracted from the fire that was in the furnace when the fresh coal was added, and little or no benefit is got from the fire till the gas is up the chimney and the destruction of the carbon in the coal has begun.

"Many expedients have been adopted to prevent this loss; and no doubt careful stoking can do much in the case of large boilers for generating steam, where there is a long fire, and where the fresh coal is always added to the front of the fire, compelling the gas to pass over the red fire and get ignited; but in the case of boilers used for heating hothouses, this is not practicable, and especially with ever-changing stokers, who, as a rule, think if they throw a given quantity of coal on the fire no further care is needed. Now, in the case of Wright's boilers, distillation of gas takes place as in others, but it has no possible chance of escape unconsumed—for gas and flame are compelled to meet face to face, over and over again, ere they leave the boiler; consequently all the gas is consumed, and the heat from it made to impinge directly on the flat surfaces of the various sections of the boiler on its way upwards. Here lies the great secret of this boiler's power.

"What also adds not a little to increase the power of the boiler is the method adopted for supplying a hot-blast, by passing air from the front of the cast-iron stand on which the boiler is placed through an intricate passage, till it is discharged at the back of the ash-pit under the bars. This leads to the most perfect combustion of the commonest dross-coal. There is also an arrangement by which a hot-blast is thrown into the furnace through the furnace door. Then there is a moderate supply of air entering the furnace all round, where the first section is laid on the heater-jacket of the boiler; this has the same effect on the fire as the well-known Argand burner has on the lamp, giving a clear fierce flame. These boilers are made up of a series of simple castings, jointed by means of india-rubber rings, which allow them to expand and contract; therefore they are sure to be the safest of boilers.

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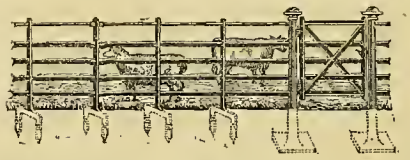

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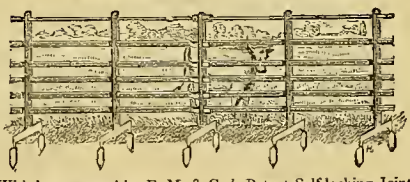

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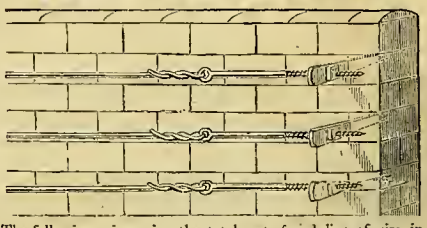

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"As it has been erroneously supposed by some that I am no longer interested in my London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-strop trade was immense; now moustache and beard are the order of the day, and the razor and strop trade is comparatively defunct. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody travels by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor geese supplied our pens, and many a now rich merchant in the City will remember the quality of Mechi's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and, I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press? and how much less time is occupied in sipping port wine, as we used to do fifty years ago, when we could not travel? Steam will make our 4 lb loaves cheaper some day, just as it has converted calico from 2*s.* 6*d.* to 6*d.* or less per yard. Then, again, a letter which used to cost 6*s.* 6*d.* to Cork is now carried for 1*d.* Sir Rowland Hill richly deserves a monument. But to return to business: fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the strop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'Exchanged if not approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and convenience of arrangements in the dressing bag and dressing case department, and in the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our sportsmen remain, and 'sporting knives' form one of our special departments. I feel firmly convinced that there is no fear of the departure of knives and forks, or dinners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their own conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

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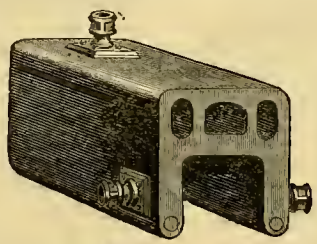

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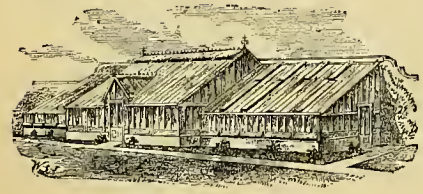

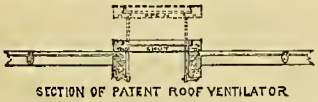

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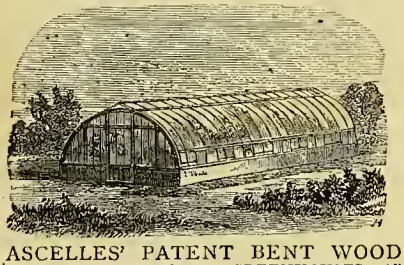

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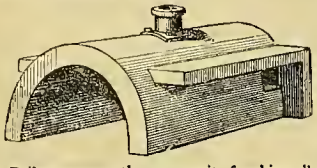

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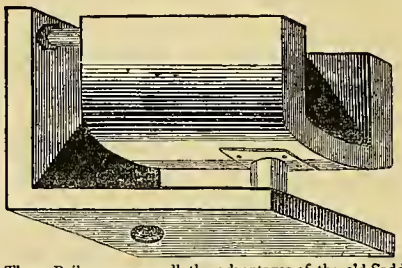

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

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From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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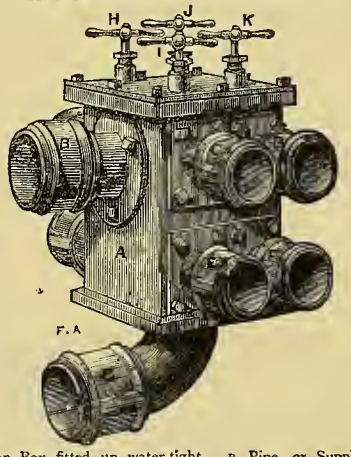
AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

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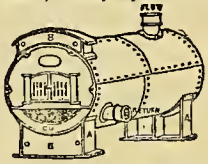

Copy of a Testimonial.

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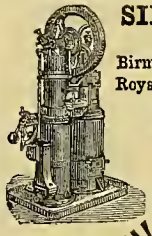

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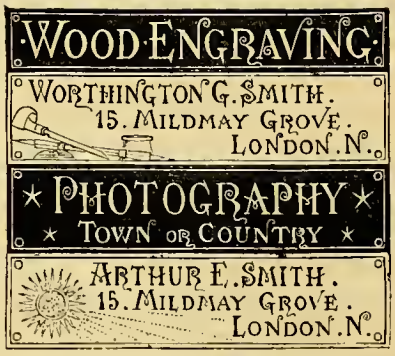

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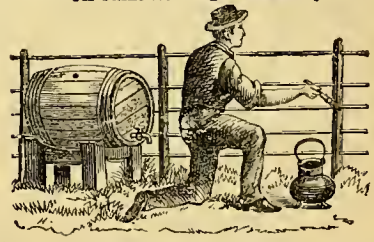

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To Nurserymen.

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Then, again, the improvements in the appliances for Warming Horticultural Structures have kept pace with the improvements in their artistic embellishment. When our business was first established, the old hot-air flue was in vogue, the science of heating by hot water was comparatively unknown, and the system employed most primitive—each house being warmed by a separate boiler, thus causing an immense amount of labour and serious waste of fuel. The whole aspect of affairs, however, was completely altered by the introduction in 1848 of our "Weeks's Patent Upright Tubular Boiler," which is pronounced by eminent engineers to be "the" Boiler for heating by hot water, being superior in rapidity and power to any other, thus enabling whole Horticultural Establishments to be heated from one stokehole by one furnace. Not content with this success, but bent on making a perfect boiler, we have expended large sums in carrying out experiments on an extensive scale, and from time to time have effected various improvements, which render our "Weeks's Patent Upright Tubular Duplex Boiler," with Patent Fuel Economiser, unequalled. Upwards of 3000 of our Boiler are now in operation in various parts of the United Kingdom, heating Horticultural Establishments, Conservatories, Mansions, Public Offices and Institutions, Cathedrals, Churches, Manufactories, Banks, Prisons, Baths, Hospitals, Zoological Gardens, &c.—in some instances as much as 3 miles of piping being warmed from one stokehole. In conclusion, we beg to state that we still adhere to our old principle, that "the best is the cheapest in the end." All buildings erected by us are manufactured by skilled workmen from the best materials. Every Hot-water Apparatus is warranted to answer its intended purpose, and every "Duplex Boiler" fixed by us is guaranteed for ten years. Catalogues free on application to

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SUPPLEMENT TO THE GARDENERS' CHRONICLE.

FRUIT CULTURE.

THE subject of Fruit Growing for the People has not yet received the attention that the importance of fruit as a cheap, wholesome, and pleasant article of food, claims for it. Thousands of small gardens are yet every year almost wholly cropped with Potatos, and, unfortunately, this crop becomes almost every year more precarious. To depend on them alone is, therefore, as impolitic as it is likely to prove improvident. In fact, since the first outbreak of disease, the *Gardeners' Chronicle* has ever been the earnest and persistent advocate of the cultivation of a larger variety of vegetables by cottagers, and, indeed, by all classes, in their gardens; and the advice thus wisely given has been largely taken and acted upon. One of the most marked and striking differences between the cottage gardens of to-day and those of a quarter of a century ago, consists in the greater variety and superior quality of the vegetables grown in them—a step in the right direction. Variety of food is not only good for sharpening appetite, which seldom fails the humble cottager, but it is necessary to health and promotion of simple pleasures.

The next great step forward in the culture of cottage gardens and small gardens generally will consist in the growth and consumption of more and better fruit. In most gardens may be found few or many trees or bushes, good, bad or indifferent, mostly the two last—and these have been allowed to remain, rather to the discouragement of fruit cultivation. The two rules as to the letting and holding of cottage property—conservative tastes in regard to trees, and even not seldom the love of picturesque forms—have combined their influences to preserve trees that bore little and showed much, and thus became and remain the bane of many cottage gardens. The planting or allowing to remain in small gardens inferior or worthless trees or bushes is one of the greatest losses to the cottager, and one which has created a strong prejudice against fruit culture in not a few of the rural population. This can only be broken down and removed by the planting of the finer varieties of fruits and trees of such sizes and characters as will yield the most fruit with the least encroachment upon and injury to the crops of vegetables. Good trees occupy less space, and need no further culture, skill, and care than bad ones, while the difference in their produce for sale or food is wide as the poles asunder. The smaller the garden the greater the necessity for the most rigorous selection. Those who have room for a dozen, a score, fifty, or a hundred trees, can afford to grow inferior sorts; those who have room for only six or a dozen trees, cannot afford any but the very best. Much may also be gained by adapting the character of the trees to the size of the garden. In most of the older cottage gardens it matters not whether the trees are Apples, Pears, Plums, Cherries—all are of the same character, either tall standards or dwarf orchard trees. In the larger cottage gardens these trees answer well, and allow sufficient head-room for the growth of vegetables, or Gooseberries, Currants, and Raspberries, underneath them. And this double cropping of Apples or Pears above and bush fruit below, proves as practicable as it is profitable. Two, or it may be even three crops are gathered off the same ground, and the bush fruit are hardly injured by the shade of the trees over them, unless, indeed, the trees are planted too closely together. But these large trees are the bane of small cottage gardens, rendering the cultivation of superior vegetables impossible, and producing an amount of shade that is often fraught with danger to the health and comfort of the dwellers in the cottage. Nothing is more wholesome and sanitary than a well cultivated, fully furnished garden, fully exposed to sun and air; few things are more unwholesome than damp or dank ground near to dwelling-houses, the sun and air shut out from it by the shade of fruit or other trees; there-

Fig. 1.—St. Aubert Plum.

fore on sanitary grounds, as well as with a view to profit, small pyramidal or bush fruit trees should be selected for the furnishing of small cottage gardens.

Duties of Landlords.

The selection and purchase of fruit trees and bushes, and the planting of them, should be done by the proprietors, under the direction of their gardeners; and failing the services of the latter, provincial horticultural societies could hardly render a higher service to society than by the advising of the owners of cottages as to the best character and varieties of fruit trees and bushes to plant in the garden.

As the law declares every permanent tree or bush found in the garden, no matter by whom planted, to be the absolute property of the owner of the soil, it follows that the landlord ought to provide and plant them. This is the more necessary, as most cottagers are only yearly tenants, and can hardly be expected to incur much expense in the purchasing of trees, and making the needful preparations for their well-doing for a lifetime or more perhaps. In not a few cottagers' gardens, for instance, the soil is of the worst possible description for the growth of fruit. It is generally an easy matter for a landlord, with horses and carts and capital at command, to substitute good soil for bad, or improve indifferent soil into good by some addition or admixture of earth or manure. But such matters are quite beyond the means of cottage tenants, and would, in fact, be the height of imprudence in the case of those who hold their gardens on the short and slender tenure of a month's notice to quit. Drainage, again, is another operation that ought to be performed by landlords. It is generally beyond the power of cottage tenants to deal effectually with an excess of water. Stagnant water at the roots of fruit trees and bushes is fatal to their successful cultivation. And there are few things more unkind or more unjust than to condemn a cottager to cultivate a garden of bad wet soil when it might easily have been laid dry and made good in the first instance at a trifling cost to the owner. It would be infinitely better to charge the cottager the interest on the capital expended in additional rent than condemn him to cast the time, labour, and skill of years into a veritable Slough of Despond compounded of inferior sorts of fruits, worthless and wet soil, that can yield little return but sour disappointment. It is alike the duty and interest of the owners of cottage gardens to remove all preventible hindrances to the extension and improvement of fruit culture by cottagers. It would be far better, more benevolent also, to give him a fair start in fruit culture, with good trees in good soil on dry bottoms, than to bestow on him a gift of flannel, coal, or a dole of meat at Christmas time.

There is one more service the owner should do for the occupiers of cottages, that is, to see that their houses and gardens are not overshadowed and underrooted into comparative worthlessness by forest or other trees. The first garden the writer had anything to do with had one-third of its area reduced to sheer barrenness by the shade and exhaustion of a large round-headed Beech tree; and it is no uncommon thing to meet with cottage gardens half or wholly ruined by hedgerow or other timber. Such things happen for want of thought, and it is hoped that the mention of them here will be sufficient to remove them.

With a free soil, exposure to sun and air, and a dry bottom, most cottage gardens will grow good fruit trees and bushes. A good stiffish loam is the best soil for both, and little or much of this might often be added, at little cost or inconvenience; but good black garden earth, such as is produced by the long cropping and manuring of so many cottage gardens, is capital for bush fruits, all of which thrive best on fat land heavily manured with solid dung, and deluged with house slops or sewage in dry weather in summer.

The Time to Plant.

The whole month of November is the best time for planting fruit trees. Plant earlier—the fruit-buds for next year have hardly had time enough to be sufficiently developed; plant later—part of the most active season for the healing and resting of injured roots and the forming of new ones has already passed away. Strawberries, a very profitable crop for cottagers in many districts, should be planted in July or August, or as soon as well-rooted runners can be procured.

How to Plant.

First of all see that the holes are large enough, or, say, 6 inches wider than the sweep of the roots when laid out from the hole to the outside of the hole, like the spokes of a cart wheel from the nave to the felloes. The vital force or growing power of the roots lies in their extremities, and it is, therefore, of the utmost moment that they should find fresh soil to strike into at once. The depth of the holes may range from 4 inches to a foot. The larger the trees, and the more numerous the roots, the deeper, as a rule, the holes should be made. In the rebounding from deep planting not a few have run to the opposite extreme of placing the roots too close to the surface. Mulching, or the covering of the roots over with a layer of long litter or rotten dung, is but a clumsy substitute for the natural covering of soil, which should on no account be withheld from the roots. The holes should be made perfectly horizontal—neither concave nor convex. By raising the holes in the middle the feeding roots are apt to be sent too deep. By keeping the centre hollow the bole of the tree is placed in a hole, and the feeding roots need to run up-hill till they crop out on to the surface. The holes should be perfectly level, and made smooth and firm, so as to cause the roots to start fair for their food. The roots should also be evenly distributed, not huddled together in masses, but each placed so as to have or find a separate feeding place wholly to itself. Each bruised or wounded root should be carefully dressed to a smooth surface, or removed by a clean slanting cut. Either favours rapid and sound healing, or the emission of fresh roots. No tramping or mechanical pressure should be applied to the roots. Place the soil over them, the finest parts next to the roots; water it home if the earth or the weather are at all dry, and the weight of the wet earth and trees, the great consolidator, will do the rest with perfect safety and sufficient despatch, which is more than can be affirmed of any other mode of compressing the soil over or among the roots. Finally, in regard to planting, fix the tree or bush immovably to some support. One of the first functions of the roots of trees is to secure immobility of root and top; in other words, to fix them securely in one place. Derange that function by transplantation, and it is needful to provide a substitute in the form of ties and stakes for a time, until the roots lay fresh hold of the soil. A loose surface over the roots is also important in keeping out the cold of winter, conserving terrestrial heat, and resisting drought.

Distance Apart and Character of Trees to Plant.

It is impossible to separate these two, as the proper distance, while partly determined by soil and climate, chiefly resolves itself into a matter of character of trees planted. For example, 20 or 30 feet asunder may not be too much for standard fruit trees, while 1 foot or 18 inches is hardly too close for cordons. The introduction of these smaller forms of fruit trees into cottage gardens will be one of the greatest steps in advance that have yet been taken in fruit culture during the century. One may travel for weeks throughout the rural districts without meeting with a single form of fruit tree different from the dwarf and tall orchard tree; even pyramidal and bush trees are almost wholly unknown in farm or other gardens. By using smaller trees far more and better fruit might often be gathered from a smaller area. The concentration of force in fruit growing reaches its limit in upright or oblique cordons on walls or fences planted a foot apart. Small pyramidal or bush fruit trees may be planted from 3 to 6 feet apart; Apples and Plums in alternate rows, 5 feet apart, have been found a most profitable crop, the one tree sheltering the other. From 4 to 6 feet apart is perhaps the most profitable distances for pyramidal or bush fruit trees. These distances apply to Apples, Pears, Cherries, Plums—horizontal trees for the covering of outbuildings, fences, walls, espalier-rails or stakes in gardens, from 8 to 12 feet apart; Peaches, Nectarines, and Apricots, as fan-shaped, from 12 to 15, or 18 feet apart—standard and dwarf trees from 12 to 20 feet apart; Gooseberries and Currants in 4 feet rows and 3 feet from plant to plant; Raspberries in 4 or 5 feet rows, and 2 feet between the stools. There is often considerable loss of ground between the stools of Raspberries, and provided the rows are sufficiently far apart it will be found far more profitable to have the plants well-nigh meeting in the lines. Grape Vines in cottage gardens are generally grown of very large size, sufficient to cover the side or end of a house. Much time may, however, be saved by planting Vines closer—at distances, say, of 2 feet or a yard, and only allowing each plant to cover a limited space. The same remark applies to Figs, which might often be grown to great advantage on the warm gable ends of cottages, and would prove a most profitable crop in many localities. The one-plant system, however, will probably prove the most profitable in the end, with Vines and Figs alike, only cottagers cannot always afford to wait, and, in fact, one man is very apt to plant and another to reap where fruit trees are planted too far asunder in cottage gardens.

Stocks.

Without at all entering into the battle of the stocks here, it may be well to remark that they are closely connected with the question of the profitableness of fruit growing. Large or orchard Apples should be grafted on the Crab, all other sorts and forms of trees on the English Paradise stock. Pears for large trees may be worked on the wild or seedling Pear; for pyramids, bushes, cordons, on the Quince; dwarf and bush Cherries on the Mahaleb stock. The Myrobalans forms the best stock for Plums, and the smaller trees may be kept at once small and fruitful by being severely root-pruned, or taken up and replanted every other year in November. In fact, all small fruit trees may be kept small and fertile by root-pruning, as we shall see. But if on rich soil and in warm forcing localities the trees grow so fast as to become overcrowded every other tree and row may be removed to fresh quarters, thus affording those left double the space to grow in, while the trees removed will form a new fruit garden at once; and, if this operation of thinning is performed early in November, with ordinary skill the thinnings will begin bearing at once and never look behind them.

Pruning.

Newly planted trees should not be pruned till February. Established trees may be pruned any time in winter after the fall of the leaf till the active rise of the sap. But great changes have recently occurred as to the time, manner, and extent of pruning. Only a few years ago all newly planted trees were severely pruned as a matter of course. Heading back succeeded to planting as surely as night to day. Now cultivators prune or not, as the character of the trees and the objects of the grower suggest or require. Without going so far as to assert that all pruning represents a waste of time and force, and is the price paid for form and fertility by thoughtlessness, ignorance, or incompetence, it is now generally admitted that the less pruning the better alike for the tree and the cultivator. Still, while the innate tendency of trees or bushes is to climb as high as possible with but scant care for symmetry of form or fulness of furnishing of the bottoms of trees and plants, it will be needful in general to prune and cut away portions of the tops of new planted trees. This forces the lower buds to break, and these form the framework, as it were, of the future tree. With the base line of trees and bushes well and truly laid, Nature will be sure to take care of the full furnishing of the tops; hence the propriety of often cutting back newly planted young trees to within a few buds of their root-stocks. Then five, seven, or more shoots of about equal strength may then be produced, and trained, so as to form the future tree. This sort of pruning may be as philosophical as it is practically useful. In all plantings the roots suffer injury, diminution, and arrest of growth—of shorter or longer duration. They are more or less crippled, consequently are hardly able to sustain the entire top in health and vigour. By cutting back the top the balance between the two parts of the tree is restored, and healthful growth results as a matter of course; but, if the top is too severely cut back, the roots have not enough work to do, and the result is an excessive growth of wood. As fruitfulness is the primary object of planting fruit trees and bushes, one of the surest means of inducing and perpetuating it is to leave most of the top intact, so as to somewhat overtax the roots, for such a condition is the most favourable for fertility; therefore prune as little as possible, and only so far as is needful to insure good form. Top-pruning for fertility is a mistake; fruitfulness is reached far sooner and with more certainty by other methods, notably by shallow planting, root-pruning, and having all the tops of trees and bushes to grow fruit for puddings, pies, preserves,

instead of pruning them off into oven faggots, merely to bake or make such good things.

Winter-prune fruit trees for form only. It is needful to force growth at the best places, to reduce its amount at times, so as to prevent overcrowding, and to remove weak, worthless and diseased shoots. Beyond these objects, little winter pruning is necessary; and in regard to orchard trees, little or none are grown in cottage gardens.

Summer Pruning.

Summer pruning is even less practised, but it is far more important. Many trees, such as Apples and Pears, often make enormous growths of young wood every year. Currants grow a crop almost as tall as Willows, and fit for basket-making. These smother the fruit and each other, and render the buds at their base thin, small and almost worthless for fruit bearing. At the winter pruning the majority of these shoots are started off, and there remains only the worst and weakest parts of them for fruiting the next season. Prune off the breastwood in July or August—the autumnal suns, rains, and dews, and the vital force of the plant will plump up the narrow buds before the end of the growing season. The light, heat, and moisture shut out by the crop of gross shoots before, will after such summer pruning play freely around and among the clusters of fruit-spurs most found around their base, and fill them to the brim with fruit in embryo. In a word, summer pruning, properly understood and practised, is simply placing fertile power where it will be found next year in a plentiful crop of luscious fruit (weather permitting), instead of permitting it to run to waste in the extremities of shoots, to be slashed off at the winter pruning.

Root Pruning.

Supposing, however, that from faulty planting, excessive richness of soil, bad culture, or other causes, fruit trees and bushes yet decline their proper work, that of fruit-bearing, and take to wood-making instead, the cultivator has still another power at command that will compel fertility: this is root-pruning. It is needful, however, to caution cottage gardeners against practising it too often or annually. It is an exceptional operation performed for a specific purpose—the checking of wood-making and the forcing of fertility, and must on no account be confounded with the winter or summer pruning of the top. More or less of these may be needful every year, root-pruning may never be needed more than once in the life of an individual plant, perhaps not even once. The tendency of most cultivators—the more ignorant the stronger the tendency—is to do too much for or to the trees. An Apple, Pear, Plum, Cherry, or other tree is doing well, then let it alone, and by no means touch its roots. The best time to root-prune fruit trees is from the middle of October to the end of November. The mode of doing it is simple: uncover all the roots to a distance of from 5 to 6 feet from the bole of the tree, according to its size; cut all the vertical roots formed, as also a few of the strongest of the others, at a distance of a yard or so from the bole of the tree, and replace the soil.

Training.

Trees should be started on the right tack at first, for "as the twig's bent the tree's inclined." If this is done but little after-training will be needful. The most common form for Apples in orchards is a sort of open centre or vase form. This admits the sun and air to all parts of the tree. The same form is well suited for Cherries and Plums; Pears are often allowed to grow up into a sort of rough pyramidal form with one leading and many subordinate shoots. The horizontal form is the most common for walls. The trees being cut back to two, four, or six buds, the branches produced from these are carried off at right angles from the bole and centre at distances from each other mathematically of from 9 inches to a foot. The fan system is also very generally adopted for walls and fences. In this form the two bottom branches are trained the same as with horizontal training, and the other branches proceed from the bole at equal distances, filling the entire space with fruit-bearing shoots disposed in the form of a fan, with generally more or less depression in the centre. A modification of this form may be strongly recommended for Figs, Cherries, Plums, and Apricots. Instead of pruning back the young and breastwood every year, the greater part of it is allowed to grow out from the walls, merely thinning out the weakest and that of least use, to prevent overcrowding. After a few years the tree presents the appearance of a bush or pyramidal tree split in halves, and backed against the wall or house, the whole of the tree from base to summit being covered with fruit. One such roughly trained tree will often yield more fruit than half the neat and trim trees occupying six times the wall space. A modification of this free training also suits cordon stone fruits remarkably well. Instead of pinching and pruning in the young wood or spurs so closely, allow them more freedom, and Apricots, Plums, and even Peaches, will bear enormous quantities of fruit. Trees intended to be trained in this way should be planted further apart—from 30 inches to 3 feet, or even more. Gooseberries and Currants fruit profusely backed up against outbuildings or walls

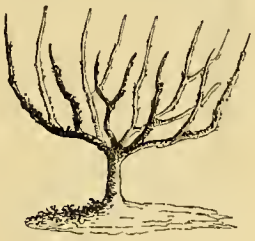

Fig. 2.—Gooseberry pruning.

in this way, and form capital screens to piggeries, closets, and other outbuildings—at once ornamental, profitable, and sanitary. This leads us by a natural transition to the

Place for Planting Fruit in Cottage Gardens.

Briefly, as close to the houses as may be, and this for the double reason of safety and convenience. A great amount of fruit is often lost by birds and other causes, by the fruit being planted at the extremities of the garden. Each cottage, however small its garden, should have it laid out in a threefold zone, as it were—flowers and sweet and fragrant herbs and plants immediately around the house, next the fruit, and then the vegetables. Few birds care to come too close to a cottage door or window, even for a ripe Cherry or a bunch of Currants, while children may be trained to protect and not steal the fruit. Then, as many of the cottages and outbuildings as can be spared from Honeysuckles, Jasmines, and Roses should be devoted

Fig. 3.—Raspberry training.

to fruit culture. A Grape Vine, a golden Apricot, a red-cheeked Peach, a black or yellow Plum, Cherries, Pears, Apples, are highly ornamental as well as useful. Plums may be led over low roofs, and so can Figs, Pears, or other fruits, to great profit at times. Ground cordons make beautiful edgings to walks, or even flower beds or borders, or partitions between neighbours' gardens. There is an enormous loss of ground by dividing lines of hedges, though posts or stakes, or a few strained wires for espalier Apple or Pear trees, would form an equally good fence, while the fruit would be a clear gain and more, for the fruit trees would exhaust the soil on either side far less than the useless hedges. There are few cottage gardens surrounded by walls; where these exist they should also be clothed with fruit trees and bushes. When all waste or unoccupied spaces were filled, the rows of dwarf trees might be planted on either side of walks or groups of them, or fruit gardens formed next to the flower beds, forming a connecting link between the flowers and the vegetables. By grouping fruit trees and bushes in masses they would be far more easily protected from birds, rodents, and bipeds—points of much practical importance to cottagers: the trees would also receive more care and attention. Now in too many cottage gardens fruit trees and bushes are too often left to shift for themselves. Mass them under the eye, grow more and better fruit, and the very effort would improve while extending their cultivation.

What to Grow.

Apples for puddings, Pears for pies, stewing and eating; Plums and Cherries for tarts, dessert, and preserving; Gooseberries, Currants, Raspberries, Strawberries, Filberts, for eating and preserving; and in warm localities and on suitable soils, Grapes, Apricots, Peaches, Nectarines, and indeed all fruits, for sale. Cottagers who have gardens of considerable size might often pay their rent and buy their coals with their fruit. A good Apricot tree on the gable end of a house helped through fickle springs by the heat of the chimney, seldom misses a crop, and may be relied on to pay the rent of the cottage. And so in a degree with other trees. Cottagers have been known to pay their rent with a row or two of black Currants. But the money made by the sale of fruit out of cottage gardens is a most inadequate test of their value. No one can doubt that fruit is sanitary as well as nutritious. A plentiful supply of good fruit for the children probably keeps disease and the doctor out of thousands of cottages, helps fathers to win bread by day, and mothers to distribute it with industry and prudence to the satisfying of their households.

The social and moral influence of fruit growing and eating has yet to be weighed and written, and will be found to be wholly on the side of virtue and happiness.

OUR ILLUSTRATIONS.

The group of Plums, so ably pourtrayed in colours by Mr. Fitch, and presented to our readers with this number, includes the varieties known as Coe's Golden Drop, Diamond, and Belle de Septembre. Of the first named what need be said to enhance its value? Is it not grown by well-nigh every gardener, amateur and professional? And has it not the character of being one of the most useful of September fruits either for the dessert or preserving? It was raised by Mr. Jervaise Coe, a market gardener at Bury St. Edmunds, about the end of the last century, and is now very widely cultivated. It is large in size, oval in shape, and pale yellow, dotted with red in colour. The flesh, which adheres to the stone very firmly, is of a pale reddish yellow colour, rich and delicious in flavour. The Diamond Plum is not so well-known as the first named, but it is none the less valuable for culinary purposes, ripening in the middle of September, and making an excellent preserve. It was raised at Brenchley, in Kent, some years ago, and is of large size, oval in form, with a well-marked suture, deepest near the stalk. Its colour is dark purple, nearly black, and the fruits are usually covered with a beautiful rich light blue bloom. The flesh, which also clings to the stone, is yellow in colour, with a sharp acid flavour. Belle de Septembre—also sometimes well called the Autumn Beauty—is perhaps the handsomest and most valuable of late varieties. It is the late Plum *par excellence*, coming into use at the end of September or beginning of October, when the glut of summer sorts is over, and realising good prices at market, for which purpose, on account of its fine size and taking appearance, it is exceedingly valuable. It is a roundish oval Plum, of a pale claret colour, which becomes of a deeper shade with age. It is a clingstone, has a very firm yellowish white flesh, juicy and aromatic, and in all respects is an admirable culinary variety, besides being a most prodigious bearer.

The St. Aubert Plum, so effectively illustrated on our front page, fig. 1, is but little, if at all, known in this country. It is of Belgian origin, and much resembles Coe's Golden Drop, but is said to ripen nearly a month earlier, and to be superior to it both in quality and productiveness. However that may be, it is a very handsome, and no doubt a good Plum. The illustration serves the double purpose of calling attention to the Plum itself, and of showing how effective a dish of fruit may be made to look with the aid of such simple materials as a spray or two of Ivy.

Of the Apples on p. 6, fig. 14, the first, Cox's Orange

Pippin, is certainly the very best of all in its season. From October to February Golden Noble (fig. 15) is a large, handsome, yellow, culinary Apple, in use from September to the end of the year. Perhaps of all culinary Apples the best and most useful is the Stirling Castle (p. 7, fig. 18), a very free bearer, and well adapted for bush culture on the Paradise stock. The fruits are of medium size, pale green in colour, and the flesh white and juicy. It comes into use in August. Reinette de Caux (fig. 19) is a French Apple, but little known in this country—but it is well worth growing on account of its valuable late-keeping qualities. It much resembles the old Dutch Mignonne, and comes into use late in spring, when good Apples are very scarce.

The Pear Van Mons' Léon le Clerc (p. 6, fig. 16) is a remarkably large, handsome, and delicious variety, ripe in November. Doyenné du Comice (fig. 17) is the finest of all the October Pears, being large in size, remarkably rich in flavour, and the tree a good bearer. Durandeau (p. 7, fig. 20) is a very fine variety, of Belgian origin—being large in size, of handsome form, and very delicious flavour, comes into use about the

Fig. 4.—Plum.

beginning of November. Beurré Hardy (fig. 21) is one of the best November Pears, though but little known. It is a beautiful and handsome fruit—of delicious flavour, but is not a great bearer.

The four varieties of nuts illustrated on p. 9 (fig. 22) are the Red-skinned Filbert, a free bearing and excellent flavoured variety, which produces its elliptic acute shaped nuts in clusters, and has a husk longer than the nut; Princess Royal, a comparatively new seedling, raised by the late Mr. R. Webb, in which the husk is as long as the nut, and the latter of fine size; the well-known Cosford, which fruits in pairs; and Empress Engénie, another of Mr. Webb's fine seedlings, in which the husk is shorter than the nuts, which are borne in clusters.

PRUNING.

To be a good pruner requires instruction in the first instance from a practical man, and in the next place considerable experience, with sense enough to profit by it. The questions a would-be pruner should ask himself before using the knife are—Why am I going to do this violence to Nature? Will any good result? Will the advantages outweigh the disadvantages? Having settled these points, the next question will be, How am I to do it? The answer to

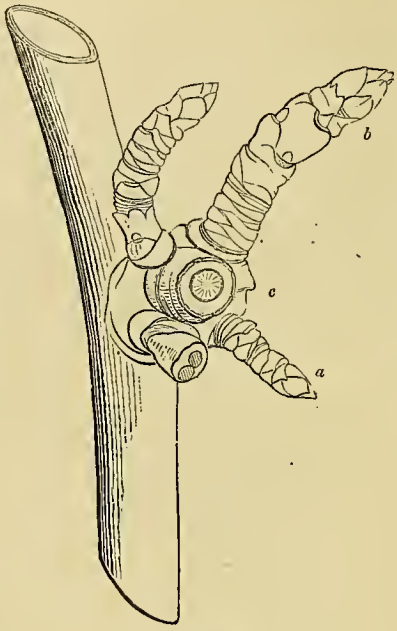

Fig. 5.—Pear.

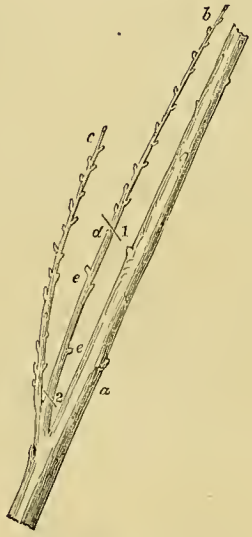

Fig. 6.—Peach.

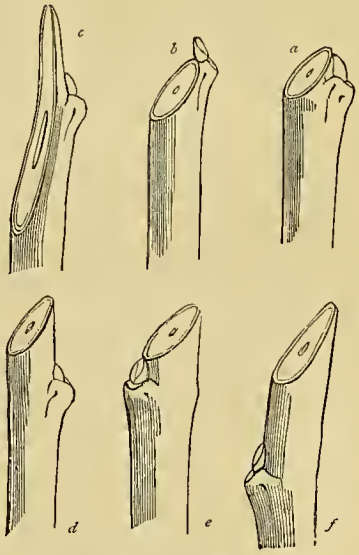

Fig. 7.—Good and bad pruning.

this will again depend on circumstances—on the object to be attained, and on the kind of tree to be operated on, and its particular mode of growth. No doubt if all these questions were duly asked, and satisfactorily answered, there would be far less pruning carried out than there now is. Still some amount of pruning is often absolutely required—how much must be determined by the exigencies of each particular case, and the judgment of the operator. Pruning, not mutilation, is in all cases the object to be attained—conservative surgery, not reckless hacking. On the other hand, in considering the matter of pruning it, must be remembered that we are not so much consulting the welfare of the tree as our own advantage. No doubt the tree would prefer to be let alone, and to be allowed to grow in its own way, but we want it to occupy a certain position, to attain a certain height, to assume a certain form, and in the case of a fruit-tree to produce a fair share of fruit larger probably in proportion to the wood and leaves than the tree left to itself would form. Moreover we look for superior quality of fruit. To effect all these good things we

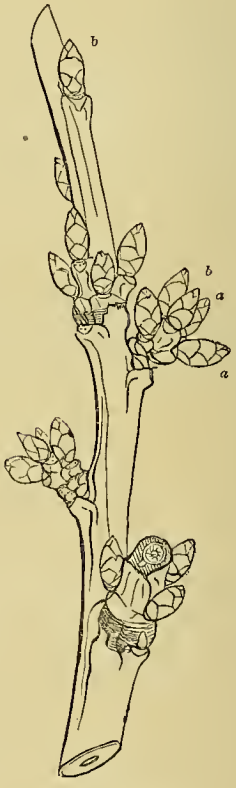

Fig. 8.—Cherry.

require a shapeable tree, with a fair proportion of fruit-bearing wood as contradistinguished from mere timber, therefore a tree with a proper balance between leaf and flower-shoots, and one wherein the flow of nourishment may take its even way in as regular proportion as possible to all parts of the tree alike. We don't want one branch to be gorged like a traditional alderman, while another is starved like a dock-labourer out of work. Moreover we want God's most precious gifts of light and air to penetrate all parts of the tree equally, or as nearly so as may be. These in very general terms are the principal objects of pruning. How to carry them out is, as we have said, an affair to be learnt from actual experience. No book, no newspaper article can teach this half so efficiently as a little practical experience under the guidance of an expert. In France, in Belgium, in Germany, such experts have classes for this purpose; the class gathers round the Professor, who prunes the tree and explains the reason why. As Jacques Bon Homme or M. le Curé cannot always conveniently pay a visit to Paris or Lyons, or wherever the Professor's headquarters may be, the Professor goes to them, in the small country towns. He tells his audience what to plant, where to plant, how to plant, how to manage, and how to prune. Practical matter-of-fact Englishmen don't do this. Some

Fig. 9.—Gooseberry.

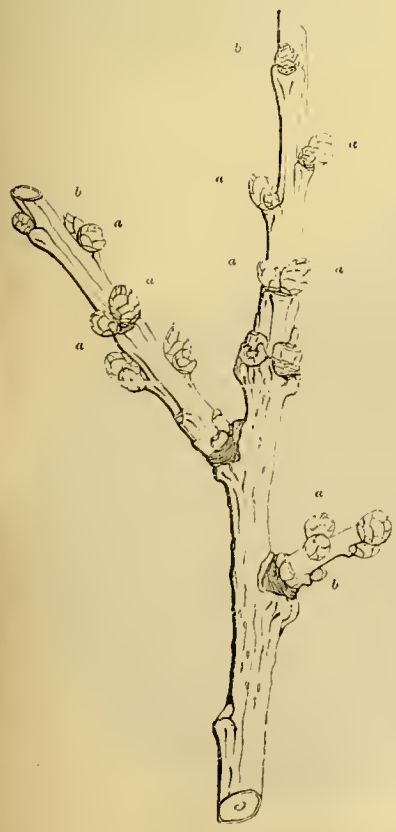

Fig. 10.—Apricot.

day, perhaps, when horticultural societies rise to a full sense of their duties, they will see that work of the character we have mentioned is, to say the least, as important as growing endless Pelargoniums and certificating illimitable bedding plants.

The accompanying illustrations will suffice to give a general idea of the natural growth of particular fruit trees and the form and arrangement of the buds. In the space at our disposal it is absolutely impossible to give full directions for pruning each tree, but a good deal may be learnt from a mere inspection of the figures, and for the rest let the amateur get some good knife-man to give him some lessons.

Good and Bad Pruning.—In pruning a clean cut

Fig. 11.—Apple.

should invariably be made sloping downwards, at an angle of about 45° at the back of the bud, as at fig. 7, *a*, so that the wounded surface may speedily be healed over. At *b* the cut is too low down, as the bud will probably die; *c* is a cut which carries its own condemation with it; *d*, *e*, *f*, are other modes of effecting the cut. In *e* and *f* it will be observed that the cut slopes up from the bud, and on the same side of the stem. As the portion between the cut surface and the bud will most probably die, it will be seen that all these methods are inferior to that shown at *a*.

Plum.—Fig. 4 shows portions of shoots, of one, two, and three years of age respectively; *a*, *a* are flower-buds, readily known by their rounded shape; *b* are wood-buds, which are of a more pointed form. The object of pruning in the case of the Plum is

Fig. 12.—Currant.

simply to equalise the size of the branches, preserve the form of the tree, and remove superfluous growths and "gross shoots," *i.e.*, shoots which would form too much wood.

Cherry (fig. 8).—The buds are very similar to those of the Plum, and, except in the Morellos, are borne at the base of last year's shoot. The objects of pruning are the same as in the case of the Plum.

Peaches and Nectarines (fig. 6) bear on the shoots of the previous year, hence in the winter pruning the

Fig. 13.—Raspberry.

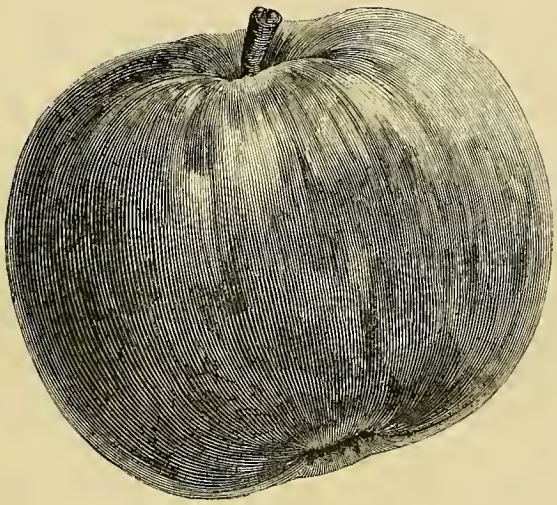

Fig 14.—Cox's orange pippin.

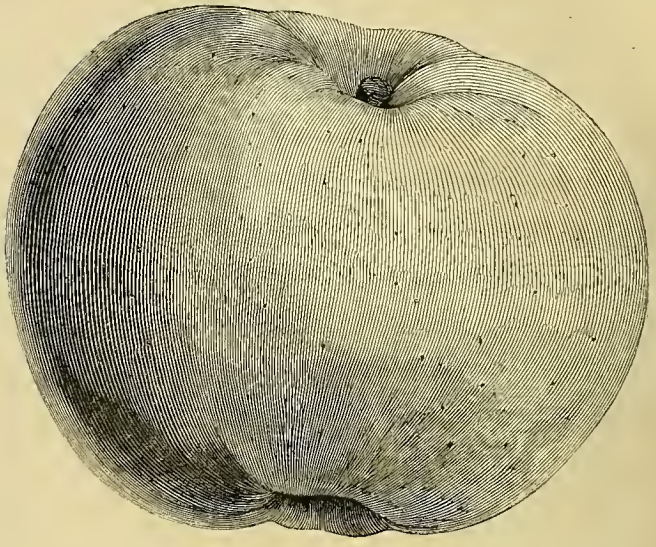

Fig 15.—Golden noble.

shoots formed in the preceding summer require to be cut back to the point where the wood is well ripened, as it is upon this ripened wood of the one-year-old shoots that the flower-buds are formed.

Pears.—The fruits are borne on thick stout spurs. The object of pruning and stopping is to secure the formation of the spurs by arresting undue luxuriance of growth. In fig. 5 *a*, *a* are wood-buds, *b* fruit-spurs, *c* the place whence the fruits of the preceding season have fallen.

Gooseberries.—The fruit-buds are formed principally, but not entirely, on two-year old wood (fig. 9). The object of pruning is to shorten the shoots, to cut out the central branches so as to keep the centre open to prevent entangling of the branches (fig. 2), and to encourage those buds which are placed on the outer side of the branches.

Apricots.—In fig. 10 *a*, *a* are the flower-buds formed on the young wood and on short spurs. Little is required beyond shortening the shoots and regulating the form of the tree and the size of the shoots.

Currants.—A clean stem is here the object, and a shortening of the lateral shoots. In fig. 12 *a* are wood, *b* fruit buds.

Raspberry.—The canes of the Raspberry are biennial—that is, they are produced one year, flower and fruit the next, and then die down, others having been formed meanwhile to replace those that die. All that is required is to cut away all dead wood and shorten and thin out the growing canes. A convenient way of training them is shown in fig. 3.

Apples bear on two-year-old spurs (fig. 11). Little or no pruning is required beyond regulating the form of the tree, the number and arrangement of the branches. Branches that cross one another should be cut away as well as those that are cankered.

THE APPLE.

The Apple has for many centuries been the fruit most intimately connected with the daily household life of all the northern European nations, it is the one fruit altogether and entirely indispensable, no table can be properly served without its appearance, if not daily at least on so many days that its absence is almost as much deplored as bread, if not by the elders at least by the younger members of the community; and what boy, where Apple orchards are numerous, has not his pockets full? I have heard of some boys in Worcestershire who acknowledged to having consumed twenty full-sized Codlins per diem, besides Apple puddings, Apple turnovers, Apple fritters, not to speak of such evanescent trifles as Apple jellies. And what a treat round the hearth is an Apple roasting on a piece of worsted, hissing and bursting with the imprisoned essences, to pass into the expectant mouth of the anxious watcher—a humble pleasure, but at least as great as that of the *blasé* wine-bibber, waiting the out-pouring of the best brand of Clicquot or Lafitte. And what fruit is more classical? Atalanta could not resist the golden Apples; Paris, bent on his own destruction, but deceived by the glamour of eyes ablaze

Fig 16.—Van mons leon le clerc.

Fig 17.—Doyenné du comice.

Fig. 18.—STIRLING CASTLE.

Fig 19.—REINETTE DE CAUX.

with love, handed an Apple to the object of his choice. We know that Adam could not resist the temptation of eating one, and from the time of Adam to the present no fruit has given so much pleasure both to the eye and palate. "From the egg to the Apple," a common Roman saying, proves that no Roman dinner was complete without it. In England, in remote times, it was surrounded with mysterious rites. The Druids, ancient and respectable gentlemen as they were, full of reverence for trees, were as respectful to the Apple as to the Oak; and it is not so long since that in the West of England the rude farmers and ruder peasants testified their appreciation of its good qualities by composing songs in its honour:—

"Here's to thee, old Apple tree!
Whence thou may'st bud and whence thou may'st blow,
And whence thou may'st bear Apples enow.
Hats full, caps full,
Bushels and sacks full.
Huzza!"

is a verse of old Devonshire doggrel, to ensure the good offices of the guardian spirit of the orchards, descended probably from the time when the worship of Thor and Odin kept alive the spirit of a religion that was probably once pure but corrupted by the artifices of those who saw their profit in fastening the bonds of superstition on the ignorant and uneducated. Our Norman ancestors were either the introducers or adopters on a large scale of the Apple, as the province of Normandy to this day is the most important seat of its culture in France, and the Norman farmers on market days delight in a carouse of Cider brandy, cheap and heady, but of which they will consume quantities enough to make Sir Wilfrid Lawson more garrulous than usual and put his pet theories in his pocket for all time—keen hands at a bargain, but after business equally keen at drinking, beginning a sitting in the morning at 10 A.M., and concluding when it is time to return, *i.e.*, when darkness comes. Cannot Sir Wilfrid go to Caën for a season and endeavour to persuade the "gros Norman," to adopt his principles? Here is a chance of a "Crusade," such as seldom happens now-a-days; Crusader-like, however, Sir Wilfrid must be clad in triple brass ere he ventures to do battle with the Norman farmer or his spouse, with "No drinking of cider brandy" as a battle flag. Hearty men and good farmers are these cider growers, and their province is a paradise for the Apple and the Pear. One of the most delicious Pears hails from Avranches, and is well named the Louise Bonne d'Avranches, a title pirated by the Jerseymen (more Norman than Normandy) as the Louise Bonne de Jersey.

The Paradise Stock.

Fruitful as are the Norman orchards, the inhabitants by no means content themselves with the fruit from the standards, but most gardens contain garden trees on the Paradise stock, and this example may be successfully imitated here by the possessors of a garden

Fig. 20.—DURANDEAU.

Fig. 21.—BEURRÉ HARDY.

limited by yards instead of acres. On these trees fruit may be grown very superior to that on the standard trees, however fine; it is necessary to choose the sorts, and to be sure that the trees are grafted on the right stock. The Doucin is grown in large quantities in France, for this method of culture gives an intermediate growth between the Crab and the true Pommier de Paradis. The latter is very dwarf, and hardly fit for general culture, but the Doucin, like its superior cousins, the Monarch and broad-leaved Paradise, imparts a healthy growth, quite sufficient for a garden tree, although not strong enough for orchards. Grown into pyramids about 8 or 10 feet high, they are when fruitful exceedingly handsome trees. To keep up a healthy action combined with productiveness a circular trench should be made round the tree, increasing in diameter with successive years, and the trench filled with the favourite food of all fruit trees, good well-rotted manure, the said trench being renewed every second year, a surface dressing of the same material being applied every year. In June the first summer pruning must be practised, which consists merely in shortening the side branches, leaving the leaders untouched. Shorten these about the end of August, thin out branches to let in light and sun while the tree is growing thriftily, and the most important summer pruning is completed, keep the tree always symmetrical whether grown as a pyramid or bush. The culture is so simple, that no reason exists to prevent every cottage garden in England growing Apples on the Paradise stock. Standards take up too much room in a small garden, and, although immensely productive, must have been planted by a grandsire. In riding about my own district I have been struck by the appearance of some cottage gardens containing pyramid trees, and have been much gratified at the results obtained.

The careful cultivator must of course be careful in the selection of the sorts. Now I do not think it necessary to plant many kinds. The Red Juneating, Kerry Pippin, Devonshire Quarrenden, Early Harvest, Duchess of Oldenburg, Mother Apple, Irish Peach, Red Astrachan, will furnish a table until October; and for the kitchen, Lord Suffield, Keswick Codlin, Manks' Codlin (charming pyramid), Cox's Pomona, Hawthorden. After October Cox's Orange need be the only sort grown; it will keep good until February, and is peerless in its season. For stronger teeth the Ribston and Blenheim Orange will always hold their rank. There is much choice in winter Apples for the table; I believe no one will object to Brownlee's Russet, Duke of Devonshire, Scarlet Golden Pippin, larger and as rich as the old sort. All the Nonpareils are good; of the Pearmains, Mannington's, Adams', Claygate are not surpassed by any, and in the last days of winter, when the returning spring is anxiously expected, some Apples are still improving in quality. Of the late Apples, Lord Burleigh, Allen's Everlasting, Spring Ribston, or D'Arcy Spice Apple, Sturmer Pippin, are the best for keeping and flavour. For the kitchen, Dumelow's Seedling, Rymer, Tower of Glammis, Winter Hawthornden, Gooseberry Apple, Northern Greening, Striped Beaufin, will afford a pudding until the green leaves come again.

Several varieties of so-called Paradise stocks have been cultivated, but I think that two kinds raised here are the best for English soils and climate. These are the Nonsuch and the broad-leaved. The latter makes a more vigorous tree than the former, and is a good stock for the prolific sorts, such as Lord Suffield, Manks' Codlin, and others; but the former imparts a high colour to the fruit, and emits roots very freely. A correspondent in Scotland tells me that it is the best stock he has.

I shall be glad if owners of cottages can be induced to encourage their tenants in the cultivation of dwarf Apple trees by making them a present of a few trees. With patience and skill all districts and all soils will produce a reward, and a certainty of winning prizes at local shows (the most interesting of all shows). *T. Francis Rivers.*

THE BEST SORTS OF FRUITS FOR COTTAGE AND VILLA GARDENS.

Apples.

Dessert.—Kerry Pippin, Cox's Orange Pippin, Scarlet Nonpareil, King of the Pippins, Rosemary Russet, Braddick's Nonpareil.

Kitchen.—Lord Suffield, Stirling Castle, Blenheim Orange, Cellini, Warner's King, Dumelow's Seedling.

The best and most useful half-dozen:—

Dessert.—Cox's Orange Pippin, Scarlet Nonpareil, King of the Pippins.

Kitchen.—Lord Suffield, Stirling Castle, Blenheim Orange.

If two trees only are wanted, plant Cox's Orange for dessert, and Stirling Castle for kitchen.

If only one tree is wanted, we should plant Cox's Orange Pippin in preference to any other.

Pears.

The best half-dozen:—Williams' Bon Chrétien, Louise Bonne of Jersey, Marie Louise, Beurré Bosc, Glou Morçeau, Winter Nelis.

Stewing Pear.—Uvedale's St. Germain. Any Pear will stew if used before it becomes mellow. It is therefore a waste of space to grow any for that special purpose, except it may be one monster variety.

Plums.

Dessert.—Six varieties:—Jefferson's, Kirke's, Green Gage, Transparent Gage, Violette Hâtive, Coe's Golden Drop.

Kitchen.—Six varieties:—Early Prolific, Victoria, Prince of Wales, Prince Engelbert or Mitchelson's, Belle de Septembre, Autumn Compôte. If only one is wanted for a wall, plant Victoria; for a standard, Mitchelson's.

Cherries.

May Duke, Black Circassian, Elton, Governor Wood, Bigarreau Napoleon, Morello.

Peaches.

For House—Hale's Early, Stirling Castle, Noblesse, Walburton's Admirable.

For Open Wall.—Hale's Early, Grosse Mignonne, Bellegarde, Barrington.

Nectarines.

Violette Hâtive or Elruge, Pine-apple, Lord Napier, Victoria.

For Open Wall.—Violette Hâtive, Lord Napier; the last for choice if only one sort is wanted.

Apricots.

Moorpark, or Peach.

Figs.

Brown Turkey and White Marseilles.

Gooseberries.

For Eating or Sale.—Early Green Hairy, Red Champagne, Roseberry, Sulphur Yellow, Whitesmith, Gretna Green, Pitmaston Green Gage, Monarch, Red Warrington, Green Overall.

Currants.

Red.—Cherry, Red Dutch. *White.*—White Dutch. *Black.*—Black Naples.

Raspberries.

Fastolf and Yellow Antwerp.

Strawberries.

Vicomtesse Héricart de Thury, Sir J. Paxton, President, Sir C. Napier, Dr. Hogg, and Elton. If only one sort can be grown it should be Vicomtesse Héricart de Thury.

Nuts.

Cosford, or Kentish Cob; red or white Filbert.

Walnuts.

Thin-shelled, or Dwarf Prolific.

Grapes.

Open Wall.—Royal Muscadine, Black Hamburgh. *Vinery.*—Black Hamburgh, Madresfield Court, Lady Downe's, Foster's Seedling, Muscat of Alexandria. *For an Amateur's Vinery.*—Black Hamburgh and Royal Muscadine.

THE HISTORY OF THE PLUM.

The original parent of the numerous and various kinds of Plums with which our orchards are in good seasons better than the present stocked, and our market overflowing, is, without much doubt, the Prunus domestica of Linnæus—a tree which "is believed to occur in a truly wild state in Greece, the south-eastern shores of the Black Sea (Lazistan), the Caucasus, and the Elbruz range in Northern Persia, from some of which countries it was introduced into Europe long before the Christian era." It is impossible to state with anything like precision the actual date of the origin of any of the almost endless forms of Plums which are now common in our orchards, nor is it indeed possible to say when or by whom many of them were introduced. Gerard tells us that he himself had "three score sorts" in his garden, "and all strange or rare;" and he mentions "the grounds of Master Vincent Pointer, of Twickenham," as the place where "the greatest varieties of these rare Plums" were to be found. Parkinson also enumerates sixty sorts fit for an orchard, all of which, he says, are to be had of his "very good friend, Master John Tradescante, who hath wonderfully laboured to obtain all the rarest fruits he can hear of in any place of Christendane, Turkey—yea, or the whole world." Among these are a few with curious names, such as the Perdrigon, or Perdigwena as it is called by Hakluyt in 1582, who says it was procured "out of Italy with two other sorts by the Lord Cromwell after his travel." Then there is the Bowle, which is "flat and round, yet flatter one side, whence the name;" the Margate, which is unfavourably characterised as "the worst of an hundred;" the Pruneola, "small, white, of a fine tart taste," which is "brought over in small round boxes, and sold at the comfit-makers cut in twain, the stone cast away, at a very dear rate," of which more anon, and three or four sorts of Bullace are also mentioned. Miller gives only thirty kinds, but these are defined with some care, and are really distinct forms. We find among them most of those which are still familiar in our markets—as for example the Magnum Bonum (which he calls Bonum Magnum), the Egg Plum, and the Orleans (which our London costers have corrupted into "Arline") Plum; this last he says "is a very plentiful bearer, which has occasioned its being so generally planted by those persons who supply the markets with fruit: but it is an indifferent Plum; it is said to have been brought over when the English were in possession of Orleans in the time of Henry V." The Damson appears as the "Damask Plum," at least so we are inclined to believe, though Martyn takes a different view, for he mentions the "Damascene, vulgarly Damson," among the sorts omitted by Miller. The French Damas or Damask Plum is rather larger and rounder than the English Damson, and of a sweeter taste; it splits readily, and its flesh separates easily from the stone.

One of the most deservedly popular of Plums is that known as the Green Gage—a name of which the origin is probably known to but few of those who are in the habit of using it. The French call this Plum La Reine Claude, in honour of the queen of Francis I., during whose reign the tree was raised, or, as some say, by whom it was brought into France. This Plum is usually supposed to have been introduced with others from the monastery of the Grande Chartreuse to the garden of Hengrave Hall, Sussex, the seat of the Gage family, some time during the last century; but having been sent without a name, or the label having been lost, the gardener, to distinguish it, named it the Green Gage, in allusion to its colour and to the family who employed him; and by this title it has been since known. A writer in *Notes and Queries* gives a slightly different account of its introduction, attributing this to a Catholic priest, the Rev. John Gage, who resided in a conventual establishment abroad, and on one occasion brought over grafts of it to his brother at Hargrave Hall. By some botanists—Karl Koch, for example—the Green Gage is regarded as a distinct variable species, native of the Caucasus.

The Prunes, which are employed in medicine as forming an ingredient in the *Confectio Sennæ*, better known, perhaps, as "Lenitive Electuary," are yielded by a variety of Prunus domestica known as P. Juliana, the "Prunier de St. Julien" of French writers. This form of Plum tree is largely grown in the valley of the Loire, especially about Bourgniel, a small town between Tours and Angers. The Prunes sold by grocers, and often stewed and sweetened for home use as a laxative, are yielded by the same variety. The Plums are dried partly by the heat of a fire and partly in the open air, being alternately exposed to one and the other, and are too familiar to need description. Prunes were at one time employed in the manufacture of the rather complicated dish called plum-broth, for the making of which full particulars are given in *The Queen's Royal Cookery*, published in 1713. "Two pound of stew'd Prunes," forced through a cullender, leaving the stones and skins; and 3 lb. more, "well stewed" and boiled, were among the ingredients of this "dainty dish," and when quite ready it was to be garnished with more stewed Prunes. Loudon says the Plum known as the Perdrigon Blanc is that generally used in France in the preparation of Prunes. It is a long narrow

fruit, greenish white tinged with red, with rather a leathery skin and much bloom. "The flesh is greenish, melting, and so sweet as to have nearly the same flavour when eaten ripe from the tree as when preserved." What are called in England "French Plums" are mainly produced by a kind called the Prune d'Ast, which has a tough, deep violet skin, and is prepared in the same way as Prunes. The bloom upon them is sometimes obtained by means of indigo. The best kind of French Plum, however, is that prepared from the kind known as the Brignole. These are large yellow Plums, also from Provence, which are shaken from the trees when quite ripe upon cloths spread to receive them, and next day carefully skinned. This operation performed they are exposed to the sun for some days, and then impaled upon pointed osier sticks, when they are again placed in dry warmth and air for several days. The stones are then removed, they are pressed into a round form, and eventually placed in the daintily arranged little round Willow boxes in which they make their appearance among us.

tute for French Prunes when the latter are scarce; it is a rather larger and longer Plum, with a somewhat thicker skin. On the banks of the Rhine, in Wurtemburg, Roumania, and several French provinces, a kind of brandy is distilled from Plums, and vast quantities of the fruit are absorbed in the maintenance of this industry. The beverage, which is said to be of some value as a tonic, is intermediate between Cherry brandy and brandy made from cider; it is strengthened by the addition of Bullaces when in the cask.

Various good kinds of Plum have been raised in the United States, the Washington being perhaps the best of them. It is a handsome tree, with large glossy broad leaves and roundish oval deep yellow fruits, which are about 2½ inches in diameter. The discovery of its good qualities was due to an accident. It had been merely used as a stock on a farm near New York, but a sucker from it was sold to a Mr. Balmer, which came into bearing in 1818, and soon attracted attention. Once known, it was not long in attaining the high position which it still retains. An

greater light and dryness in the cottage are advantageous to the tenant, and those who have the superintendence of cottage property know the trouble saved by substituting trained trees for wild growths constantly requiring to be cleared out of the slates and pipes.

Well-chosen, and properly planted to start with, fruit trees will bear for years, and there is no reason that they should ever be allowed to grow into the unmanageable masses of foliage too often seen with gnarled trunks close down on the ground, choking all below, and only fruiting themselves on the upper surface.

Light and air are needed for the crop below, but light and air are as much needed amongst the branches and beneath them, as well as above, to insure a good crop on the tree itself; and if the trees are chosen with branches starting at a good distance from the ground, and afterwards properly thinned so as to allow sunshine and air to pass among the boughs, the tree will bear all over instead of only above, and the ground below will be serviceable. Espaliers

Fig 22.—1, Red-skinned Filbert. 2, Princess Royal. 3, Cosford. 4, Empress Eugénie.

It will have been observed, from what has been stated, that Provence is one of the chief Plum-producing districts of France; and this has been the case from an early date. For a long period Tours enjoyed the exclusive privilege of the sale of Plums in the North of France; those of the south-west provinces were sent, by way of Bordeaux, to England and the colonies, while those of Provence went to Germany, by way of Switzerland. The Plums of Tours enjoyed a great reputation even at Paris, which, however, is now lost; and a French poet writes of that town:—

"Tours, ville que rendent célèbre,
Son archevêque et ses pruneaux."

It is stated that about half the Plums prepared in France are for home consumption, the remainder being exported to England, Russia, Holland, and America, which last country absorbs a very large quantity.

A German Plum—the Zwetschen or Quetschen—is widely cultivated in Germany for its fruit, which is used in a dried state as an article of food. It is, indeed, usually grown with a view to its employment in a dried form, and is a particularly hardy and free-bearing kind. It is sometimes imported as a substi-

article in our columns, 1876, vol. vi., n. s., p. 69, gives some account of the Plums in Servia and Bosnia, which may also be read with interest at the present time. *B. M.*

COTTAGER'S FRUIT TREES.

Fruit trees in the cottage garden give such a comfortable addition to the income of the tenant, with little comparative outlay or trouble, that it is a pity more attention is not bestowed on the subject in some of our rural districts. Much more available space could be gained whether for vegetables or small fruits by keeping the standard trees properly open and clear from the ground, espaliers might be much more introduced, and the walls of the cottage utilised for tender fruit more than is generally the case.

They may not have the picturesque charm of Roses clustering round the door, or Vines (which can hardly under the circumstances be described as fruit trees) mantling roof and water-pipes, and every place where they should or should not be in their folds; but they have beauty both in flower and fruit, and the trimness of the branches in winter is satisfactory in every point of view. The immediate money return and the

might be much more introduced for choicer fruits (Pears especially) which it may be desirable to keep under the eye. Planted about 2½ feet from the paths, their shade is not enough to be injurious. They give a trim edging to the beds, and the fruit can be hand-picked as it ripens, instead of being bruised beyond marketable value in falling from the tree. With the help of the cottage wall, there is no reason why almost all common kinds of outdoor fruit should not be cultivated by the cottager. Not quite all, for Peaches and Nectarines, except in very favourable situations, would usually require more reflected heat than is given by the short length of unenclosed wall, and they are also too conspicuous to be a safe crop.

Apricots are very desirable, so are the large yellow Plums and early or autumn Pears; but the point to be considered economically is—what kind of fruit is in season at the time of the chief fruit demand of the neighbourhood. The influx of tourists brings a certain sale, and the presence of schools, time of visiting or return of families from London with regard to dessert fruit, and supplies required for jam with regard to the small fruit, all affect the selection; but the choicer the fruit (so long as its culture is not beyond

the cottager's powers) so much more will be his return for the care bestowed.

With regard to the sorts horticulturally, it is best to find what kinds answer on the same exposure in the immediate neighbourhood, taking what bear outside the garden walls in the vicinity rather than those inside, as the reflected heat gives a much higher temperature than can be had on the exposed cottage wall.

It is easy by running the eye down lists in any gardening book to find good kinds—as, in Pears, the Jargonelle, Williams' Bon Chrétien, Louise Bonne, and many others, are excellent—but a little difference in soil and situation may make much in the crop; and if sorts are chosen known to do well in the neighbourhood, it saves a deal of disappointment.

This is the point where the cottager really needs help. He has probably little idea how to select his trees or to procure them, and assistance here is a solid kindness. He is often quite able to purchase them, but has no means of ordering them, and if the gardener of the landowner, or any one who takes an interest in the subject, will add the trees to their own order, and let the purchaser pay his part of the account to them, it will often make the difference of his having proper trees instead of the superannuated or worthless things which only cumber the ground.

Where the man cannot afford the purchase money ocal prizes are a good way of meeting the difficulty, and especially appropriate to village horticultural societies, or (as in this case the need once supplied is not likely to need repetition) an occasional gift would not come under the common objections to such methods of supply, and would at once be highly useful and most thankfully received.

With regard to planting materials there ought not to be much difficulty. In rural neighbourhoods there is generally plenty of old mortar, brick rubbish, and decayed leaf-mould to be had one way or other—often for gathering, almost always by asking; and (by collecting beforehand) enough manure may have been gathered off the roads, and (with stray bits of turf) enough may easily be got together to do without further assistance. The point is to have a good hole dug, the materials well mixed, and the tree planted at a proper depth, with its roots spread, then properly covered and firmly trod in, and of all things it should be set and kept upright. Half the waste of room in cottage gardens is from trees being allowed to slant in all directions, till at last the trunks may be seen fairly along the ground, all nettles and weeds below, and very probably nothing in the way of a crop on the one-sided head above.

It is well to protect the stems of the wall fruit against the cottage with a good bunch of Brambles, first to keep the young children who sit mostly at the cottage door from scraping the bark off with any odd thing that comes to hand, and afterwards to keep the older ones from climbing to pilfer the fruit, and the spot should also be chosen where it is not customary either to empty burning ashes or the collective slops from indoors. The liquids may do a deal of good if properly applied, but not whirled out of a pail with a good sweep at one spot daily—the ground affected becomes merely an impervious mass, and a young tree perishes almost as surely under this treatment as under the exhausted ashes hot from the oven. Also it is a great preservative to have a few short posts driven in near the door to hang pots (or anything which domestic convenience suggests should be hung outside the door temporarily) properly and avowedly on; no tree or bush can be expected to thrive if its stronger spurs are turned into kitchen pegs, or its head wrapped up perpetually in some portion of the wash (or at least the dish-cloth laid nicely out to dry on the top) as is so often to be seen, and unless some equally convenient arrangement is made there the things will be.

If nothing else can be grown on the cottage wall it might at least be utilised for red and white Currants, which bear excellently so placed, with little risk to the crop, and may be profitably planted against all the low walls and wooden palings of the cottage garden. Generally speaking, there is the greatest possible difficulty in growing the smaller fruits where the children have an excuse for passing near them. They vanish piecemeal, imperceptibly, and cause nothing but pain and vexation, being preferred apparently green; but on the damper walls, or in any spare corners clear of the regular traffic, black Currants are most desirable. Probably nothing brings in so sure a return as fruit-growing for preserving. There is, then, no difficulty about the fruit being in exact order to a certain day, and a deal that would be unsaleable from rough usage answers perfectly well for the preserve pot. Families round are usually very glad of the supply; but if the cottager's wife could be induced to study the very simple details of the subject a large profit might be made by preserving on the spot.

Quantities of fruit may be saved in this way, for when the injured or decayed portion which would ruin the fruit before it could be sold is cut off, the rest is in perfect order, and the very richest and best preserve or jam is that thus made from small quantities of fruit taken as they occur every two or three days, so as to secure them at their prime.

The cottager has usually no convenience for storing fruit, and (simply for home consumption) the requisite flour, sugar, &c., needed to turn it into an article of diet make it too expensive to be of service to him; but for sale it may be made of far more benefit than he usually imagines, if he will utilise his ground by allowing air and light to pass amongst and under his trees in the way shown to be, not only possible, but profitable in the fruit-growing districts round London, and also by considering the neighbouring demand.

It is seldom the *bonâ fide* rural cottager can grow profitably for distant markets, as he cannot pack properly himself, and makes much less profit by selling to dealers than the neighbouring gentry; but with a little care in finding a purchaser before his fruit is dropping from the tree, and trustworthiness in fulfilling his orders, his fruit trees will give him a comfortable yearly profit on scarcely any but the original outlay and a little labour. *O.*

STRAWBERRIES.

Much has been written upon the cultivation of this most generally esteemed fruit. The writers who treat upon it usually start off with the injunction that Strawberries require a strong holding soil in which to grow them, and do not succeed in such as is of a light nature. This is not very encouraging to beginners in their cultivation who happen to live in neighbourhoods where the land is of a light description, of which a considerable portion of the kingdom consists. I often hear amateurs so situated say—"Oh, it is no use attempting to grow Strawberries on my light soil: I tried and failed:" or, "They grew and bore for a time whilst the garden was new, but after a few years the land gradually got so light that they would not do in it." My reply has generally been an interrogation, asking if anything has been done to try to induce them to succeed. The answer has almost invariably been much the same — "That plenty of manure has been applied to the soil, with no better results." At which I have not expressed the least surprise, but the reverse, as the manure in most cases would only aggravate the evil by making the land lighter, causing a greater disappointment in the plants running to leaf instead of producing fruit. Instead of using manure alone a dressing of marl or clay, about 3 inches in thickness, should be laid on the surface of the ground, which must be previously dug, and when it has got well dried by exposure to the sun and air the first heavy shower will reduce it to a pulverised state. It should then be pointed-in, mixing it with some 6 inches of the top soil, when, if the land is deficient in manure, some can be worked-in at the same time. After this let the whole be well trodden until it is quite solid, and plant as early in August as runners can be obtained. On land of this description the plants will not last as long as where it is of a heavier character, and naturally better adapted to the requirements of Strawberries; two years is long enough to let them remain. Instead of putting the plants in the usual distance of some 2 or 2½ feet betwixt the rows, and about half as much between the plants in the rows, I should advise their being planted much closer, say 14 inches betwixt the rows, and 9 inches from plant to plant in the row. In this way a great deal more fruit will be obtained the first season. As soon as this is gathered, every other row, and each alternate plant in the rows left, should be cut out with the hoe, leaving those remaining to stand another year, when they may be destroyed, and their place supplied by others planted on ground similarly treated, putting in as many each year as required to keep up the supply. By following this method on light sands, loam, and also on peaty soil that had both been long used as a kitchen garden, and as ill-adapted for Strawberry culture as they well could be, I have been able to grow as fine fruit, and also secure crops regularly equal in quantity to what is usually obtained from land naturally better suited to their cultivation. At first sight some people might suppose that to carry out the details here mentioned would involve considerable labour and expense, yet this is by no means the case; clay can in most places be had at little cost, the extra labour is very little, and it must be borne in mind that light land, such as that under consideration, is very much benefited for succeeding crops of all kinds by being so treated.

The varieties of Strawberries have, like many other things of late years, so much increased as to make it perplexing what to grow. Many kinds are more variable in their adaptability to any particular locality than is the case with any other fruit we grow, yet there are some sorts that combine a free bearing disposition, good quality of fruit, with ability to do well in most soils. It is much better, especially in localities where the soil is not naturally suited to the growth of Strawberries, not to plant delicate growers or doubtful bearers.

For the guidance of those who have not had an opportunity of testing the merits of the leading kinds, I append the names of a few that will afford a succession, and which may be relied upon for giving satisfaction where Strawberries can be grown at all:—

Keens' Seedling.—An old, fine flavoured, free-bearing sort, and although not quite the earliest in cultivation, still, taking all properties into account, the best to depend on for first crop.

Sir Joseph Paxton.—A very free-bearing, early kind, and a good grower.

President (Green).—An immense bearer, of good flavour.

Sir Charles Napier will bear well where most others fail; a heavy cropper, fruit large.

Eleanor (Myatt).—Late; a good size, and free.

Elton Pine.—An old, very late variety, that succeeds where many fail.

Where the soil naturally is of a character adapted to the growth of Strawberries, I should substitute other kinds for at least two of the above, but where it requires especial preparation to get them to answer these are what I should plant. *Z.*

Bearing Years of Orchards.—The Michigan Pomological Society, says the *New York Tribune*, lataly discussed the practicability of changing the bearing year of an orchard, so as to have it produce when orchards in general fail, and when prices are high. Examples were given of successful practice in this way by suppressing excess of production in the year of general bearing, and by feeding the trees well and keeping the head judiciously open to light and air. But of course the trouble is considerable, as is always the case when a rare object is aimed for. And only in sections like the east shore of Lake Michigan, where the blossoms are safe from climatic severities almost every year, is it worth while to attempt to change habits induced by natural causes. But it is always profitable to reduce excessive cropping. Very often one season by no means suffices to enable an Apple or Pear tree to recover from the exhaustion induced by a heavy crop, and to store up material and arrange it for another. Late sorts, which require the entire season to attain maturity, of course exhaust a tree more than those which fall from a tree early in August, and leave the tree two summer months of growth for recuperation. And it is consequently the winter sorts that are most prostrated by a heavy crop. In the discussion referred to, Professor Beale and Mr. Garfield cited cases in which they had observed that blossoms fertilised by pollen from other trees, in some experiments on crossing, yielded fruit as a result of this mere pollen-contact when others were generally barren. This agrees, as far as it goes, with the results observed by Dr. Gray, Mr. Darwin, and others as to the very much stronger growth of seedling plants from seed produced by cross-fertilisation. In an orchard under the writer's eye in August, 1877, there are scarcely any Apples on any trees where the whole head is of one kind, and a whole block of one sort. But there are scattering Apples on most of the specimen trees which have several different sorts grafted upon one head. Not enough, however, to be called a crop upon any one. They all bore heavily last year.

☞ *For numerous additional articles on fruit and fruit culture, including the Gooseberry, Apple, and the mode of constructing and managing orchard-houses, the reader is referred to the Number issued with the present Supplement.*

KENTISH FRUIT TREES, ROSES, &c.

THOS. BUNYARD & SONS

Will be happy to forward their DESCRIPTIVE LIST of the above on application, and refer intending Purchasers to the notice of their Nurseries in the *Journal of Horticulture*, December 4, 1873, pp. 442 and 443.

The Fruit Tree List contains all Particulars as to

APPLES, APRICOTS, BARBERRIES, CHERRIES, CRABS, CURRANTS, FIGS, COB NUTS, KENT FILBERTS, GOOSEBERRIES, MEDLARS, MULBERRIES,

PEACHES (RIVERS' NEW), PLUMS, NECTARINES, PEARS, QUINCES, RASPBERRIES, VINES, RHUBARB, STRAWBERRIES, WALNUTS, ORANGES.

The Trees, which are in the finest health and condition, and move with plentiful fibrous roots, may be obtained as Standards, Standards trained, Pyramids, Espaliers, Dwarfs, Dwarfs trained, Cordons, Maidens, and Bushes. APPLES can be had on Rivers' Paradise Stocks; PEARS on Quince, double-worked; CHERRIES on Mahaleb.

THE ROSE LIST CONTAINS—

NEW ROSES, HYBRID, PERPETUAL, NOISETTE, | TEA, BOURBON, CHINA, MOSS, and SUMMER ROSES,

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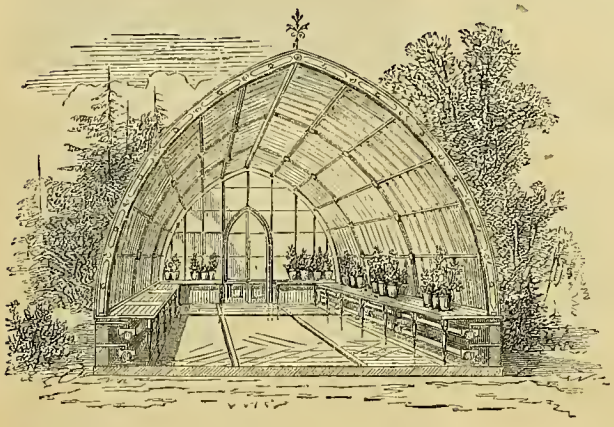

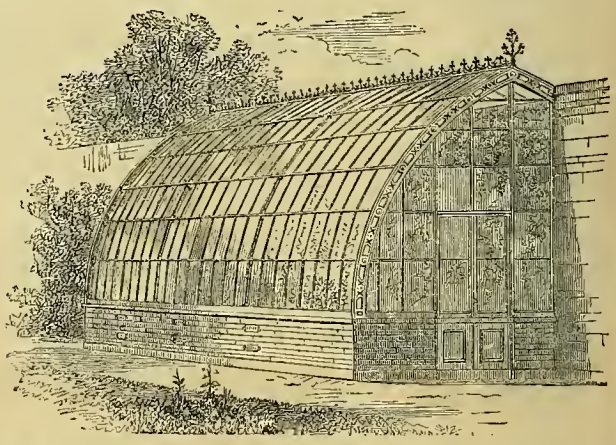

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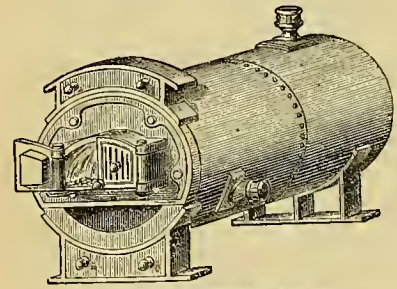
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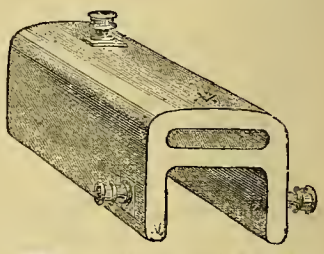
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VOLUME for JANUARY to JUNE, 1877.

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SOUTHAMPTON HORTICULTURAL SOCIETY.
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On view the mornings of Sale, and Catalogues had.

Cattleya Dowiana.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 25, at half-past 12 o'Clock precisely, an importation from Costa Rica of fine plants of the beautiful CATTLEYA DOWIANA. The Plants imported are in the best possible condition; nearly the whole with good leaves, and may be relied on as all true to name

On view the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 25, at half-past 12 o'Clock precisely, a COLLECTION of ORCHIDS, among them some of the most beautiful and rare species known, including such as:—

Odontoglossum vexillarium	Odontoglossum coronarium
Cattleya amabilis	Calanthe masuca
Epidendrum vitellinum majus	Lælia anceps
Lælia elegans	Odontoglossum Roezlii
Odontoglossum niveum	Zygopetalum Gautieri
Cattleya Wagneri	Cymbidium eburneum
Batemannia Wallisii	Barkeria elegans
Odontoglossum Phalænopsis	Oncidium Kramerianum
Bollea Lalindei	Palumbina candida

And the new and rare PHALÆNOPSIS VIOLACEA; also many other extremely rare Orchids.

On view the morning of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 27, at half-past 12 o'Clock precisely, an importation of DENDROBIUM BIGIBBUM in splendid condition; an importation of CATTLEYA ACLANDIÆ, C. INTERMEDIA and LÆLIA ELEGANS, from Brazil. A COLLECTION of ESTABLISHED ORCHIDS, in the best possible condition, including some nice young specimens of choice and valuable sorts, &c.

On view morning of Sale, and Catalogues had.

Auction Mart, Tokenhouse Yard, London, E.C.

UNRESERVED SALE of a large quantity of first-class HYACINTHS, fine selected roots for glasses; also thousands of choice TULIPS, CROCUS, NARCISSUS, LILIES, JONQUILS, ANEMONES, and other DUTCH FLOWER ROOTS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on MONDAY NEXT, at half-past 11 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Exotic Nursery, Tooting, S.W.

TENTH ANNUAL SALE.—Important to the Trade and to Amateurs forming Collections of Plants.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, on the Premises, on TUESDAY, September 25, at 11 for 12 o'Clock precisely, an assortment of valuable established ORCHIDS, amongst which may be mentioned Angræcum eburneum superbum, Saccolabium guttatum and violaceum, Cypripedium caudatum, Dendrobium crassinode and suavissimum, Odontoglossum Phalænopsis and cirrhosum, Cattleya gigas, Warneri and Mendelii, Oncidium varicosum and reflexum, Cypripedium Boxallii, Vanda cœrulea Boxallii, several valuable and rare PALMS, new and choice exotic FERNS, a fine assortment of large CAMELLIAS, also TREE CARNATIONS, ERICAS, and other GREENHOUSE PLANTS, prize specimen hardy FERNS, CLIMBERS in pots, &c.

Now on view and Catalogues had.

Stanstead Park Nurseries, Forest Hill, S.E.

IMPORTANT and ATTRACTIVE SALE of 6000 PALMS, comprising Areca lutescens, alba and rubra, aurea, crinita, Herbstii; Licuala peltata, Cocos Weddelliana, Stevensonia grandifolia, Ptychosperma Alexandræ, &c.; also 1500 strong established Pot ROSES, H.P.'s and Teas, for forcing; 500 LOMARIA GIBBA, DICKSONIA ANTARCTICA, 100 SOLANUMS, 200 DRACÆNAS, and a valuable assortment of HEATHS, CREEPERS, IVIES, and other indoor and outdoor plants.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. J. Laing & Co. to SELL the above stock by AUCTION, without reserve, on the Premises, on THURSDAY, September 27, at 11 for 12 o'Clock precisely.

Now on view and Catalogues had.

Castle Nursery, Lower Norwood, S.E.

SECOND ANNUAL SALE of ESTABLISHED ORCHIDS, including Dendrobium Wardianum, Oncidium prætexum (true), O. Marshallianum, O. Rogersii, Phalænopsis Schilleriana, grandiflora, and rosea; several species of Odontoglossums, Vandas, Pleiones, Cypripediums, Miltonias, and numerous others; also a considerable number of young and free-growing STOVE and GREENHOUSE PLANTS, fifteen handsome Eucharis amazonica, Adiantum farleyense, and other Exotic Ferns, Tree Carnations, Camellias, Azaleas, choice Tea Roses in pots, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James to SELL by AUCTION the above carefully selected assortment of Stock, on the Premises, on FRIDAY, September 28, at 11 for 12 o'Clock precisely.

The Stock may at any time be viewed. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Stamford Nursery, Bowdon, Cheshire.

SALE of the IMPORTANT NURSERY STOCK of Mr. Shaw.

MESSRS. CAPES, DUNN, AND PILCHER are instructed by Mr. Shaw, who is retiring from the Nursery Business, to SELL by AUCTION, on WEDNESDAY and THURSDAY, October 10 and 11, at 12 o'Clock each day, on the Premises, near to Dunham Park, Cheshire, and within a few miles of Manchester, the whole of his HARDY ORNAMENTAL TREES, FRUIT TREES, FLOWERING SHRUBS, EVERGREENS, ROSES, CONIFERÆ, JAPANESE and other CHOICE PLANTS. Mr. Shaw's Collection is well-known, and comprises every variety suitable for the district. Many are large specimens, some exceedingly rare, and all are well-rooted and healthy.

Catalogues are in preparation, and will be forwarded from the Nursery at Bowdon; from Mr. SHAW'S Manchester address—29, Oxford Street; or from the Offices of the Auctioneers, 8, Clarence Street, Albert Square, Manchester.

To Nurserymen and Others.

TO BE DISPOSED OF, one of the oldest established NURSERY BUSINESSES in the North of England, with valuable connection.

The executors of the late Mr. John Harrison, of the North of England Nurseries, Catterick Bridge and Scorton, are open to treat with a gentleman possessing capital, for the disposal of the business, which has an established connection of nearly 50 years.

The Nurseries consist of about 60 acres of Freehold Land, about 40 acres of which are stocked with a choice Collection of Roses and General Nursery Stock. There are good Residences in the Grounds, and fine Ranges of Glass, close to the Catterick Bridge Station of the North-Eastern Railway, situate between Darlington and Richmond, and offering unusual facilities for doing a large and profitable business. A large portion of the purchase money could remain on security of the property at a reasonable rate of interest. Possession could be given at any time as a going concern. Principals or their Solicitors only may apply to the undersigned,

A. E. HARRISON, Solicitor, Church Yard, Rotherham.

To Strawberry and Fruit Growers.

THE LEASE to be SOLD of 3¼ acres, in full bearing, of the finest sorts of Strawberries, and an Orchard of Fruit Trees. Rent, £16 per annum.

W. EATON, Chase-side, Southgate, N.

TO BE LET or SOLD, a small FREEHOLD NURSERY, within easy distance of Covent Garden, and close to Railway Station. Apply

E. P., Mr. Cullens, Confectioner, High Road, Leytonstone, S.

TO BE LET, an old-established NURSERY, with which a SEED BUSINESS has been connected, in a Cathedral Town, 60 miles from London, and within easy access of the South Coast Watering Places. The extent of the Nursery is from 3 to 6 Acres, with considerable breadth of Glass, and Cottage. Energy, practical knowledge, and moderate capital would ensure a profitable business.

Address X., care of Messrs. Rutley & Silverlock, 412, Strand, London, W.C.

Cheltenham.

To FLORISTS and GARDENERS.

TO BE LET, the old established NURSERY BUSINESS, London Road, Cheltenham. The premises comprise good Dwelling-house, with gas laid on; five Greenhouses, 40 to 60 feet long; long range of Pits, the whole well heated by hot-water. One Acre of Land planted with Violets, Roses, and other Plants. Stock consists of Camellias, Eucharis, Stephanotis, Azaleas, Gardenias, Ferns, early Pelargoniums, quantity of Scarlet Geranium for winter flowering, for which, with other cut flowers, there is a great demand; also stock of Bedding Plants.

For further particulars, apply to F. EARWOOD, on the Premises, Charlton Nursery, London Road, Cheltenham.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING,

The ERECTION of FARM BUILDINGS and COTTAGES

WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

Address, HENRY SHEPHERD, Manager.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

TO GENTLEMEN INTENDING TO PLANT.—In consequence of the decease of the late Mr. R. WEBB, of Calcot Gardens, near Reading, his valuable Collection of Young Prize NUT TREES, of named sorts, are offered at half the usual selling prices. Printed LISTS will be forwarded on application.

Immediate Orders are solicited, as the Trees will be supplied in the rotation in which the orders are received; delivery commencing on October 1. Apply to

The MANAGER, Calcot Gardens, near Reading, Berks.

To Large Planters and the Trade.

LIMES, Red-twigged, from 6 to 7, 7 to 8, 8 to 10, and 10 to 12 feet.
YEWS, English, well furnished, 2½ to 3, 3 to 4, and 4 to 5 ft.
CHESTNUT, Horse, 6 to 12 feet.
LAURELS, 2½ to 3, and 3 to 4 feet.
OAKS, Hedge-row, and Standard ROSES, &c

Prices and sample dozens on application

A. GODWIN AND SON, Ashbourne, Derby.

SPECIAL CLEARANCE OFFER.—7000 fine well-grown pyramid APPLES, PEARS, PLUMS, and CHERRIES, 50s. per 100; 5000 strong GOOSEBERRIES and CURRANTS, 8s. to 10s. per 100; finest EVERGREENS, CONIFERÆ, 3 to 10 feet. Flowering SHRUBS, FOREST TREES, ROSES, hardy CLIMBERS, &c., at greatly reduced prices. Stock most be cleared off by December. CATALOGUES on application.

R. THORNHILL, Bowdon Nurseries, Bowdon, Manchester.

Rhododendrons.

ISAAC MATTHEWS AND SON have to offer the following RHODODENDRONS—100,000 fine bushy plants, thinly grown and well rooted, nice round plants:—

RHODODENDRON SPLENDIDUM, white, 1 to 1½ foot, 37s. 6d. per 100; 1½ to 2 feet, 50s. per 100; 2 feet, 60s. per 100.
,, CAUCASICUM PICTUM, scarlet, 1 to 1½ foot, 50s. per 100; 1½ to 2 feet, 60s. per 100.
,, JACKSONII, scarlet, 1 foot, 50s per 100; 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, 75s. per 100.
,, WOOLLERII, scarlet, 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, £5 per 100.
,, HYBRIDS, from all choicest named varieties, 1 foot, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100; 2 to 2½ feet, 60s. per 100.
,, PONTICUM, 9 to 12 inches, 50s. per 1000; 12 to 15 inches, 10s. per 100; 15 to 18 inches, 15s. per 100; 18 to 21 inches, 40s. per 100; 2 to 3 feet, 50s. per 100.
,, very bushy, 3 to 3½ feet, 80s. per 100.
YEW, English, 6 to 9 inches, 40s. per 1000; 9 to 12 inches, 50s. per 1000; 12 to 15 inches, 70s. per 1000.
,, English, bushy, 15 to 18 inches, 20s. per 100; 1½ to 2 feet, 30s. per 100; 2 to 2½ feet, 40s. per 100.
,, English, very bushy, 2½ to 3 feet, 60s. per 100.
CURRANTS, Black, very strong, 10s. per 100.
GOOSEBERRIES, strong, 10s. to 12s. 6d. per 100.

CATALOGUES can be had on application to

The Nurseries, Milton, Stoke-on-Trent.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. B. S. W. has much pleasure in offering this fine new Grape, believing it to be a decided acquisition. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each.

NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10s. 6d. each. Extra sized fruiting plants, 21s. each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

6000—Camellias—6000.

H. WALTON begs to call attention to his extensive collection of the above, of all sizes, from 42s., 63s., 105s., to 120s. per dozen; large handsome plants of all the best varieties, from 21s. to 105s. each, all home grown.

AZALEAS, all the leading varieties in fine healthy plants, from 24s. to 63s. per dozen.

A large quantity of Specimen STOVE and GREENHOUSE PLANTS in fine condition.

ERICAS, in Half and Quarter Specimens, all the best Exhibition varieties.

Inspection invited.

Edge-end Nurseries, Brierfield, near Burnley, Lancashire.

See Report No. 190, page 212, Aug. 18, 1877.

Winter and Spring Flowering Plants.

MESSRS. JOHN STANDISH AND CO.'S stock of these is unusually fine this season, and includes the following:—

AZALEA INDICA, bushy and well budded, in good variety.
BOUVARDIAS, good bushy plants.
CAMELLIAS, good plants and well budded.
CARNATIONS, Miss Jolliffe and others.
EPACRIS, good plants.
ERICAS, Hyemalis, Simdryana, Wilmoreana, ventricosa varieties, and others.
ROSES, Tea-scented and H.P's., in great variety.
POINSETTIA PULCHERRIMA.
SOLANUM, well-berried plants; and other plants.

They have also a great variety of PALMS and other plants suitable for decoration; also of ADIANTUM and many other FERNS, besides a varied stock of STOVE and GREENHOUSE PLANTS and GRAPE VINES.

CATALOGUES post-free on application.

Royal Nurseries, Ascot, Berks.

Thorns.—Special Offer.

LENAULT-HUET, NURSERYMAN, Ussy, Calvados, France, begs to offer 20,000,000 1-yr. THORNS, at from 1s. to 6s. per 1000, according to strength. Great culture of seedling and transplanted FOREST and other TREES, SHRUBS, &c.

General CATALOGUE will be ready in the commencement of October, applications for same and all correspondence to be addressed to my

London Agents: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, E.C.

26,000 Camellias.

B. WHITHAM begs most respectfully to call attention to his unrivalled collection of the above, of all the finest varieties in cultivation, and well set with buds, all home-growo, strong, healthy plants. Price from 24s. to 120s. per dozen, according to size and variety.

Also about 10,000 fine home-grown CAMELLIA STOCKS, in pots, fit for present Grafting—First size, 28s. per 100; second size, 21s. per 100.

CATALOGUES on application.

The Nurseries, Reddish, near Stockport.

STRAWBERRY PLANTS, STRAWBERRY PLANTS.—Purchasers' selection from Fifty-five of the best sorts known. For LIST see large Advertisement in last week's *Gardeners' Chronicle*. 3s. 6d. per 100, our selection; 2s. 6d. per 100, 20s. per 1000, all true to name.

HARRISON'S MUSK, 2 plants 1s., 12 for 3s. 6d.

PRIMULA SINENSIS FIMBRIATA, of a splendid strain. 2s. per dozen.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To the Trade.

W. HEATH AND SON beg to offer the undermentioned plants, all of which are healthy and well-established:—

STATICE PROFUSA, good plants, 3-inch pots, 12s. per dozen; 4 and 5-inch pots, 24s. and 30s. per dozen.
DENDROBIUM NOBILE, splendid plants with 7 to 12 branches, 6-inch pots, 7s. 6d. and 10s. 6d. each.
CROTONS, healthy young plants, of all the best varieties, 4-inch pots, 12s. and 18s. per dozen.
IXORAS, of varieties, 3-inch pots, 18s. per dozen.
GARDENIAS INTERMEDIA and RADICANS MAJOR, 4-inch pots, good plants, 18s. per dozen.
ARDISIA CRENULATA and CRENULATA ALBA, young plants, 9s. and 12s. per dozen.
DIPLADENIA BOLIVIENSIS, good plants, 24s. per dozen.
POINSETTIAS, a splendid stock of healthy plants, 4½ and 5-inch pots, 9s. and 12s. per dozen; smaller plants, 6s. per dozen.
BEGONIA INSIGNIS, good plants, 1 foot high, 5-inch pots, 9s. and 12s. per dozen.
BOUVARDIAS, all the best varieties, 4½-inch pots, 10s. per dozen.
PELARGONIUMS, 1877, new varieties, strong plants, 24s. per dozen.
ABUTILON BOULE DE NEIGE, fine healthy plants, 8s. per dozen; larger, in 4½ and 5-inch pots, 12s. per dozen.
ROGIERA GRATISSIMA, 3½-inch pots, 18s., 30s., 42s. per dozen.
PRIMULAS, ALBA PLENA, several thousands of strong healthy plants, in 3 and 4½-inch pots, 9s. and 10s. per dozen.
CINERARIAS, all the best varieties, to name, thumb-pots, 4s. per dozen.
ADIANTUM CUNEATUM (Maidenhair), splendid plants, 4-inch pots, 12s. per dozen, £4 per 100.
ADIANTUM FARLEYENSE, nice young plants, 24s. per dozen.
PTERIS SCABERULA, good plants, 12s. per dozen.
" SERRULATA, small plants, 3s. per dozen; plants in 5-inch pots, 5s. per dozen.
CARNATIONS, The Bride, Miss Joliffe, and La Belle, splendid plants, well rooted, 9s. per dozen.
CARNATIONS and PICOTEES, named varieties, 50s. per 100 pairs.
PANSIES, best named varieties, 25s. per 100.
" best bedding varieties, 20s. per 100.

WILLIAM HEATH AND SON, Nurserymen and Seed Merchants, Cheltenham.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

DUTCH ROOTS.

CHARLES LEE & SON

Have received a large Consignment of

HYACINTHS AND OTHER DUTCH ROOTS,

FOR WHICH THEY HOPE TO BE FAVOURED WITH EARLY ORDERS.

Catalogues post-free.

ROYAL VINEYARD NURSERY AND SEED ESTABLISHMENT,

HAMMERSMITH, LONDON, W.

NOTICE TO THE TRADE.

THE THAMES BANK IRON COMPANY,

UPPER GROUND STREET, LONDON, S.E.,

Having Bought the Entire Stock of

HOT-WATER BOILERS, PIPES, AND CONNECTIONS

OF

Messrs. ANDREW McLAREN & CO., LONDON,

(Who have relinquished this branch of their business),

WILL FOR A FEW WEEKS OFFER THESE GOODS AT

REDUCED PRICES.

HOT-WATER APPARATUS ERECTED COMPLETE, OR THE MATERIALS SUPPLIED AT WHOLESALE PRICES.

ISAAC DAVIES

Has now to offer a fine Stock of the

RHODODENDRONS and AZALEAS

RAISED BY HIM,

And which have been exhibited at various Flower Shows, and have received First-class Certificates of Merit.

SWEET-SCENTED RHODODENDRONS.

R. COUNTESS OF DERBY.—This is the most beautiful Rhododendron of its class. It is bushy-growing and very free blooming, the smallest plants bearing flowers which are pure white, very large, and most deliciously scented. Prices, 7s. 6d., 10s. 6d., 21s. each; a few extra large, 42s. and 63s. each.

R. COUNTESS OF SEFTON.—White with band of rosy purple on each side of the corolla, fringed margin. Prices, 3s. 6d., 5s., and upwards to 42s. each.

R. LADY SKELMERSDALE.—Pure white, exquisitely formed trumpet-shaped flowers, even edges and of great substance. Prices, 3s. 6d., 5s., and upwards to 42s. each.

R. MRS. JAMES SHAWE.—Pure white, extremely free-blooming, and very bushy habit. Prices, 3s. 6d., 5s., and upwards to 42s. each.

R. DUCHESS OF SUTHERLAND.—Pure white flowers, fringed margin. Prices, 3s. 6d., 5s., 10s. 6d., and 21s. each.

The above are admirably suited for Growing in Cold-houses, without the necessity of artificial heat.

SWEET-SCENTED AZALEAS.

AZALEA DAVIESI.—Bears fine trusses of pale sulphur flowers, which change to white. This Azalea is perfectly hardy and very suitable for forcing. Good plants with flower-buds, 2s. 6d., 3s. 6d., and 5s. each.

A. HYBRIDA ODORATA.—A hardy bushy plant, bearing trusses of pure white sweet-scented flowers. Good plants 2s. 6d., 3s. 6d., and 5s. each.

RHODODENDRON MULTIFLORUM, fine bushes, covered with flower-buds, 2s. 6d. to 3s. 6d. each.
R. PRÆCOX, fine plants, well budded, 1s. 6d. to 2s. 6d. each.
R. PRÆCOX RUBRUM, well budded, 1s. 6d. to 2s. 6d. each.
R. PRÆCOX SUPERBUM, well budded, 1s. 6d. to 2s. 6d. each.

The above being Plants that were raised by me, I can recommend them with confidence.

BROOK LANE NURSERY, ORMSKIRK.

J. LINDEN'S

ESTABLISHMENT for the INTRODUCTION of NEW and RARE PLANTS, 50 and 52, RUE DU CHAUME, GHENT, BELGIUM.

FIRST GRAND PRIZES OF HONOUR AT THE FOLLOWING INTERNATIONAL EXHIBITIONS:

Brussels, in 1864 and 1876; Amsterdam, in 1865; Paris, in 1867; St. Petersburg and Hamburg, in 1869; Florence, in 1874; Ghent and Vienna, in 1873; Cologne, in 1875; First Prize for the best New Plants in London, 1865.

The largest and best Stock of Palms, Orchids, Variegated Plants, Tree Ferns, Bromeliads, Cycads, Azaleas, Camellias in bud, Rhododendrons, &c. Plants for Table Decoration, &c.

Wholesale LIST is just issued, and may be had free on application.

Agents in London: Messrs. R. SILBERRAD & SON, 5, HARP LANE, GREAT TOWER STREET, E.C.

BEAUTIFUL FLOWERS

FOR

WINTER & SPRING

WEBBS'

CHOICE COLLECTIONS

OF

HYACINTHS, CROCUS, TULIPS, NARCISSUS, &c.,

CONTAIN A SUPERB ASSORTMENT OF THE BEST VARIETIES

FOR GROWING IN POTS, GLASSES, VASES, &c.
Collections 10*s.* 6*d.*, 21*s.*, and 42*s.* each.

FOR OUTDOOR OR OPEN BORDER DECORATION.
Collections 10*s.* 6*d.*, 12*s.* 6*d.*, 21*s.*, 42*s.* and 63*s.* each.

FOR GREENHOUSE OR WINDOW BOXES.
Collections 10*s.* 6*d.*, 12*s.* 6*d.*, 21*s.*, and 42*s.* each.

All Goods of 20s. value carriage free.
Five per cent. discount for cash.

Webb's Autumn Catalogue of Dutch Flower Roots, &c.,

is beautifully Illustrated and contains Original and Complete Cultural Instructions.

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LÆLIA ANCEPS
ODONTOGLOSSUM ROEZLII
CALANTHE MASUCA
BATEMANNIA WALLISII
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MR. J. C. STEVENS has been instructed by Mr. B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, N., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, September 27, at half-past 12 o'Clock precisely, a splendid lot of this fine Orchid. The plants are in excellent condition, and are breaking freely into growth. The lot of D. bigibbum superbum is undoubtedly the finest ever imported, and is said by the Collector to be far superior to the old variety grown under that name. Many of the bulbs measure from 18 to 24 inches in length.

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25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

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From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

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"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

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THE QUEEN'S SEEDSMEN, READING.

SATURDAY, SEPTEMBER 22, 1877.

APPLES.

OF all the fruits in cultivation there is none of such importance in this country as the Apple. Another advantage it possesses is that it can be grown successfully in most parts of the country; undoubtedly it will succeed much better in some soils and situations than in others, but if suitable kinds are planted they will answer in most districts where any of the better character of fruits will grow. That there has of late years been a greatly increased demand for Apples as an article of food, especially in large towns, there is abundant and conclusive evidence to prove, and in seasons such as the last, and still more the present, when the failure of the crop is so general, there is usually an outcry in the horticultural papers about the necessity for planting more Apples, and this is no doubt correct, and a most desirable consummation, providing that the most suitable soils and situations are selected, the ground properly prepared, and, what is of special importance, the planting confined to the most generally useful and productive kinds, more particularly such as will keep well.

APPLES ON WASTE LANDS.

Many who have expressed their views on this subject, urge that waste lands and railway embankments should be utilised by planting with Apples. Now, any one acquainted with rural matters is aware that the unreclaimed lands in this country consist of commons, unfertile moors, and peaty tracts. As to the two latter descriptions of land, it would be useless to attempt Apple culture upon them, for the simple reason that the trees would grow little and fruit less. The limited area of commons suitable for apple cultivation still remaining unreclaimed would have little influence upon the supply, and there is not much likelihood of much more of such lands being enclosed at all. As to growing Apples on the railway embankments, those who advocate the attempt evince a lack of knowledge of the requirements of the Apple, or they know nothing of what the railway slopes and embankments in this country really are. I am aware that in some places in France and Belgium Apples and Pears are grown with more or less success in this way, but in this, as in other small matters, I have no doubt that in those countries they have looked further ahead in the construction of their railways than we have done. If in the making of railways the whole of the good upper soil had been removed from the top where the cuttings had to be gone through, and also from the surface where the embankments had to be made, and this good soil had been afterwards laid on the slopes, then there might have been a possibility of growing something, if not Apples, profitably upon them; but instead of this the best soil has been almost without exception buried to an extent that has not left enough to cover the slopes 6 inches in thickness. There is not one acre in fifty of these slopes that would pay for cultivation under any fruit or vegetable crop.

To grow Apples successfully good soil of considerable depth is needed, and it is much better when of rather a heavy than when of a light character. The description of the subsoil is also of importance; if this is of a nature deleterious to the health of the trees, and sufficiently open for the roots to enter it, they will not long remain in a fruitful state. Where the top soil is from 15 to 24 inches in depth, not too light, and the under surface of fair quality, it may be relied upon to grow Apples satisfactorily; they also like to be moderately sheltered. Where the situation

is naturally exposed to cold, sweeping winds, a thin belt of deciduous or coniferous trees to protect them is of material advantage. Apples will not do on wet land, and where the soil holds too much water it must be sufficiently drained. Neither will they succeed under the opposite condition of being too dry. Where the subsoil is of a sandy or gravelly character, and the upper surface wanting in depth, and too open, the trees suffer in dry summers to an extent that prevents their either growing or fruiting as they ought.

ORCHARD OR MARKET GARDEN CULTURE.

Before proceeding to plant Apples it is well to consider under what system of cultivation they are to be grown, so as to enable the right description of trees to be selected. Where the intention is to ultimately devote the whole of the ground to the Apples, laying it down in grass when the trees have attained a considerable size, as is usual with large orchards in places distant from a market, where other produce grown in the spaces betwixt the trees cannot conveniently be disposed of, then standard trees on free-growing stocks are no doubt the best; but where, as in market gardens within a moderate distance of large towns, produce of all kinds can be disposed of without involving too much time and cost in carriage, it then becomes a question whether smaller trees, grafted on a stock that will favour less growth with a greater disposition to fruit in a smaller state, are not better, for although trees of this character have not hitherto been used to any great extent by growers of this description, still there are some who have tried them with satisfactory results. The advantage is that the bush fruits and collards usually grown in intermediate rows between the Apples do much better consequent upon being less shaded by the smaller trees and by planting the Apples closer, which the less size of the trees admits of, the crop obtained is equal in quantity to the produce of the standards. Moreover, from the slight pruning the smaller trees are subject to, and the higher cultivation consequent upon digging and manuring for the bush fruits, &c., the Apples are finer. The advantage derivable from the ground being thus occupied by Apples, Pears, Plums or Cherries, with rows of bush fruits intervening, is that whilst they do not interfere with the health of these smaller fruits, they afford considerable protection to their bloom from spring frosts. Under the conditions of partial shelter it often happens that a crop is secured from the bush fruits, whereon, if grown by themselves, the bloom would have been destroyed, which is so much gained even if the Apple bloom is killed. In private gardens, even of considerable size, there can be little doubt that these medium-sized trees are the best, as large standards are so injurious in their effects upon culinary vegetables and other things that often perforce must be grown near them. In small gardens, where standards have acquired anything approaching their full size, their adverse influence in this respect is even worse, and they always look out of character, in addition to which the space they occupy does not admit of sufficient variety, and in seasons when they fail to crop their presence is doubly objectionable.

CORDONS.

The small miniature bush-shaped trees and cordons that find favour with some persons are interesting enough in their way, and serve the purpose of those who are more anxious to grow a large number of varieties on a small space than to have a plentiful supply of good useful kinds. These little toy trees, that a few years ago were so persistently belauded, are poorly calculated to fill the Apple store.

PLANTING APPLES.

In breaking up new ground for planting Apples it should be trenched from 15 to 18 inches deep, according to the depth of the soil, but I should not advise the bottom spit being brought up to the top, merely turning it over and keeping it underneath. If the land is good in quality it will be better not to dig in or use any manure at the time of planting, as the trees will make quite growth enough for a few years without it, and stimulants of this kind can be given whenever required; and when thus applied later on it will necessarily be dug in only a little below the surface, which will have a beneficial effect in inducing the roots to keep near the top—a condition of the greatest importance. In old gardens the addition of a portion of fresh soil, or trenching deep enough to bring up some new to incorporate with the old, will in most cases be of more use than heavy dressings of manure. In situations where the land is naturally moist, or the rainfall considerably above the average, in addition to sufficient drainage I have found it much better to plant upon the surface than to make holes in the usual way, covering the roots to the required depth with soil from betwixt the rows. There is a double advantage in this: the roots, from being so placed, are afterwards more under control, and the drier bed they thus occupy is more favourable through the advanced summer and autumn to the formation of fruit-buds than the production of wood. This method of planting, from the greater depth it gives to the roots, is an advantage where the soil is shallow. There are two other matters that I would urge the importance of: never plant deep, and never defer planting later in the autumn than can be avoided. If I were planting Apples by the acre, I should try to get them all in during the latter end of October. As to pruning, all that is required is to shorten back any over-strong shoots that are taking an undue lead, and to thin out the weaker ones, so as to give enough room to all that are retained. The summer pruning advocated by some people, by repeatedly pinching the shoots, is about as great a mistake with anything but the diminutive toy trees as ever was introduced into anything connected with horticulture. When the trees have got established a few years, any inclination to over-luxuriance, with consequent indisposition to bear, and later still, should they appear to be getting too large for the position they occupy, root-pruning should be resorted to, always performing it early enough—the end of August and beginning of September I have invariably found to give the best results. Root-pruning in the spring is highly injurious.

SELECTION OF KINDS.

In the cultivation of this fruit there are two mistakes very often made—the selection of varieties unsuited to the soil and climate, and planting too many kinds. Amateurs and those who have not much experience in any particular locality, will always do well before planting to look round and see what sorts succeed best in the neighbourhood, and keep to such; and even where all the conditions are favourable to Apples of most kinds, it is much better to limit the planting to a few of the best sorts that come in for use at the different seasons, and that are the most certain and free bearers. However fine in quality any particular variety may be, if it is a shy bearer it is worse than useless; for instance, Cornish Gillyflower may be the finest flavoured Apple in existence, and unsurpassed in texture, but in nine places out of ten throughout the kingdom where Apples are grown it will not produce as many Apples as there are trees, one year with another.

List of the best varieties:—

Kitchen Sorts.	*Dessert Sorts.*
Lord Suffield	Irish Peach
Keswick Codlin	Devonshire Quarrenden
New Hawthornden	Kerry Pippin
Cellini	Ribston Pippin
Ecklinville Seedling	Margil
Blenheim Pippin	Cox's Orange Pippin
Nelson Codlin	Boston Russet
Yorkshire Greening	King of the Pippins
Bedfordshire Foundling	Court Pendu-Plat
Dumelow's Seedling	Sykehouse Russet
Alfriston	Cockle Pippin
French Crab	Sturmer Pippin

These twelve dessert and twelve cooking varieties of Apples may appear a very short list to those who have a leaning for variety rather than quality and quantity, with a continuous supply over the greatest part of the year, but the above sorts combine general excellence in flavour and texture of the fruit with a free bearing disposition; they are good growers in most parts of England, and, unless where the space that can be devoted to the culture of this fruit is in no way restricted, I would much rather plant several trees of each of the above kinds than extend the number of the varieties. *Zed.*

New Garden Plants.

ONCIDIUM CHRYSOMORPHUM, *Lindl. Fol. Orchid.; Oncidium, No.* 188.

A VERY unexpected surprise it was to see lately this obscure plant as a bourgeois of English flowers. The flower panicle is described as 12 inches long, thickly branched, and very pretty in the mass. Dr. Lindley has very well compared it with O. anomalum, Rchb. f. (panchrysum, Lindl.). It is stouter, thicker, has broader leaves, much broader pseudobulbs, and a stronger inflorescence. The branchlet at hand has no heteranthous flowers. It is to be regretted that neither Sir William nor Sir Joseph Hooker has ever published the representation prepared by Mr. Fitch, and quoted by Dr. Lindley ("Lindl., in *Bot. Mag.*, lend."). Is it to keep Dr. Lindley's word "ined." perpetually accurate, or is it the consequence of certain letters addressed by subscribers complaining of Oncids having yellow flowers? Is so, why not complain, also, of their having usually green leaves? As it is, the plant is of botanic interest, and I feel very grateful to Mr. Sergeant Cox, Moat Mount, Mill Hill, N.W., for the sight of it. *H. G. Rchb. f.*

EPIDENDRUM COXIANUM, *n. sp.**

A botanic curiosity, having fusiform pseudobulbs with ligulate leaves. It flowers in a panicle, as I am informed, from the young shoot. The rhachis is viscose. The bracts are unusually developed, and remind one, as does the whole shape of flower, of Epidendrum clavatum, Lindl. The numerous flowers have "brownish yellow sepals, the throat is pale green, the labellum pale yellow." Origin: Mr. Stevens' inexhaustible store-rooms. I have to thank for materials and information about the stem, leaves, and colour, Mr. Sergeant Cox, of Mill Hill, near London, a most ardent grower of Orchids, with whom it has flowered, and to whom the novelty is dedicated. *H. G. Rchb. f.*

GREENHOUSE PLANTS.
THEIR CULTURE AND MANAGEMENT.

THE CAMELLIA (*concluded from p.* 298).—After potting, replace them in the house or pit they have previously occupied, keeping them a little close and shading as heretofore, syringing in the afternoons They will not need water at the root for some days, during which time any roots that have been broken will have time to heal. The reason for potting Camellias at a time when their growth is approaching completion, and different from that found the best for most plants, is that early in the season, for some time previous to any development of top growth, their roots are actually at work, and from their exceptionally brittle nature, especially whilst young, they cannot be disturbed without injury to an extent that generally seriously interferes with the top growth for the season. The evil consequences of this are avoided by moving them at the time here advised; but the potting, particularly with plants that have acquired considerable size, and whose flowering is of much consequence, must not be deferred too long, that is until the flower-buds have grown to any considerable size, or the inevitable result will be that they will fall off. The roots will soon enter the new soil, as, when the plants are in good health, they keep on growing after the wood-growth is completed. They will now require no warmth, simply ordinary greenhouse protection, with plenty of air, but should be slightly shaded during the middle of the day, when the weather is bright, so long as the sun is powerful. The soil even during the autumn and winter must never be allowed to get dry. As to temperature, they will need nothing more than sufficient to keep out frost.

From their natural free disposition to flower, even in a very small state, they will bloom the ensuing spring, but if their flowers are needed for cutting, they should not have much or any of the wood cut with them whilst so young, or it will seriously interfere with their growth; but for most purposes in which Camellia flowers are now used, they are cut or twisted off without any wood attached, and afterwards mounted on wires, which is a great gain to the plants, even when large and strong, as it enables them to produce a full crop of flowers every year, which was not the case when many of the shoots were cut with the flowers, a practice frequently carried so far as to bring about a stunted, unhealthy condition. Each subsequent year's treatment will need to be similar to that advised for the first, so far as warmth, shade, and moisture during the season they are making their growth, potting at such intervals as they require it; but this will not be necessary every year, even in their younger stages, and as they get large they will frequently go on for years without additional room. At the same time, they must not be too much confined at the root, and whenever they evince signs of weakness by making less growth they should be moved to larger pots or tubs. As they get big enough for the

* *Epidendrum Coxianum.*—(Osmophytum) labello apiculato; pseudobulbo fusiformi, uni usque "diphyllo;" foliis ligulatis coriaceis; panicula diffusa; rhachi compressa viscida; bracteis scariosis triangulis ovarii pedicellati tertiam partem æquantibus; sepalis lanceis cuspidatis; tepalis angustioribus; labello omnino adnato circulari apice cum apiculo; carinis ternis in basi, externis basi obtusangulo elevatis; androclinio lobulato.—"Sepala et tepala brunneo-flava; labellum pallide flavum."—Ex coll. E. W. Cox.

latter, any branches that show a disposition to outgrow and impoverish the weaker ones should be shortened back and bent down, but with sufficient room and fair treatment. When the training has been properly attended to in the early stages of their existence, the natural habit of most varieties is such as to entail little difficulty on this head.

Some growers fully expose their plants out in the open air during the summer after the flowers are set; but this is a bad practice, as if stood where the foliage is sufficiently shaded by trees or walls to prevent its getting discoloured by the sun, they are exposed to heavy rains, whereby the soil gets saturated to an extent that causes it to become sour, often inducing a diseased condition of the roots, or, if less serious in its consequences, causing the buds to fall off later when they should be near approaching expansion. A similar result in the buds dropping will follow if the plants ever get too dry at the roots after the buds have attained any considerable size, or if they are kept in too high a temperature with insufficient moisture in the atmosphere; in fact, Camellias will not bear any attempt at forcing, although some kinds open their flowers much more freely in a temperature a little above that of an ordinary greenhouse, but where there is a disposition to accelerate their flowering, 45° to 48° in the night, with 6° or 8° more in the day, is hot enough.

When Camellias are required to bloom earlier than they have done the preceding year, the time to regulate this is after the flowers are set, by keeping them in heat until the buds are grown to a size that will enable them to expand without the application of anything much above a greenhouse temperature, after they have once been removed from the warmth to which they have been subjected whilst making growth and setting their buds, for, though they may be kept in in a temperature such as existed whilst the growth was being made, even until the flowers expand if such were desirable, yet when once they have been removed from the influence of such heat it appears to induce a slower condition of flower development that will bear little attempt at acceleration. Camellias look well trained over a back wall in a greenhouse or cool conservatory, where such exist as are suitable for the purpose, either grown in pots, tubs, or planted out. In the latter way they increase in size much the quickest, as in like manner they do when planted out in a well prepared bed in the body of the house. So treated, they thrive in a way that cannot be equalled by pot or tub culture; but when they are to be grown in this manner they should not be planted out in a very small state, as when thus turned out the limited quantity of roots they possess are not able to take hold of the large body of soil before it gets into a soddened state. The principal objection to planting a collection of Camellias out is, that the system does not admit of a portion of the stock being removed to cooler quarters after the buds are set, so as to retard their flowering, and thus afford a longer succession, or of starting some later with the same object; neither can the plants be so readily washed with any insecticide for the destruction of insects.

When Camellias that have attained a moderate or considerable size happen to get into a stunted condition, with an insufficiency of branches and foliage, there is no method equal to planting out for restoring them to health; where this has to be done, a bed of good turfy loam or peat, if the plants are much enfeebled, should be prepared, with enough sand added to ensure porosity. It should be made at least 6 inches deeper than the depth of the balls of the plants, and the bottom well and carefully drained; into this they should be turned out, either in spring before growth commences, or, better, after the growth is fully completed; but in the case of plants in the state under consideration the later time of moving is not of so much importance. To prevent any possibility of the balls getting dry it will be well to puncture them freely from the surface to the bottom with a stout iron wire in the form of a skewer. With the same view, also, the soil surrounding the ball must be well-rammed, and made an inch or so higher than the surface of the ball, so as to force the water given through it. After the first season, when the roots have extended, the soil thus raised may be levelled down. Camellias so treated generally break out quantities of young shoots from the old wood, and in a few years get dense and full of growth, when, if desired, they may be taken up and replaced in pots or boxes. This should be done as soon as the buds are set, keeping the plants close for some weeks. If the operation is carefully carried out, and they are afterwards fairly treated, they will generally flower freely the ensuing winter and spring.

When Camellias get into a straggling, naked condition it is frequently desirable to cut them right back to the strong branches, or to head down so far, removing the top altogether to within 8 or 9 inches above where grafted. The union with the stock is usually easily to be seen, and although no eyes on the stem are perceptible, it will break into growth at every place where there was a leaf during the earliest existence of the scion; but heading down, or even cutting back to any extent, should never be attempted unless the plants are fairly stocked with healthy roots, or death will most likely be the result. The operation ought to be carried out in the spring, a month or so before the wood-buds have begun to swell; if deferred later, the stools generally bleed to an extent that does them much injury. When headed down they should be placed in a gentle heat and the soil kept slightly moist, but not wet. When broken fairly a little more water may be given. Keep during the summer in a growing temperature, with a moderately humid atmosphere. They usually make long, vigorous growth, which will need stopping and slightly tying out so as to make them shapely.

The after treatment required will be of a similar nature to the ordinary stock. There is some difference of opinion amongst growers of Camellias as to the use of manure-water. I have tried liquid stimulants of different kinds, and have found them decidedly beneficial, especially to plants that are rather deficient in pot-room when given just before and during the season of their making growth, but at no other time. Liquid from stable manure with a little soot added will well answer the purpose.

Camellias suffer from most insects that infest pot-plants, although it is only in extreme cases of neglect that thrips or red-spider do them harm; mealy-bug will live and thrive upon them, but from the nature of both wood and leaves is easily removed; brown-scale is also sometimes troublesome, increasing fast during the growing season, but as it confines itself principally to the leaves, it is easily removed by sponging; white-scale is their greatest enemy, and is difficult to eradicate if once it gets to a head, getting into every crevice in the bark, on the shoots, the leaves, and on the buds. Careful and thorough brushing, with the use of a small pointed stick of soft deal to get into the crevices where the insect takes up its quarters, sponging the plants afterwards, is the best method of keeping down the pest.

The following is a list of the best kinds, old and new:—

Alba plena (old double white): still unsurpassed for all properties.

Valtevareda: bright rose, sometimes spotted with white; imbricated. A large and magnificent flower.

Contessa Lavinia Maggi: white, striped with carmine; flowers very large. Unsurpassed amongst the striped varieties.

Targioni: white striped with cerise; a beautiful imbricated flower.

Teutonia: pale rose striped with white.

Jubilee: a pinkish white, specked and splashed with rose.

Mathotiana: large, rich crimson; imbricated. A magnificent kind.

Mathotiana alba: pure white, similar in every respect to the preceding, except colour. Very fine.

Chandleri: a strong growing crimson, very showy.

Vicomte de Nieuport: beautiful rose, large, and finely imbricated.

Bealii: very deep crimson. One of the best kinds; flowers late in the spring.

Candidissima: medium sized flower of the purest white; blooms late in spring. Should have a place in the most select collection.

Monarch: rich scarlet veined with crimson, irregular centre; a large fine flower.

Henri Favre: flowers beautifully imbricated; colour pinkish rose. A splendid variety.

Imbricata: the finest of all the double reds; flowers sometimes marbled with white.

Imbricata alba: white, sometimes striped with carmine; a fine variety.

Jenny Lind: white, striped and spotted with rose.

Donckelaari: semi-double, rich crimson, beautifully marbled with white.

Fimbriata: pure white, very double, splendidly imbricated, fringed petals; a superb variety.

Princess Bacciochi: deep glossy carmine, regularly imbricated; a beautiful kind.

Napoleon III.: rosy-crimson, edged with white.

Lady Hume's Blush: carmine, with a white tint—a beautiful kind, the plant somewhat straggling in growth.

Storyi: outer petals bright rose, with a whitish centre.

Archiduchesse Marie: red, banded with white, imbricated; flowers very double. *T. Baines.*

VEGETABLE PRODUCTS OF PERSIA.

Some very interesting details on the vegetable products of Persia are contained in a recently issued report on the trade and commerce of Ghilan, Mazenderan, and Asterabad. It seems that from experiments made in the cultivation of Tobacco the result has been successful; a kind known as "Samsoun" is grown in small quantities in the neighbourhood of Resht, from seed brought from the shores of the Black Sea, and although it has been grown and prepared by inexperienced hands it yields a Tobacco of good quality and aroma. This success has encouraged the natives to turn their attention to Tobacco growing, preparations having been made to cultivate it on a large scale during the present year; a company has also been formed with the same object, and special Tobacco growers have been induced to take up their quarters in Resht for the purpose of carefully cultivating the plant. It was estimated at the time the report was written that this year's produce would amount to 1000 cwt.

Olive Oil.—A considerable quantity of oil is yielded by the Olive groves of Rudbar, but the quality, as a general rule, is very inferior, so that it is suitable only for the manufacture of common kinds of soap; it is considered that if properly treated its value would be considerably increased. Salad oil is produced in small quantities by the Armenians, and this oil is said to be equal, both in flavour and colour, to the best Italian oil. There is ample room and good water-power accommodation in Rudbar for the establishment of several water-mills, which would open up a great branch of industry. Olives realise, on the spot, about 3*s.* 6*d.* per cwt.

Rice.—Some years ago this commodity was so little cultivated in Ghilan that it had to be imported from Mazenderan and other parts of Persia; it has now become a produce of considerable importance. Since the repeated failures of the silk crops the peasantry of Ghilan have applied themselves to clearing away the jungle and sowing Rice. This new feature in the agricultural prospects of the country, together with the cutting down of the forests, has contributed to alter the nature of the climate of these regions.

Boxwood.—During the year 1876, 2170 tons of this wood were cut down in the province of Ghilan, numbering in all 60,000 pieces. "When it is considered that scarcely more than one piece can be got out of one tree, and that hence upwards of 200,000 trees were hewn down last year alone in Ghilan and Mazenderan, it will readily be understood that, however thick the jungle may be, this extensive cutting down of the forests must have an effect on the climate of these regions, and it is to be observed that within the last few years—in fact, since boxwood has been cut, and Rice cultivated, a much smaller amount of rain has fallen on the side of the Elburz mountains, which tends to make the country less feverish and unhealthy than it was in days gone by." From the district of Tenekaboun 5800 tons of boxwood were exported during last year, one firm of proprietors having cut down nearly 170,000 trees to effect this object. Every piece of boxwood worth exporting must be at least 9 inches in diameter and between 4 and 5 feet in length. It must be straight and free from cracks, the average weight of each piece being 70 lb.; 1000 pieces of such wood is worth on the coast from £120 to £160. Tenekaboun boxwood is superior to that of Ghilan. The wood felled in these boxwood forests last year was sent to Rostow for transmission to England, but it seems the market got overstocked; and this together with the war rumours then prevalent would, it was estimated, prevent the cutting of any more boxwood during the present year. Therefore, all things considered, the high price of this wood is likely to be maintained, if not increased.

Loupes.—Under this name the large knobs or burrs of the Walnut trees are collected in great quantities. The *loupe* is described as an "article of trade much sought after in the mountains separating the Caspian provinces from Irak or Persia proper. It is only produced in the highlands, where it may be purchased

at a very low rate, but owing to the labour attending its transport in a country destitute of means of communication, it comes to cost too much for speculative purposes to bring it down to the ports of shipment. Some good specimens of this valuable excrescence were notwithstanding brought down last season to Eozelee. The best marked samples of this wood are sent to England, *viâ* Tiflis, while the ordinary qualities suit best the French market. Some *loupes* are to be found weighing upwards of a ton, but, owing to the want of means of transport, they have to be reduced in size. "It would repay curiosity to witness the process by which these hard blocks of timber are cut up into sheets almost as thin as writing-paper for veneering purposes. The *loupe* is introduced into a large receptacle and steamed for several days consecutively, until from the adamantine hardness it naturally possesses it assumes the consistency of cheese; it is then placed under a machine, which, with a large blade, slices it off into sheets, which harden by exposure, and are sold in the market according to size and beauty of design. Some *loupes* in Paris have fetched as much as £800."

From these notes it will be seen that the forest produce of the districts under consideration are of a very valuable description. *Y.*

THE ROTHAMSTED AGRICULTURAL EXPERIMENTAL STATION.*

MR. LAWES was the founder of the Rothamsted Experimental Station, and commenced experiments with different manuring substances, first with plants in pots, and afterwards in the field, soon after entering into possession of his hereditary property at Rothamsted† in 1834. The researches of De Saussure on vegetation were the chief subjects of his study to this end. Of all the experiments so made, those in which the neutral phosphate of lime, in bones, bone-ash, and apatite, was rendered soluble by means of sulphuric acid, and the mixture applied for root-crops, gave the most striking results. The results obtained on a small scale in 1837, 1838, and 1839, were such as to lead to more extensive trials in the field in 1840 and 1841, and subsequently.

In 1843 more systematic field experiments were commenced, and a barn, which had previously been partially applied to laboratory purposes, became almost exclusively devoted to agricultural investigations. The foundation of the Rothamsted Experimental Station may be said to date from that time (1843).

The Rothamsted station has up to the present time been entirely disconnected from any external organisation, and has been maintained entirely by Mr. Lawes. He has further set apart a sum of £100,000, and certain areas of land, for the continuance of the investigations after his death.

In 1854-5 a new laboratory was built, by public subscription of agriculturists, and presented to Mr. Lawes, in July, 1855, from which date the old barn-laboratory was abandoned, and the new one has been occupied.

From June, 1843, up to the present time, Dr. J. H. Gilbert has been associated with Mr. Lawes, and has had the direction of the laboratory.

The number of assistants and other helps has increased from time to time. At first only one laboratory man was employed, but very soon a chemical assistant was necessary, and next a computer and record-keeper. During the last twenty-five years the staff has consisted of one or two, and sometimes three, chemists, and two or three general assistants. One of these is usually employed in routine chemical work, but sometimes in more general work. The chief occupation of the general assistants is to superintend the field experiments—that is, the making of the manures, the measurement of the plots, the application of the manures, and the harvesting of the crops, also the taking of samples, the preparation of them for preservation or analysis, and the determinations of dry matter, ash, &c. These assistants also superintend any experiments made with animals. There are now about 25,000 bottles of samples of experimentally-grown vegetable produce, of animal products, of ashes, or of soils, stored in the laboratory.

A botanical assistant is also occasionally employed, with from three to six boys under him, and with him is generally associated one of the permanent general assistants, who at other times undertakes the botanical work.

Two or three (for some time past three) computers and record-keepers have been occupied in calculating and tabulating field, feeding, and laboratory results, copying, &c.

One, and sometimes two, laboratory men are employed.

Besides the permanent laboratory staff, chemical assistance is frequently engaged in London or elsewhere, and in this way, for some years past, Mr. R. Richter, of Berlin, has been almost constantly occupied with analytical work sent from Rothamsted.

The field experiments, and occasionally feeding experiments, also employ a considerable but a very variable number of agricultural labourers.

On different descriptions of Wheat, nine years, 7 acres (each year in a different field), about 20 plots.

On Beans, thirty-one years (including one year Wheat and five years fallow), 1¼ acre, 10 plots.

On Beans, alternated with Wheat, twenty-eight years, 1 acre, 10 plots.

On Clover, with fallow or a corn crop intervening, twenty-eight years, 3 acres, 18 plots.

On Turnips, twenty-five years, about 8 acres, 40 plots.

On Sugar Beet, five years, about 8 acres, 40 plots.

On Mangel Wurzel, 1 year (in progress), about 8 acres, 40 plots.

On Potatos, one year (in progress), 2 acres, 10 plots.

On rotation, thirty years, about 2½ acres, twelve plots.

On permanent grass land, twenty-two years, about 7 acres, twenty plots.

Comparative experiments with different manures have also been made on other descriptions of soil in other localities.

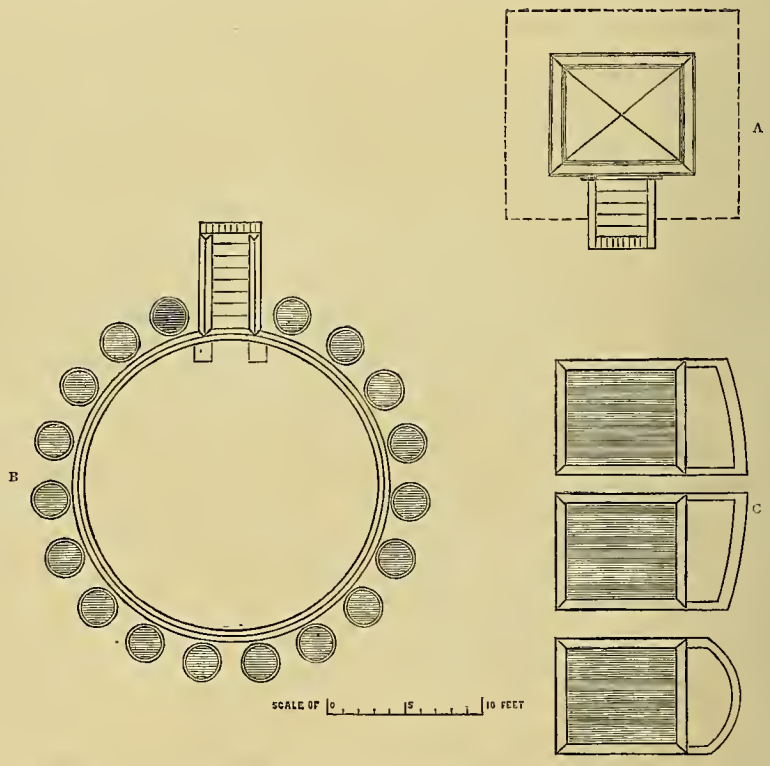

FIG. 71.—A, RAIN-GAUGE; B, SMALLER DRAIN-GAUGES; C, LARGER DRAIN-GAUGE.

Nothing has been done at Rothamsted in the way of manure-feeding stuff or seed control.

The investigations may be classed under two heads:—

I.—FIELD EXPERIMENTS, EXPERIMENTS ON VEGETATION, &C.

The general scope and plan of the field experiments has been:—

To grow some of the most important crops of rotation, each separately, year after year, for many years in succession on the same land, without manure, with farmyard manure, and with a great variety of chemical manures; the same description of manure being, as a rule, applied year after year on the same plot. Experiments on an actual course of rotation with different manures have also been made. In this way field experiments have been conducted as follows:—

On Wheat, thirty-four years in succession, 13 acres, 35 plots, many of which are duplicates of others.

On Barley, twenty-six years in succession, 4½ acres, 23 (or 29) plots.

On Oats, nine years in succession, ¾ acre, 6 plots.

On Wheat, alternated with fallow, twenty-six years, 1 acre, 2 plots.

Samples of all the experimental crops are taken, and brought to the laboratory. Weighed portions of each are partially dried, and preserved for future reference or analysis. Duplicate weighed portions of each are dried at 100° C., the dry matter determined, and then burnt to ash on platinum sheets in cast-iron muffles. The quantities of ash are determined and recorded, and the ashes themselves are preserved for reference or analysis.

In a large proportion of the samples the nitrogen is determined.

In selected cases, illustrating the influence of season, manures, exhaustion, &c., complete ash analyses have been made, numbering in all about 500.

Also in selected cases, illustrating the influence of season and manuring, quantities of the experimentally-grown Wheat grain have been sent to the mill, and the proportion and composition of the different mill products determined.

In the case of Sugar Beet the sugar, by polariscope, has in most cases been determined.

In the case of the experiments on the mixed herbage of permanent grass land, besides the samples taken for the determination of chemical composition (dry matter, ash, nitrogen, woody fibre, fatty matter,

* Drawn up March—April, 1877, in answer to Circular in connection with the commemoration of the twenty-fifth anniversary of the establishment of the first experimental station in Germany (Mockern), to be held in Leipzig in September, 1877.

† Rothamsted is in Hertfordshire, twenty-five miles from London, on the Midland Railway; station, Harpenden.

and composition of ash), carefully averaged samples have frequently been taken for the determination of the botanical composition. In this way on three occasions, at intervals of five years—viz., in 1862, 1867, and 1872—a sample of the produce of each plot was taken, and submitted to careful botanical separation, and the percentage by weight of each species in the mixed herbage determined. Partial separations have also been made in other years.

Analysis of Soils.

Samples of the soils of most of the experimental plots have been taken from time to time, generally to the depth of 9, 18, and 27 inches, but sometimes to twice this depth. In this way nearly 600 samples have been taken, submitted to partial mechanical separation, and portions of the mould have been carefully prepared and preserved for analysis. In a large proportion of the samples the loss on drying at different temperatures and at ignition has been determined. In most the nitrogen determinable by burning with soda-lime has been estimated. In some the carbon, and in some the nitrogen as nitric acid, have been determined. Some experiments have also been made on the comparative absorptive capacity (for water and ammonia) of different soils and subsoils. The systematic investigation of the amount and condition of the nitrogen, and of some of the more important mineral constituents of the soils of the different plots and from different depths, is now in progress or contemplated.

Rainfall.

Almost from the commencement of the experiments the rainfall has been measured—for twenty-four years in a gauge of one-thousandth of an acre area, as well as in an ordinary small funnel-gauge of 5 inches diameter. From time to time the nitrogen, as ammonia and as nitric acid, has been determined in the rain waters.

Three "drain gauges," also of one-thousandth of an acre each, for the determination of the quantity and composition of the water percolating respectively through 20 inches, 40 inches, and 60 inches depth of soil (with its subsoil in natural state of consolidation) have also been constructed. A more numerous series of smaller "drain gauges," arranged for the investigation of the influence of different crops and of different manures, are in course of construction. Each of the differently manured plots of the permanent experimental Wheat field having a separate pipe-drain; the drainage-waters have frequently been collected and analysed. Professor Frankland has determined the nitrogen, as ammonia, as nitric acid, and as organic nitrogen, and also some other constituents, in many samples both of the rain and of the various drainage waters collected at Rothamsted; and Dr. Voelcker has determined the combined nitrogen, and also the incombustible constituents, in many of the drainage waters.

Amount of Water Transpired.

For several years in succession, experiments were made to determine the amount of water given off by plants during their growth. In this way various plants, including representatives of the gramineous, the leguminous, and other families, have been experimented upon. Similar experiments have also been made with various trees.

Botanical Characteristics.

Having regard to the difference in the character and amount of the constituents assimilated by plants of different botanical relationships, under equal external conditions, or by the same description of plants, under varying conditions, observations have been made on the character and range of the roots of different plants, and on their relative development of stem, leaf, &c. In the case of various crops, but more especially with Wheat, samples have been taken at different stages of growth, and the composition determined in more or less detail, sometimes of the entire plant, and sometimes of the separated parts. In a few cases the amounts of dry matter, ash, nitrogen, &c., in the above-ground growth of a given area, at different stages of development, have been determined. The amounts of stubble of different crops have also occasionally been estimated.

Assimilation of Nitrogen.

Experiments were made for several years in succession to determine whether plants assimilate free or uncombined nitrogen, and also various collateral points. Plants of the gramineous, the leguminous, and of other families were operated upon. The late Dr. Pugh took a prominent part in this inquiry.

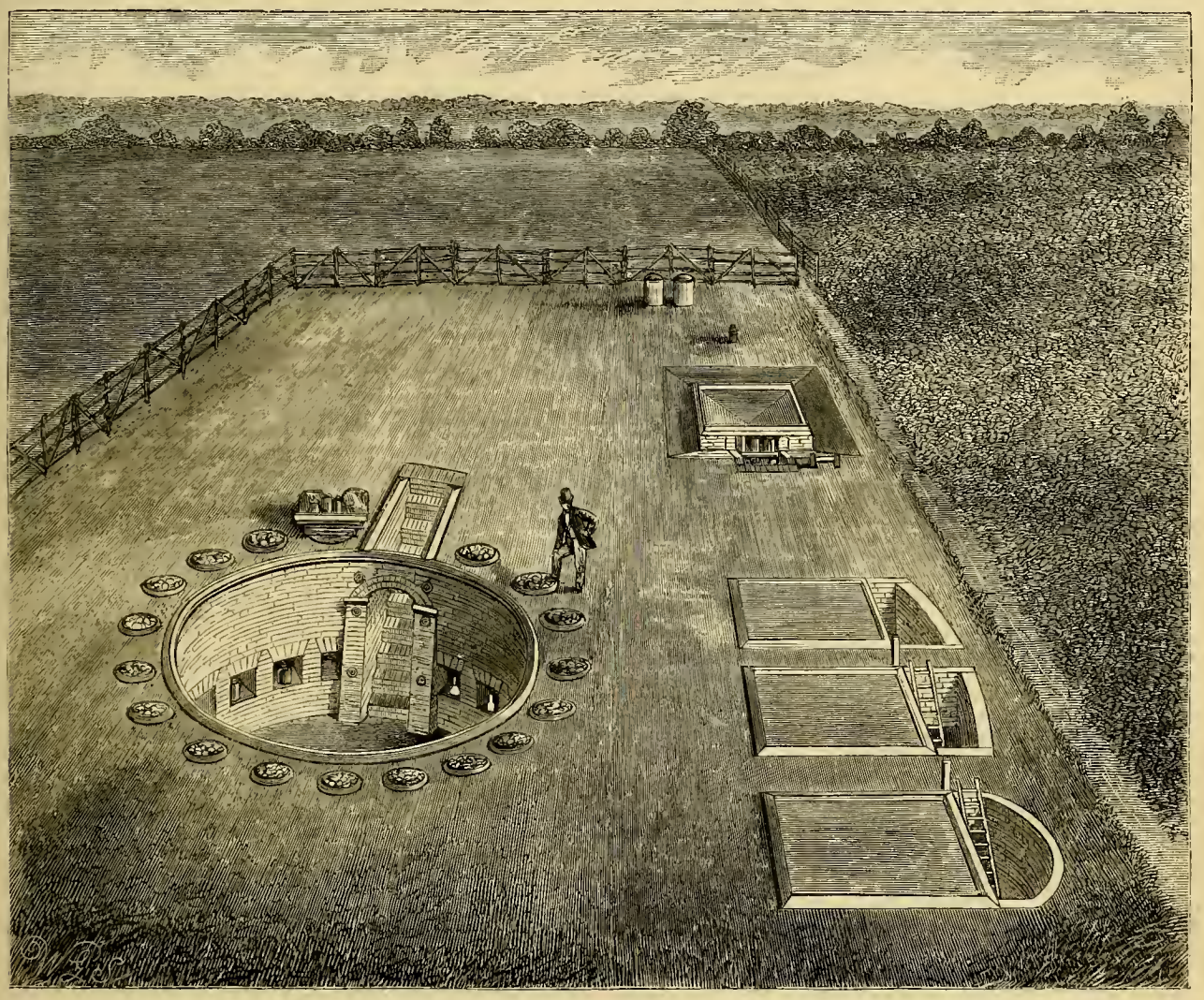

Fig. 72.—Differential drain-gauges at Rothamsted.

II.—EXPERIMENTS ON ANIMALS, &c.

Experiments with the animals of the farm were commenced early in 1847, and have been continued, at intervals, up to the present time.

The following points have been investigated :—

1. The amount of food and of its several constituents consumed in relation to a given live weight of animal within a given time.

2. The amount of food and of its several constituents consumed to produce a given amount of increase in live weight.

3. The proportion and relative development of the different organs or parts of different animals.

4. The proximate and ultimate composition of the animals in different conditions as to age and fatness, and the probable composition of their increase in live weight during the fattening process.

5. The composition of the solid and liquid excreta (the manure) in relation to that of the food consumed.

6. The loss or expenditure of constituents by respiration and the cutaneous exhalations—that is, in the mere sustenance of the living meat-and-manure-making machine.

The general plan of experimenting was as follows :—

To provide data as to the amount of food or its several constituents consumed in relation to a given live weight of animal within a given time, and to produce a given amount of increase in live weight, several hundred animals—oxen, sheep, and pigs—have been experimented upon. Selected lots of the animals were supplied for many weeks, or for months consecutively, with weighed quantities of foods, selected and allotted according to the special point under enquiry. The composition of the foods was determined by analysis. The weights of the animals were taken at the commencement, at intervals during the progress, and at the conclusion of the experiment.

The amount and relative development of the different organs and parts were determined in two calves, two heifers, fourteen bullocks, one lamb, 249 sheep, and fifty-nine pigs.

The percentages of water, mineral matter, fat and nitrogenous substance, was determined in certain separated parts, and in the entire bodies of ten animals —namely, one calf, two oxen, one lamb, four sheep and two pigs. Complete analyses of the ashes respectively, of the entire carcases, of the mixed internal and other offal parts, and of the entire bodies of each of these ten animals, have also been made.

From the data provided, as just described, as to the chemical composition of the different descriptions of animal in different conditions as to age and fatness, the composition of the increase whilst fattening, and the relation of the constituents stored up in increase to those consumed in food, have been estimated.

To ascertain the composition of the manure in relation to that of the food consumed, oxen, sheep and pigs have been experimented upon.

In the case of oxen, the food and litter, sometimes with an acid absorbent, were weighed, sampled and analysed, the animals were fed in boxes for periods of from five to nine weeks, and the total dung produced was well mixed, weighed, sampled and analysed. The constituents determined in the food and litter on the one hand and in the dung in the other, were dry matter, ash and nitrogen.

In the case of sheep no litter was used ; the animals were kept, in lots of five, on rafters, through which (but with some little loss) the solid and liquid excreta passed on to a sheet-zinc flooring at such an incline that the liquid drained off at once into carboys containing acid, and the solid matter was removed two or three times daily, and also mixed with acid. The constituents determined in the food and manure were dry matter, mineral matter, sometimes woody fibre, and nitrogen.

In the case of pigs individual male animals were experimented upon, each for periods of three, five, or ten days only. Each animal was kept in a frame preventing it from turning round, and having a zinc bottom, with an outlet for the liquid to run into a bottle, and it was watched night and day, and the voidings carefully collected as soon as passed, which could easily be done, as the animal never passed either fæces or urine without getting up, and in getting up he rang a bell, and so attracted the notice of the attendant. The constituents determined were, in the food and fæces, dry matter, ash and nitrogen, and in the urine, dry matter, ash, nitrogen, and urea.

The loss or expenditure of constituents by respiration and the cutaneous exhalations has not been determined directly, that is by means of a respiration-apparatus, but only by difference, that is, by calculation founded on the amounts of dry matter, ash, and nitrogen in the food and in the fæces and urine.

Independently of the points of inquiry above enumerated the results obtained have supplied data for the consideration of the following questions :—

1. The characteristic demands of the animal body (for nitrogenous or non-nitrogenous constituents of food) in the exercise of muscular power.

2. The sources in the food of the fat produced in the animal body.

3. The comparative characters of animal and vegetable food in human dietaries.

SUPPLEMENTARY INVESTIGATIONS.

In conjunction with Professor Way, an extensive investigation was undertaken on the application of town sewage to different crops, but especially to grass. The amount and the composition of both the sewage and the produce grown were determined, and in selected cases the composition of the land drainage-water was also determined. Comparative experiments were also made on the feeding qualities of the differently grown produce, the amount of increase yielded by oxen, and the amount and composition of the milk yielded by cows being determined. In this inquiry part of the analytical work was performed at Rothamsted, but most of it by Professor Way in London.

The chemistry of the malting process, the loss of food constituents during its progress, and the comparative feeding value of barley and malt, have been investigated.

Although many of the results of the investigations above enumerated have already been published, a large proportion as yet remains unpublished.

CONCERNING GOOSEBERRIES AND CURRANTS.

THERE are Peas which are called double-blossomed, somewhat inaccurately, because their blossoms are not double. Each flower-stalk that starts from the Pea-haulm bears two blossoms, and that is all. Can a more correct name be found for them?—twin-flowering?—or what? "Double-bearing" would seem to indicate that they bore two crops a-year, which is equally untrue.

A like difficulty occurs with Gooseberries, which occasionally give two fruits hanging from the same branched footstalk. M. Carrière overcomes it by designating the varieties which manifest this tendency as "biferous," although the term is not sufficiently precise, and gives only an imperfect idea of the fact so pointed out. The essential point is, that it should denote the varieties whose fructification differs from that peculiar to the typical form of Gooseberry, Ribes grossularia, whose fruits are solitary, whereas these have a tendency to imitate Currants in their formation of bunches, by producing two, or even three, associated fruits, through a biferous or a multiferous effort. M. Carrière asks if the fact is exceptional—if it is capable of continued reproduction? He does not know ; the future will tell ; it is at least important to point it out. The occurrence, at any rate, is not unique ; for in the sowing which produced the plant that attracted M. Carrière's attention, there were several other seedlings possessing the same character. Is it the beginning of the development of a new type? The thing is possible, but cannot of course be certified. This biferous seedling is moderately vigorous and much less thorny than Gooseberries in general ; which, however, is not surprising, since it comes from the variety Billiard, which is almost thornless. The fruits have no particularly distinctive quality. They are of average size, slightly coloured, and of agreeable flavour, resembling that of other good varieties. Even if the biferous Gooseberry present no great interest in a horticultural point of view, the case is different when regarded botanically. By modifying the type to which it belongs, its inflorescence assimilates it to another type, a kindred species, the bunch-bearing Currant. Perhaps one of these days horticulture may succeed in making bunches of Gooseberries as familiar as bunches of Currants.

M. Carrière also recommends in the *Revue Horticole* the propagation of Gooseberries and Currants by budding, although they are usually multiplied by cuttings. The operation is performed in the same way as with other fruit trees, and at the same season when the bark is sufficiently matured and is easily raised from the wood. The same stock can be made to bear one or several varieties. In the latter case, the effect is sometimes very singular, especially if different kinds are associated ; for instance, Gooseberries and Currants of various colours, white, yellow, pink, green, red, and even black. At the beginning of last summer the nurseries of MM. Croux et Fils, Vallée d'Aulnay, à Sceaux (Seine), contained a certain number of Ribes palmatum, which had been trained in single upright stems and budded as above described. Not only was their ornamental effect very striking, but they also possessed considerable interest. There seemed to be such a complete identity of constitution between the stock and the scion that in many cases the point where the bud had been inserted was hardly distinguishable. This was especially noticeable with the Gooseberries, which seemed to make one with, and only to be a continuation of, the Ribes palmatum—a fact which somewhat surprised M. Carrière ; for, *à priori*, he would have expected the contrary. He therefore urges amateurs to put this mode of budding in practice ; and, for that purpose, to rear as tall as possible single stems of Ribes palmatum, so as to produce tree Gooseberries and Currants, which will make remarkable rarities, especially the former. Nevertheless, it should be observed that as R. palmatum, aureum, tenuifolium, and others, have naturally a great tendency to throw up suckers, especially when grafted or budded, care must be taken to remove all such suckers immediately that they show themselves. Another ornamental way of growing Gooseberries and Currants is to train them over a low arcade or bower. The ripe fruit, of various colours, hanging overhead, makes both a novel and pleasing addition to the foliage of such an arbour or covered walk. *E. S. D.*

ENGLISH NAMES OF WILD FLOWERS AND PLANTS.*

EIGHT years ago I was piloting a famous botanist from the east of England among the fields and lanes round Taunton, when he asked me the name of a plant which he did not at the moment recognise. I answered that it was the Gipsy-wort, and received a prompt rebuke. "This is the third time," he said, "that I have inquired the name of a flower, and you have answered me in English. The Latin names are universal, the English at best are local. It is to be wished that all English names of plants could be forgotten, and their scientific names become popularised instead." Unquestionably a foolish utterance, it was of great service to myself, for it set me to consider the real value of these names which my pedantic guest despised, and from that time to this I have never encountered the popular name of any English wild flower without questioning it closely as to its etymological history and meaning, and noting the passages in our literature where it occurs. It would be a great pleasure to me to believe that the knowledge gained by these inquiries, put together to the best of my power, could interest you to-night as much as it has interested myself.

It is no new thing to infer from the terms in use at the beginning of a nation's history the arts and customs of the nation using them. Thus the fact that in all or nearly all the Aryan languages the words for the Supreme Being, for the king, for brother and sister, for ploughing, grinding, building, closely resemble one another, is admitted to show that our common forefathers in times when they were still one people, and had not yet scattered into India, Persia, Europe, had the beginnings of religion and government, possessed the family life, knew the simple arts which are most needed for the comfort of home life. Let us see what light will be thrown upon the habits of our Teutonic forefathers if we apply their method of investigation to the popular names of plants.

TEUTONIC NAMES.

The following words are common to all the Teutonic languages—must have been known, that is, to the race from which we ourselves, with the Germans, Danes, Swedes, and Norwegians, are descended, on their first settlement in Europe, and before they broke up into sub-divided nations. The first I will take is Birch, the rind of which must, we

* Lecture by Rev. W. Tuckwell before the Somersetshire Archæological and Natural History Society.

find, have been used for boat-building and for roofing houses; for boat-building, since the word "bark," from the same root as Birch, stands for ship in English, Dutch, Icelandic, Danish; for roofing houses, since the old English *beorgan* and the German *bergen*, also from the same root, mean to cover, protect, or shelter. From this simple word, then, we gather that our ancestors possessed the arts of building boats and of roofing or thatching houses. Houses could not be built without timber, and we find the word "tree" in almost every Aryan language standing for three things—for a tree, for timber, and for an Oak, extending the use of Oak wood for building purposes back to the first formation in Asia of our mother language, and presenting us with the additional facts that our European ancestors built of Oak timber the houses which they roofed with Birch. In Hazel a fresh fact lies buried. It is in all Germanic dialects the instrumental form of *hæs*, command or behest, a Hazel stick having been used, as Jacob Grimm informs us, in the earliest times as a sceptre or baton to keep order among slaves and cattle. Without dwelling on the fact that the old word *hælsian*, to foretell, indicates the use of the Hazel rod for purposes of divination, we have the additional probability revealed in a single word that our remote ancestors possessed slaves and cattle. In Hawthorn, common to Swedish, German, and English, we have testimony to the use of a haw, *hæg*, hedge, or fence, "honouring the holy bounds of property," and consequently to the division and appropriation of land, in the earliest Teutonic time. My next word makes some demand upon your etymological credulity. Without tracing particulars, I will ask you to believe that the Sanskrit *Kshi*, to dwell, passes through various forms in one direction to the English "home," in another to the word "heath"; now meaning the plant which grows wild on open land, standing originally for the land itself. "My foot," says Rob Roy, "is on my native heath;" and the same idea was enshrined in the same word to the first Teuton settlers. In the forest he fought his enemies, hunted his prey, hewed timber for his fences, and peeled timber for his roof; his home was in the open land, or heath, from which, again, when ages had passed away and Christianity possessed the towns, he still worshipped his father's gods upon his father's heath, and gained, as Trench thinks, his ancient name of heathen. A sixth word lifts him higher than all the rest. The word Beech, in Gothic, old High-German, modern German, Norse, Danish, Dutch, English, is identical with book, the Runic tablets of our ancestors having been carved upon this wood. In Sloe, the wild Plum, we have the root of "slay," its tough wood having been used for bludgeons; Dog-wood is dagger-wood, from *dag*, to strike; from Ash, whose wood was therefore used for spear-shafts, came the old English *æsc*, a spear; sedge is allied to *sæcg*, a sharp small iron sword. And let us observe that while all these plants, bearing purely Teutonic names, extend far into Northern Asia, trees which stop short at a more southern limit—the Elm, Chestnut, Holly, Sycamore, Plum, Pear, Peach, Cherry—all have Latin names, showing that the Teuton squatters came from a colder country than that in which they are supposed to have settled near the Roman provincials on the Lower Rhine. The knowledge that Wheat, Barley, Oats, Corn, Rye, are all Teutonic words, completes the historical picture given by the first list of names. They show us a race of men coming from a northern to a southern region, dwelling in timber houses, roofed and thatched, launching boats upon the rivers, possessing cattle and slaves, recognising the rights of property and the sacredness of home, fighing with cudgels, swords, and spears, familiar with cereal agriculture, in some way not ignorant of letters. All these facts, just hinted at here, but challenging minute investigation, we owe to a dozen common names of English plants, whose Latin equivalents teach and commemorate nothing of any national interest to ourselves.

GREEK AND LATIN NAMES.

These names, and a few more, are as old as the English language; but from the conquest to the sixteenth century botanical enquiry ceased in England, and the rest of our popular names are little more than 300 years old. Most of these come to us from the Greek and Latin. Any scholar will detect in Acacia the Greek word for guilelessness; in the Amaranth, with which Milton's worshipping archangels wreathed their brows, the Greek for unfading; in the Periwinkle the *pervinca* used to bind about the head; in Lettuce, the meaning of milky; in Geranium, the descriptive name, crane's bill. In the Plane he will see the *platanus* of the poets; in the Rose, the *rhodon* of Homer and the *rosa* of Virgil; in the Sycamore, the wild Fig of the Bible, transferred in mediæval miracle-plays to the tree which now bears the name; in the Vine, the *oinon* and *vinum*, whose Sanskrit root is still present in our words twine and twist. He will understand that the Basil, which poor simple Isabel planted in the pot which held her murdered lover's head, was the regal plant, used perhaps of old in some royal bath or unguent; that the Angelica, which now flavours our soups, and was once a specific against the plague, was given to mankind by angels; that the Belladonna was applied as a cosmetic to make ladies beautiful for ever; that the Cyclamen, which still grows wild in Devonshire, owes its name to its prominent circular tuber. He will not so readily discover that the Tansy of our cottage gardens is the Greek *athanasia*—immortality, administered to Ganymede that he might become fit for his life in heaven; that the common Milfoil Yarrow is the *hiera*, or holy herb, pledged to heal all herbs with its fragrant leaves; that Nasturtium means nose-twister, from its pungent smell; that our Quantock Whortle-berry is a corruption of *myrtillus*, Myrtle-berry; that Eglantine is *aculenta*, the prickly Rose, or Sweet Brier; that the Herb Bennett or *avens*, is the *benedicta*, blessed herb, kept in houses to prevent the entrance of the Devil; that the hip of the Dog Rose is a form of the Greek and Latin words which people afflicted with sore throats know as jujubes; that Liquorice is an Anglicism of the Greek *Glycyrriza*, sweet-root; that the Larch is from the Latin *lar*, a house, in consequence of its use in building; that Lavender, from the Latin *lavare*, to wash, was in the twelfth century Scotch and northern English for washerwoman, because then as now its sweet spikes were laid amongst fresh linen; that the Service-tree is the Latin *cerevisium*, beer—its leaves having been used to flavour ale before the virtues of the Hop were known; that the little Squinancy-wort was the ancient remedy for the disease *kynanche* or dog-choker, which we know in its modern sound as quinsy; that the Mushroom is the Muscarius or Fly-bane, because a particular Agaricus, pulverised and mixed with milk, was used in Southern Europe as we now use the poison called "Keating's Insect Powder." Least of all will our scholar be quick to admit that the Narcissus owes nothing to the love-sick youth over whom Ovid sung and Bacon moralised, but is connected with the Greek *narkodes*, sluggish, a derivative from *narke*, the torpedo, itself sprung from the Sanskrit *nark*, hell; cited by Sophocles (Œd., Col., 682), as crowning the gods of Hades; gathered by Proserpine before her wedding tour into the same dark region, because its heavy odour (for by it the ancients meant the Hyacinth) blunts the nerves and makes men sleepy and torpid.

FRENCH NAMES.

I can find comparatively few names which we have borrowed from the French. Dandelion is, of course, the lion's-tooth. Mignonette is applied by us to a very different plant from that which bears the name in France. Woodruffe, known to travellers in Germany as flavouring the pleasant drink called *maitrank*, takes its last syllable from *roue*, a wheel, its verticillate leaves being set like a wheel or rowell on the stone. Pansy is *pensée*, thought, from its significance in the language of flowers: "There's Pansy," says Ophelia—"that's for thoughts." Gilliflower is *giroflée*, from *caryophyllum*, a Clove, a name originally given to the Carnation, but now transferred to the Wall-flower. Tutsan is *toute-saine*, the oil in its leaves having made it a remedy for wounds. Most curious of all is Apricot, from *abricot*, which at one time I contentedly referred to the Latin *apricus*, sunny, ripening as it does on sunny walls. It is, in fact, traceable to the Latin *præcox*, early, the fruit being supposed by the Romans to be an early Peach. The Arabs took the Latin name and twisted it into *al burquq*; the Spaniards altered its Moorish name into *albaricoque*; the Italians reproduced it as *albicocco* the French as *abricot*, and we get it next in England curiously enough as Apricock, so spelt in Shakespeare's time, and finally as Apricot.

LEGENDARY NAMES.

Many curious bits of myth and history reveal themselves as we excavate down to these old meanings. The Pæony, or healing-plant, commemorates the Homeric god Pæon, the first physician of the gods, who tended the bellowing Ares when smarting from the spear of Diomed. The Centaury is the plant with which the centaur Chiron salved the wound inflicted by the poisoned arrow of Hercules. The Ambross, or Wormwood, is the immortal food which Venus gave to Æneas, and Jupiter to Psyche—the Sanskrit *amrita* which Kehama and Kailyal quaff in Southey's splendid poem. The Anemone, or Wind-flower, sprang from the tears wept by Venus over the body of Adonis, as the Rose sprang from his blood—

αἷμα ῥοδὸν τίκτει, τὰ δὲ δακρυα τὰν ἀνεμώναν.

The Daphne, Syringa, and Andromeda tell their own tales: the last, which you may find in the peat-bogs round Shapwick station, is due to the delicate fancy of Linnæus, who first discovered and named it, blooming lonely on a barren, rocky isle, like the daughter of Cepheus, chained to her sea-washed cliff. The Juno Rose, or tall white Lily, was blanched by milk which fell from the bosom of Juno, the tale being transferred in Roman Catholic mythology to the Virgin Mary and the Milk-Thistle. The yellow Carline Thistle is named after Carl the Great (in Mr. Freeman's county I must not call him Charlemagne), who, praying earnestly for the removal of a pestilence which had broken out in his army, saw in vision an angel pointing out this plant as a heaven-sent cure. The Herb Robert healed a disease endured by Robert, Duke of Normandy, still known in Germany as *Ruprecht's-plage*. The Filbert, though this is disputed, commemorates the horticultural skill of one King Philibert. The Treacle Mustard, a showy crucifer resembling Wallflower, was an ingredient in the famous Venice treacle, compounded, as you will remember, by Wayland Smith to treat the poison sickness of the Duke of Sussex. The word treacle is corrupted from the Greek *theriacum*, connected with wild beasts, whose blood formed part of the antidote. It was at first made up by the physician to Mithridates, king of Pontus, and is still in many parts of England known as Mithridate Mustard. The Flower-de-luce, or *fleur-de-lys*, is the flower of King Louis, having been assumed as a royal device by Louis VII. of France, though legend figures it on a shield brought down from Heaven to Clovis, when fighting against the Saracens. It is probably a white Iris.

Not a few strange superstitions and beliefs are embalmed in well-known names. The Celandine, from *chelidon*, the swallow, exudes a yellow juice, which, applied by the old birds to the eyes of young swallows, who are born blind, or have lost their sight, at once restores it. The Hawk-weed has the same virtue in the case of hawks. The Fumitory, *fume-terre*, was produced without seed by smoke or vapour rising from the ground. The Devil's-bit is a common Scabious, with a premorse or shortened root, which was used so successfully for all manner of diseases, that the Devil spitefully bit it off, and for ever checked its growth. The Eyebright, or *euphrasy*, was given to cure ophthalmia.

> "Michael from Adam's eyes the film removed,
> . . . Then purged with euphrasy and rue
> The visual nerve, for he had much to see."

The Judas-tree, with its thorns and pink blossoms, was the tree on which Judas hanged himself. The Mandrake gathered round itself a host of wild credulities. It was the Atropa Mandragora, a plant nearly allied to the deadly Nightshade, but with a large forked tuber resembling the human form. Hence it was held to remove sterility, a belief shared by Rachel in the Book of Genesis, and was sold for high prices in the middle ages with this idea. In fact, the demand being greater than the supply, the dealer used to cut the large roots of the White Bryony into the figure of a man, and insert grains of Wheat or Millet in the head and face, which soon sprouted and grew, producing the semblance of hair and beard. These monstrosities fetched in Italy as much as thirty gold ducats, and were sold largely, as Sir T. Brown tells us, in our own country. It was thought that the plant would only grow beneath a murderer's gibbet, being nursed by the fat which fell from his decaying body: hence it formed an ingredient in the love-philtres and other hell-broths of witches, and, as it was believed that the root, when torn from the earth, emitted a shriek which brought death to those who heard it, all manner of terrible devices were invented to obtain it. The readers of Thalaba will remember the fine scene in which the witch Khawla procures the plant to form part of the waxen figure of the Destroyer. I have seen the plant growing in the Cambridge Botanical Gardens; it is not uncommon in Crete and Southern Italy; its fruit is narcotic, and its name is probably derived from *mandra*, an enclosed, over-grown place, such as forms its usual home. *Nature.*

(*To be continued.*)

DUTCH BULBS.

THROUGH the kindness of Messrs. Byvoet, of Haarlem, we are enabled to give a list of the Hyacinths and Tulips which formed part of their prize collections at the Amsterdam International Horticultural Exhibition in the spring of the present year. The list may be of some interest to those who are about purchasing bulbs. The varieties marked * formed also part of the smaller collections, and may therefore be looked on as superior varieties for exhibition purposes.

COLLECTION OF 100 FLOWERING HYACINTHS IN POTS IN 100 VARIETIES, SIXTY SINGLE AND FORTY DOUBLE.

Single Red.
Fabiola, or Florence Nightingale
Romeo*
Lord Derby
Macaulay
Reine des Jacinthes*
Von Schiller*
Vuurbaak
Solfatara
Gigantea
Incomparable
Cavaignac
Milton
Garibaldi
Cynthia
Pelissière
Agnes

Single White.
Snowball*
La Grandesse*
Lady Franklin
Alba maxima
,, superbissima
Maria Cornelia
Paix de l'Europe
Mont Blanc
La Franchise
Mina
Madame Van der Hoop
Koningen der Nederlanden
Grand Alexandre
Baroness van Tuyll
Elfride
Anna Paulowna

Single Blue.
Starlight*
King of the Blues*

Single Blue.
Czar Peter
Lord Derby*
Mary of Scotland
General Havelock
Pieneman
Grand Lilac
De Candolle
Lord Palmerston
Marie
Mimosa
Baron van Tuyll
Charles Dickens
Gladstone
Sir John Laurence
Prince Albert
Feruck Khan
Nimrod
Baron von Humboldt
Blondin
Grande Vedette

Single Yellow.
Ida
Obélisque*
Bird of Paradise
Duke of Malakoff

Single Mauve.
Hadyn
Charles Dickens

Double Red.
Lord Wellington*
Grand Conquérant*
Noble par mérite*
Grootvoorst
Koh-i-noor
Prince of Orange*
Susanna Maria
Bouquet Royal

Double Red.
Princess Royal
Belle Alliance
La jeune Christine
Louis Napoleon
Milton

Double White.
Anna Bianca
Miss Nightingale*
Sir Lytton Bulwer*
Sphæra Mundi
La Virginité
Ne Plus Ultra
Jenny Lind
Rosa de Vries
Duchess of Bedford
Prince of Waterloo
Venus

Double Blue.
Bloksberg*
Laurens Koster*
Garrick
Van Speyk*
Albion
Karel Kroonprins van Zweden
Koning der Nederlanden
Hélicon
Comte de St. Priest
Eendracht*
Madame Marmont
Shakespeare
Rembrandt

Double Yellow.
Göethe*
Taune suprême
Willem III.

COLLECTION OF 100 POTS OF FINE EARLY TULIPS, IN FLOWER, IN 100 VARIETIES (THREE BULBS TO A POT).

La Charmante
Franciscus Primus
Susanna
Bizard Pronkert
Le Matelas
Queen Victoria
Feu éclatante
Correggio
Comte de Melbourne
Maria de Medicis
Belle Lisette
Marquis de Westrade
Feu rouge
Queen of Violets
Constantine
De Keizer
Rose de Provence
Mianlus
Pronkjuweel
Cramoisie Royale
Comte de Vergennes
Couronne pourpre
Rose Aplati
Rosa Mundi
Grootmeester van Maltha (pure white)
Morgenzon
Ferdinand Bol
Johanna
Non's Wit
Standard Royal
Perle blanche
Keizerskroon
Belle Laura
Cerise rectifié
Globe de Régaut
Rose tendre
Canarie-vogel
Triomphe des Roses
Couleur ponceau
Red Prince
La Cour de France
Reine des Cerises
Roi Pepin
Grootmeister (red and white)
La Plaisante
Rouge luisante
Yacht van Rotterdam
Drapeau rouge
Garibaldi
Zoost van Vondel (pure white)
Van der Neer
Alida
Standard Gold
Cottage Maid
Grande blanche
Paul Morulse
Theba
Vermillon brillant
Cerise grisdelon
Washington
White Pottebakker
Cerise de France
Rose grisdelon
Brutus
Flamboyante
Rouge luisante
Bacchus
Alida Maria
Keizerskroon (broken)
Wouverman
Yellow Pottebakker
Commandant
Zoost van Vondel
Molière
Marianne
Rose brillante
Eleonora
La Remarquable
Proserpine
Bride of Haarlem
Belle Alliance (broken)
Waterloo
Alpheus
Brutus (broken)
Molière (pure white)
Pierrot
Epaminondas
Rembrandt
Little Dorritt
Intendant
Donna Maria
Parragon Everswyn
Chrysolora
Red Pottebakker
President Grant
Grand Duc major
Holophernes
Duchesse d'Angoulême
La Favorite

AUTUMN ROSES.

BEFORE the season for purchasing comes round, a few words about the most valuable of all Roses—those which bloom freely in the autumn—will not be without benefit to the large class of amateurs who have little opportunity of making observations for themselves. An authentic list of such varieties will not only form a basis for additions to collections, but also serve to correct notes taken at the summer shows, which afford no criterion of the perpetuality of the kinds staged on such occasion. For these reasons the kinds here given are chiefly those which have already appeared, and which have again occupied a noteworthy position in the stands where Roses have formed a portion of the exhibitions in the later part of the year. It is surprising how many of the so-called perpetuals are in actual culture, virtually only summer Roses, their second crop being either nothing, or of such inferior quality as to be scarcely worth growing at all except for the earlier exhibitions. It is unfortunate also that fragrance appears to be as little valued by many of the raisers of modern Roses as true perpetuality. Some of the most attractive Roses of modern date, Baroness Rothschild for instance, are destitute of that property which is, so to speak, almost the very soul of the Rose. We may almost exclude the "Teas" from comment, as they are always late bloomers, some perhaps a little more freely so than others, but all worth cultivating are essentially autumn bloomers, the difference being that some display that invaluable function out-of-doors and with greater perfection in colour and substance than when grown under glass. The whole of the Gloire de Dijon family, which bid fair to become a distinct race, are remarkable for this faculty. Madame Berard and Belle Lyonnaise with the Gloire itself are never so rich and so fine as late in the year.

The following were well shown at the Alexandra on September 13, though the boxes were much less numerous than they otherwise would have been but for the heavy rains in the earlier part of the week. They may, therefore, be taken as representing good autumn bloomers, and consequently worth the particular attention of those wishing to add to or remodel their collections. We shall give them alphabetically, for the sake of convenient reference :—

Abel Grand, H.P.
Adrienne Christophle, T.
Alba rosea or Madame Bravy, T.
Alfred Colomb, H.P.; frequently, and in fine form.
Antoine Ducher, H.P.; a bloom or two.
Auguste Rigotard, H.P.; ditto.
Beauty of Waltham, H.P.; several, in fine order. It is remarkable how frequently this fine old Rose appeared in the prize boxes at the great summer shows, incontestably proving its superior merit.
Belle Lyonnaise, T.; very frequently.
Bessie Johnson, H.P.; more than once.
Bouquet d'Or, T.
Captain Christy, H.P.; whatever other faults it may have it must certainly be admitted a free bloomer in the autumn.
Céline Forestier, N.; some blooms of this.
Charles Lefebvre, H.P.; not so fine as some
Cheshunt Hybrid, T.
Comtesse d'Oxford, H.P.; several times
Dr. Andry, H.P.
Duke of Edinburgh, H.P.; frequently and fine
Dupuy Jamain, H.P.
Emile Hausberg, H.P.; fine and globular
Etienne Levet, H.P.; many times and good
Ferdinand de Lesseps, H.P.
Fisher Holmes, H.P.
François Michelon, H.P.; good
Général Jacqueminot, H.P.; one of the most floriferous and continuous of all the H.P.'s
Gloire de Dijon, T.; plentiful and good
John Hopper, H.P.
La France, H.P.; most numerous of any kind
Louis Van Houtte, H.P.; plentiful and good—far before Reynolds Hole, the few blooms of which, together with the Duke of Connaught, presented a burnt and foxy appearance at the petal points—anything but attractive.
Madame Berard, T.; many superb examples.
Madame Charles Wood; good.
Madame Falcot, T.
Madame George Schwartz, H.P.
Madame la Baronne Rothschild, H.P.; one of the most numerously illustrated, and in fine condition.
Madame Bellenden Kerr, H.P.
Madame Marie Finger, H.P.
Madame Trifle, T.
Mdlle. Annie Wood, H.P.; several good.
Madame Victor Verdier, H.P.; most excellent.
Mdlle. E. Verdier, H.P.; good.
Marie Rady, H.P.; good.
Maréchal Niel, T. or N.; not particularly fine.
Marie Baumann, H.P.; frequently shown, and well.
Marie Van Houtte, T.
Marquise de Ligneries, H.P.
Marquise de Castellane, H.P.
Miss Hassard, H.P.: good.
Maurice Bernardin, H.P.; a fine bloom or two.
Paul Néron, H.P.; more double and symmetrical than usual, in consequence of not being overdone. The writer cut a bloom of this in Mr. John Fraser's nursery a few days before the show, almost equal in globular form to Felix Genero.
Mons E. V. Teas, H.P.
Narcisse, T.; always a good autumn bloomer.
Niphetos, T.; some good specimens appeared.
Perle des Jardins, T.; a nice yellow Tea.
Prince C. de Rohan, H.P.; a bloom or two.
Princess Beatrice, H.P.; several very fine examples.
Sir Garnet Wolseley, H.P.; in Mr. Cranston's stand were some good flowers.
Malmaison, B.; always a fine late Rose.
Rev. J. B. M. Camm, H.P.; good
Star of Waltham, H.P.; many fine examples, proving amongst other excellencies that it is a reliable late Rose. We cut some much finer specimens at the Waltham Cross Nurseries, however, than were seen at the Palace.
Victor Verdier, H.P.; a well-known autumnal bloomer.
Von Moltke, H.P.; not often exhibited, though small, of a brilliant colour.
Xavier Olibo, H.P.; very rich, but scarcely a Rose for amateurs unless under exceptionally favourable conditions.

It must not be supposed that these names exhaust the list of good autumnal Roses, or that others could not be found to accompany them at the nurseries or in large collections. There are hosts of old favourites of well established repute that have been and will be in flower till cut off by the frost. There is another reason given as an illustration derived from the last public displays, which have had everything against them from unfavourable atmospheric conditions—the feasibility of establishing autumnal Rose shows. Under ordinary circumstances the list would have been multiplied fourfold, but exhibitors are notoriously at the mercy of the weather.

Speaking generally the present can scarcely be termed "a Roseless autumn." In this respect the writer has met with few complaints. The writer's personal observation at several large nurseries, as well as at private collections, corroborates this view. There has been no lack of fine flowers, with promise of plenty more to come, Jupiter Pluvius and rude Boreas—"blustering railer," as the song says—permitting. *W. D. Prior.*

FOREST TREES OF CANADA.

(*Concluded from p. 299.*)

Acerineæ.—Two of these trees are very common all over Canada, the Rock Maple (Acer saccharinum), and the White Maple (A. dasycarpum). These are the most beautiful trees in the Canadian forest. Their tall rugged trunks are crowned with a mass of foliage, beautiful in summer, but doubly beautiful when turned by the early frosts of the fall into twenty gorgeous colours and shades of colours. My pen is quite unable to describe the beauties of the Canadian forest at this season of the year. No painter has ever done justice to it. The Rock Maple is a very tough, close-grained, and hard wood. It is highly prized for axe-handles, sleigh-runners, shafts, poles, machinery, and any purpose for which strength and elasticity are required. The Bird's-eye Maple that we see in furniture and ornaments is merely a variety of the Rock Maple, so is the Curly Maple. The woodsman never knows before he strikes his axe into the tree whether it is bird's-eye, curly, or plain.

The Rock Maple is the tree from which the maple sugar is made. Early in the month of April, in Lower Canada, when the snow is still deep in the wood, the inhabitants, the Indians, and many of the back settlers hie into their sugar camps; sometimes accompanied by their wives and families, who enjoy the picnic immensely. The sugar-maker provides himself with a large quantity of Birch-bark sheets in the summer, which he makes up into troughs or pails to hold the sap. Some hundred of these are required in a large "sugary." The Maple tree is tapped by cutting the letter V in the bark. At the angle a little peg of wood is stuck in, to act as a spout, and convey the sap into the trough which is placed below it. A good tree will yield 3 gallons of this sap in a day. The sap only runs in warm sunny days after frosty nights; 4 gallons of this sap are required to make 1 lb. of sugar. It is boiled down in a cauldron over a hot fire until the syrup on being dropped into the snow turns hard. When it is sufficiently boiled it is strained through a blanket (let us hope a clean one), and poured into bark dishes, when it soon hardens. The boiling and straining is the work of the women; the men are kept very busy in attending to the trees and collecting the sap. One man will sometimes tap 200 or 300 trees. An Indian, with his wife and little child, can make 600 lb. of maple sugar in one spring. A very good Maple tree in one season will yield 8 lb. of sugar. Some springs the sap runs better than others. Strange to say, this great depletion—8 lb. of sugar represents about 32 gallons of sap—does not seem to hurt the tree, which is tapped season after season without any bad result to its health. The average run of large trees is about 20 gallons in the season.

The stranger is astonished to see this very ornamental and useful timber used as firewood. Rock Maple is the best of fuel, and constitutes the staple firing of Lower Canada, New Brunswick, and Nova Scotia. Hundreds of thousands of trees are burned every winter. Many thousand stoves in Lower Canada alone glow all winter with red-hot Maple brands, and yet they make no perceptible difference in the Maple forests. With fair play the Maple and the other valuable woods in the Canadian forests will suffice not only to warm and to shelter many generations of Canadians yet unborn, but also to adorn and beautify their country for ages to come. Detestable forest fires, the result of gross carelessness, do more harm to the forests in twelve hours than all the stoves in Canada do in a year. The Rock Maple indicates good dry soil, and is generally found growing with Beech, Black Birch, and White Maple. The White Maple is an equally ornamental tree, but the wood is inferior both as timber and as fuel. There are also two or three other varieties of the Maple, one of which, A. pennsylvanicum, is the favourite food of the moose.

Cupuliferæ.—The White Oak (Quercus alba) occurs here and there in the lower provinces, but is abundant in Canada West. It is a large and valuable tree, indi-

cating the best quality of land. The wood is made into staves, and is used for carriage building and other purposes. The bark is used in the tanneries. The Swamp Oak (Q. prinus), a variety of the above, so called from its growing in swampy places, is also an excellent and very tough wood. The Red Oak (Q. rubra) is a somewhat inferior wood to both of these.

The Beech (Fagus sylvestris) is common all over Canada, and is generally found in company with the Maple and the Birch. It is a hard and excellent timber, but not much lumbered. Together with Maple and Birch it is cut up in 4-foot lengths, split, and piled in little heaps 8 feet long by 4 every other way. In this shape it is called cordwood, and is sold as fuel. The Winter Beech is a variety so called from its retaining the dead leaves all winter. It is a small tree, but the wood is much valued for axe-handles and agricultural implements.

The Chestnut (Castanea vesca). This tree grows only in Canada West. The wood is light and durable. It is very like our own Chestnut, if not identical; the nuts are much alike.

The Hornbean (Ostrya virginica) is one of the hardest of Canadian woods. It is a small-sized tree; the wood is used by carriage builders.

Oleaceæ.—White Ash (Fraxinus Americana) grows in low land. A very tough and flexible wood, of closer grain than the English Ash. It is found all over Canada; used by carriage makers, barrel makers, &c. It is the most flexible of Canadian woods, and is used for making hoops, also by the Indians for making snow-shoe bows.

Black Ash (F. sambucifolia) grows in swamps. It is chiefly used by the Indians for basket making. A tree is cut down, and after having been macerated in water it is beaten with the poll of an axe until the wood peels off in narrow ribbons, which the Indians dye and weave into baskets. Ash trees of both kinds indicate a poor soil.

Ulmaceæ.—The White Elm (Ulmus americana), a magnificent tree, that grows in rich intervale lands, generally near the banks of rivers or creeks.

The Rock Elm (Ulmus racemosa) grows chiefly in Canada West, in the same sort of land as the foregoing. Both these Elms are very valuable wood.

Tiliaceæ.—Basswood (Tilia americana). A very soft wood, something like our Sycamore; useful for turning and carving; also used in furniture and machinery.

Salicaceæ.—The American Poplar, Aspen, or Popple (Populus tremuloides). This tree is commonly found occupying the place of the old Pine forests that have been destroyed by fire. It is a very soft wood, of not much value. The Balm-of Gilead is a variety of the above. The seed coverings of this tree are a sort of down or cotton, which falls in the summer like snow.

Juglandaceæ. (Not found in the northern forests.)—The Black Walnut (Juglans nigra) grows only in Canada West. A very valuable wood, used chiefly by furniture makers; also makes stocks of guns, &c. Well known in this country.

Butternut (Juglans cinerea). This is an inferior species of Walnut, the wood is lighter in colour and more open in the grain, but makes very pretty furniture. The nuts are like Walnuts in shape, only much harder in the shell and the fruit more oily, not unlike the Brazil nuts in flavour. A very pretty tree; grows in poorer soil than the Walnut.

The Hickory (Carya alba) is the heaviest of all Canadian woods. Used for tool-handles, carriage-spokes and shafts, fishing-rods, &c. There are two varieties of this tree, the rough-bark and smooth-bark. Grows only in Canada West. The nuts of the rough-barked variety are very good eating.

Anacardiaceæ.—Sumac (Rhus typhina). A small and very pretty tree, that grows chiefly in succession to the first forest crop. Indicates bad land. The wood is of a yellow colour, and used for furniture and dyes. The bark is valuable for tanning purposes. The seed is contained in large crimson pods, which makes the tree very gay in the fall of the year. The Sumac is a very pretty ornamental tree, and grows freely when transplanted.

Amygdaleæ.—There are three Cherries, of which the Red Cherry (Cerasus pennsylvanica) and the Choke Cherry (C. virginiana) are the most common. The former is one of the first trees that springs up on burnt land in succession to the Pine and Spruce. In some districts in the early summer whole tracts are white with the blossom of the Red Cherry. The fruit is not good. The Black Cherry (C. serotina) is a larger tree, and the wood is of some value, also the fruit. It only grows in Canada West. The Choke Cherry, so called from the fruit, which is such a strong astringent as almost to choke the eater. This pretty shrub grows in the outskirts of the forest.

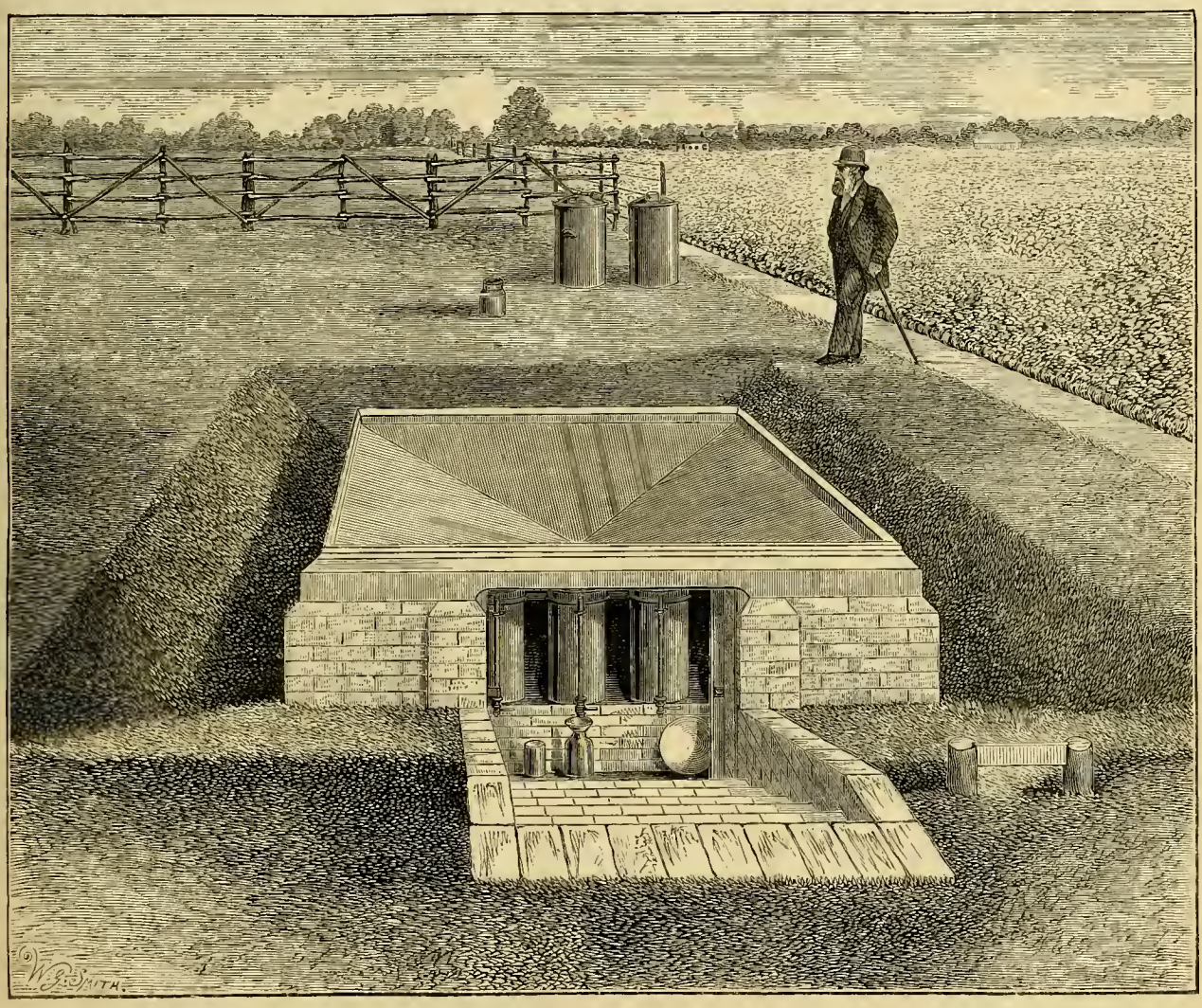

FIG. 73.—RAIN-GAUGE AT ROTHAMSTED; AREA, ONE-THOUSANDTH OF AN ACRE.

Natural History.

THE WAGTAIL AND THE CUCKOO.—In your issue of the 1st I find an account, from your correspondent, Mr. Thomas Wynne, of the rearing of a young cuckoo by a pair of water-wagtails which had built their nest in a Laurel bush. Mr. Wynne states that he never before knew that these birds built in shrubs; I also was ignorant of the fact of water-wagtails building in shrubs, although I have paid some attention to the habits of our commoner birds. Some weeks ago, however, at the house of a relative, I saw a wagtail's nest built in a fork of the Cotoneaster microphylla, which covered the front wall of his house. The nest was about 2 feet from the ground, and not more than that from the portico. Here, close to the main door of the house, a pair of young wagtails were reared, and in due time took to wing. Though exceptional, I have little doubt that others of your correspondents will be able to cite a few similar instances of departure from usual habits. *J. A. C.*

THE CUCKOO.—In reply to "W. E. T.", in the issue of September 8, regarding the habits of this bird, I confidently believe they do suck the eggs of various species of the feathered tribe. I have found many nests during the past few seasons thus destroyed, the eggs being in many instances broken open in a manner which left no doubt that it had been done by the beak of some bird. Now in this immediate neighbourhood we have neither jays, squirrels, nor snakes, which "W. E. T." thinks might be the culprits; but both cuckoos and magpies are very plentiful, and it is known that the latter of these birds will destroy eggs. Having studied the habits of birds for years, I am convinced that both the above birds destroy many nests during the breeding season. There is no doubt that the habits of the cuckoo are not yet fully known, more particularly during the breeding time; but those naturalists who daily see these birds in their haunts during the spring may eventually, by careful study, solve many things which are at present open to much doubt concerning the cuckoo. *Yorkshire.*

PLANT PORTRAITS.

ALLIUM UNIFOLIUM, *Bot. Mag.*, t. 6320.—A handsome Californian species resembling A. roseum, but differing from all known species by the circumstance that its bulbs are developed at a distance one from the other, and are connected by a thread-like rhizome. The plant was introduced by Messrs. Backhouse.

DENDROBIUM CRYSTALLINUM, *Bot. Mag.*, t. 6319.—A species described in our columns, 1868, p. 572. Like D. Wardianum, to which it is closely allied, it is a native of Birma; it differs from it by the shape of its elongated anther-case, which is covered with very prominent crystalline papillæ. The plant was discovered by Colonel Benson, and was introduced by Messrs. Veitch.

ESCHSCHOLTZIA MANDARIN, *Floral Magazine*, t. 275.—A splendid variety of the common Eschscholtzia; the petals are clear yellow within, but blood-red on the outer side. Carter & Co.

ODONTOGLOSSUM CIRRHOSUM, Lindl., *Bot. Mag.*, t. 6317.—A very beautiful Odontoglot, with dense panicles of white flowers, the lance-shaped segments spotted with brown, and with a yellow lip. Native of Ecuador, and figured by us in 1876, p. 503.

ORANGE, TANGIERINE, *Florist*, September, 1877.—A good figure of the fruit of this fine variety, from the collection of Messrs. Rivers.

PAVONIA WIOTII, *Floral Magazine*, t. 276.—A stove shrub of the Mallow family, with lanceolate-serrate leaves; the flowers are each provided with an outer calyx of numerous linear pink or red bracts forming a kind of cage over the true calyx.

PELARGONIUMS ARTIST, EVELYN, DESPOT, *Floral Magazine*, t. 273.—Three show varieties, raised by E. B. Foster, Esq., Clewer Manor, Windsor, and in the hands of Mr. Turner, of Slough.

PELARGONIUM PRINCESS OF WALES, *Florist*, September, 1877.—One of the new Regal Pelargoniums sent out by Mr. W. Bull. The flowers are large, the petals crisped and frilled at the edges, the disc of the petals of a bright rose, mottled with white spots, and with a white stalk. The two upper petals are blotched with maroon.

PITCAIRNIA FLAVESCENS, *Bot. Mag.*, t. 6318.—A stemless Bromeliad, with long, sheathing, recurved linear-lanceolate leaves, whitish on the under surface, erect, many flowered racemes, with a woolly rachis and pale yellow spreading flowers each about 2 inches long. The native country is not known. The present plant flowered at Kew in April.

PINK DUCHESS, *Floral Magazine*, t. 273.—A forcing Pink of lilac colour and good form and substance. It is in the hands of Mr. B. S. Williams.

PINK, SCARLET TOM THUMB, *Floral Mag.*, t. 270.—A very dwarf, stiff-habited Pink, with large, well-formed, fragrant, scarlet flowers. It was introduced by Messrs. Veitch, and is certainly a most desirable plant for pot culture.

ROSE EDWARD PYNAERT, *Revue de l'Hort. Belge*, September, 1877.—A fine globular Rose, of a bright red-groseille colour. It is a seedling from Antoine Ducher, raised by M. Schwarz, of Lyon.

SONERILA ALP. VAN DE SANDE, *Ill. Hort.*, t. 229.—A form with ovate-lanceolate leaves of a rich deep green colour abundantly blotched with irregular creamy white spots.

SPIRÆA VENUSTA var. ALBICANS, *Revue de l'Horticulture Belge.*—A chance seedling from S. venusta, found in the nurseries of Simon-Louis, near Metz. It differs from the type in its lighter rose-coloured flowers.

TRADESCANTIA NAVICULARIS, Ortgies, *Gartenflora*, t. 901.—A creeping species, with small, boat-shaped ovate-acute leaves, and small pink flowers. It is a native of Peru, and would make a pretty greenhouse basket plant.

TULIPA KAUFMANNIANA, Regel, *Gartenflora*, t. 906.—A species with medium-sized flowers, with oblong obtuse segments of various shades of pink, and with a yellow base. The anthers open gradually from above downwards, so that the upper portion is withered while the lower part is still unexpanded—a very curious circumstance. The plant is a native of the mountains of Turkestan.

TULIPA ORPHANIDEA, Boiss., *Bot. Mag.*, t. 6310.—A Greek species, discovered by Dr. Orphanides, with flowers as large as those of T. silvestris, of an orange-yellow colour, flushed with red. Figured from a plant which flowered in June in the garden of the Rev. H. H. Crewe. We do not understand how the termination *ea* was arrived at for this species, and leave it to the grammarians to explain.

YUCCA ORCHIOIDES, *Bot. Mag.*, t. 6316.—A form intermediate between Y. orchioides of Carrière and Y. filamentosa, being probably an extreme form of the latter species. In any case, with its broad spreading leaves with filiferous margins, and its panicle of large white, spreading, bell-shaped flowers, it is a very handsome, hardy plant, worthy of a place in every garden. The plant figured bloomed at Kew in July.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Stock of all winter-blooming stove plants, especially such as are of a soft character, annually propagated, must not be left too long in pits or similar structures where they cannot receive enough warmth, for even in cases where they are not required in flower until the end of the year they must not be subjected to too cool treatment, or their roots will be liable to either perish or become stagnant to an extent that will seriously injure their blooming capabilities. Salvias, Sericographis, Begonias, and a portion of the Poinsettias should now be kept tolerably warm to bring them into flower at the time required.

FERNS.—There is one circumstance often lost sight of connected with the cultivation of heat-loving plants—Ferns in particular—that is, the rapidity with which that most troublesome insect, brown-scale, is communicated from any specimens which are affected with it, and which overhang others. The habits of this insect, which entails such an amount of labour in keeping it down, with injury and disfigurement to the plants, consequent upon the cleaning process they have to undergo, are little observed and often very little understood. From the apparently fixed position which it holds on the leaves and stems of plants, the observer is frequently led to the conclusion that it is little likely to be communicated to clean subjects, unless these are placed for a considerable time in absolute contact with affected ones; yet if any one will take the trouble to examine these scale coverings when they have attained something like their full size, if they are removed without crushing, it will be found that each contains a numerous colony of very small but perfectly formed insects, whose powers of locomotion will be easily seen if placed upon a leaf or the hand, and subjected to a slight magnifying power. When these insects are released naturally from their scale-covered habitation very little disturbance of the plant, even no more than occurs from the use of the syringe, brings them down in quantity upon everything that stands beneath taller affected plants. In this way it often happens in the Fern-house that the most valuable dwarfer-growing kinds, such, for instance, as Gleichenias, get seriously infested with the pest from overhanging Tree Ferns; consequently where scale exists in the latter the cultivator should not rest with merely keeping them in check, but ought to be satisfied with nothing less than their extermination. It is from now to the end of the year, when the season's growth has attained a mature hard condition and no young fronds are being formed, that the cleansing process may be effected with least injury. The lower, older fronds are those that are generally infested, and from these they usually find their way to the younger ones above, to prevent which many growers cut away the lower ones; but as the removal of the fronds in a green state has a serious weakening influence upon the plants, means should be taken to free them from the scale without cutting away until they have decayed naturally. When much affected, it is almost a hopeless task to attempt their complete eradication by brushing and sponging, as, even when the plants are repeatedly gone over, some are almost certain to escape detection. I have found nothing so effectual as, at this time of the year, immersing the infested fronds in Abyssinian Mixture at from 6 to 7 oz. to the gallon, varying the strength according to the more or less hardy state of the fronds, consequent upon the conditions under which they have been grown. The plants are awkward to get at for this purpose. I have found it best to lay them down on their sides, inclining the heads sufficiently to enable the affected fronds to be immersed in the mixture, in which position they should lie for an hour, turning the plants round until all the infested parts are so treated, when if the work is well done very few will escape; indeed, if there is any doubt, a second application should be given. At first sight this may seem to involve considerable trouble, but complete extermination will in the end be found a great saving of labour. Lower growing spreading Ferns that have now completed their growth may be similarly treated. With young plants of Gleichenias particularly, the work should be followed up until they are perfectly free from the insects, some of which often get so low down as to be found on the rhizomes creeping upon the surface of the soil. If these most beautiful and valuable Ferns are not effectually freed from this, to them the worst and most unmanageable of insects, before they attain any considerable size, the work becomes impossible so far as the ordinary cleaning by hand goes, as the incessant brushing and sponging renders them unsightly. Adiantums, Aspleniums, Pteris, Polypodiums, Nothochlænas, Lomarias, Doodias, Davallias, and similar dwarf-growing species should be treated in like manner, and the work persisted in until a thorough cleansing has been effected.

My reason for now going so far into detail in this matter is from a conviction that to see these most beautiful plants in the condition which they ought to be, they must be kept free from these, their worst enemies; and if, as happens in most collections, the plants are also more or less affected with thrips, the eradication of these at the same time is certain by the same means. It is useless, however, to attempt the work at any other time except now through the autumn, when most of the species will have done growing, and be devoid of soft immature fronds.

Previous to these insect-cleaning operations being carried out any plants that have ripe spores upon them, and which it is desirable to propagate, should have these taken off and sown. With many of the most difficult to raise in this way, if the spores are left until they can be shook off, it will be found the operation comes too late, and that they are already fallen and lost. I have found it better to take a few likely fronds, cut them in small bits with a pair of scissors, and strew them over the surface of the pans of prepared soil, squeezing them down by hand so as to be under the influence of the moisture contained in it. In this way I have increased many varieties with which I have previously failed. Seedling Ferns that have been raised through the summer should be now pricked off into well drained pans filled with very open porous soil, putting them in an inch apart; if allowed to remain through the winter in the seed pans they get weakened by over-crowding. Young Ferns that were moved singly some months back into thumb-pots should, as they require it, receive a shift, not giving them too much room; in this way they will be much better calculated to make strong growth next summer than if the potting was deferred until spring, as they will thus be enabled to acquire much more strength of roots. *T. Baines.*

ORCHIDS.—The very beautiful and showy varieties of Miltonias that will now be in flower, partly on account of their blooms appearing when there is a

comparative absence of flowers, and also because they retain their colour and freshness for a considerable length of time, are of such a useful and pleasing character that where convenience can be given it is desirable that they should be well represented and a little extra care given to them at all times. It is not always that they are to be met with in a very healthy and satisfactory condition—either the leaves are of a dull, yellow colour, with shrivelled bulbs, or in some cases the bulbs are without leaves altogether. In hardly any collection will the dwarf, compact-growing species, as M. spectabilis, bicolor, virginalis, or Moreliana, be observed where the foliage is of a deep shining green, and in these cases it is not so essential as an indication of health and vigour as it is with the majority of plants. These are all close and free growing species, and on account of the great numbers that have been imported at various times, are found to vary very much in different plants. Of spectabilis the labellum in some varieties is of an intense rosy purple, the colour being diffused to the very edge, the flowers also standing up in a very firm and bold manner. Among the Morelianas, too, are some where the flowers are of an unusual size and substance, the colour and veining of the lip being of a very rich and distinct character. These should all be grown in the Cattleya-house. As a rule they are found in their native habitat clinging very securely to the smaller branches of the trees, the small roots closely interwoven one over another, the growths at the same time gradually working themselves quite round the stems, forming close and dense tufts. They may be grown on blocks, in which condition they will root and grow very freely; in fact, if those that are just received after importation are treated thus they come on better than if they were made up in pots in peat and moss and stood on the side tables. On blocks they can be treated to copious supplies of water, and this during the lengthened growing season is an absolute essential; at the same time it runs quickly away, and thus the risk of damp and rot is not so great as when a mass of damp soil is present, and only a few roots entering it. When, after becoming established, it is thought desirable to make them up into larger specimens, they may be fixed, blocks and all, three or four, according to size, in shallow pans, so that they may be suspended from the roof. In making them up use plenty of drainage, and in the moss and peat some small crocks or broken pieces of bricks will be found to be of service in keeping the soil porous and open. At no season must they have the direct rays of the sun allowed to fall on them; at the same time a good light will assist the flowers in pushing up, and help them to expand. The long bulb section, such as M. Clowesii, of which there are several varieties; candida grandiflora, a most desirable form; and Regnelli, with the dark rosy purple variety named purpurea, are, on account of their manner of growth, best when grown in pots, well raised above the rim, with plenty of drainage and open soil, as already described. These, too, should be stood in the Cattleya-house, where they will grow very freely, and during early autumn throw up the spikes of bloom which are ever welcome. The rare M. cuneata, the lip of which is pure white, will, however, almost always come into flower during January and February. Carefully look through the collection from this time in the matter of watering; as the plants do not dry so quickly, only give water when necessary, otherwise an undue abundance of moisture is very apt to cause rot to attack the young shoots of those that start away in the autumn. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

Most of the bedding-plants have grown and bloomed well this season, but many of the flowers suffered from the heavy rains which prevailed over most parts of the country. From the same cause plants that are so unusually vigorous are consequently in the condition in which frost is most likely to pinch them; this may occur at any time now, but if frost keeps off, the flower-beds and borders may be fresh and enjoyable for several weeks to come. Keep a sharp look-out for decayed flowers, leaves, &c., and have them cleared off as soon as possible. Any plants that are growing beyond their proper limits may require to be thinned out and pinched back to their desired form; wherever they are encroaching on the grass or edging of walks have them trimmed without delay, for sometimes harm may be done before it may be thought necessary to look after it. Get the propagating brought to a close as early as possible. Verbena cuttings are in better condition now than earlier in the season, and will root quickly in a close, humid atmosphere. Climbers that are growing strongly will require attention. The stormy weather has kept the lawns rather untidy. Let them be swept up as often as required, in order to have them enjoyable. The grass still wants the machine frequently run over it, which keeps it firm and smooth. Provision had better be made for securing the Pelargonium cuttings in the event of heavy rains or frost setting in; the latter may occur at any time now, as the season is pretty far advanced, and not much to be trusted for tender things after this time. The best varieties of Lobelia should be selected and marked, and the seeds carefully looked for in dry weather Any other choice seeds may be collected in the same manner. See that the ties are not getting broken which keep Cupressus, Junipers, and other spiral trees in form; so much rain and wind has been rather trying for them. Have weeds kept under at every favourable opportunity. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—If the same course of treatment as indicated in the preceding Calendar for Figs, viz., August 25, be extended for another fortnight or three weeks beyond the time of clearing the fruit, and conjointly with it a somewhat drier state at the roots be permitted, it will considerably advance the ripening process in the growths of the current year and render them more fruitful for the subsequent one. To accelerate this object, it will also be advisable to withhold water from the roots altogether for the next six or eight weeks. This can be done in the case of ordinary sized borders without any apprehension of danger arising from the borders becoming too arid, providing that hitherto they have had abundant supplies of the element. Attention should also at this season be directed to any requirements in the way of lifting the trees or root-pruning. These are points in management which are occasionally necessary in the cultivation of this gross growing subject: if by reason of too much vigour or from other causes any trees are unfruitful it is a safe plan to either lift the roots partially, or prune them in somewhat hard. This remark applies to these trees generally, but particularly, in this instance, to trees which are to be subjected to forcing operations again ere long, in which case the operation should be performed without much delay, at the same time giving the roots a little fresh compost made up of about half loam and road-sweepings. Keep the growths which are to be retained for bearing fruit next year well exposed to the sun's powerful influence, and any spurs which are not required which impedes its operation should now be removed.

Trees in pots which are intended for early forcing operations should at about this time be overhauled and their requirements attended to. In the case of trees to be shifted into larger pots be careful to have the soil rammed firmly round the old ball, so that in watering this element will penetrate the whole mass of soil evenly. With regard to the trees that do not need to be repotted, they should have the matted roots round the base and the soil removed to the extent of 3 or 4 inches, and, after the drainage is rectified, this space should be refilled with fresh compost. It is usual to employ in this case the same pots again; see, therefore, that the position of the tree in the pot is accurately noted before it is removed, so as when replaced it will occupy its former position. At the same time the surface of the balls should also be dressed down and an equivalent of new compost added. After such matters have been accomplished water the trees, in order to settle down the soil completely. All decayed leaves which fall from the trees should be collected daily, in order to prevent any insect pests which may infest them from being disseminated. *G. T. Miles, Wycombe Abbey.*

ORCHARD-HOUSE.—The most important work in this department includes the potting of early kinds of Peaches and Nectarines from which the fruit has been gathered, and attention to the thorough maturation of the wood of later varieties still under glass. To insure this all late growths will require shortening back to admit of full exposure of the wood to the influence of light, sun, and air, the gradual reduction of the supply of water to the roots, and the maintenance of a dry warm atmosphere by day with abundant ventilation through the night. If red-spider or other insects have gained a footing the trees should be well syringed on fine mornings as the fruit is cleared off, and all strong roots which have found their way through the bottoms of the pots into the border may be checked by the insertion of a sharp instrument to cut off the supply of moisture. Plums, Pears, and Cherries plunged in the open air will be greatly benefited by full or partial exposure of the pots for a time in a position where they can be protected from drenching rains; and if not already done, a shift where necessary into larger pots should be given without further delay. Stop all late growths in Figs, and turn aside the old leaves which interfere with direct action of sun and light on the fruit now ripening. Get in a good supply of stiff turfy loam from an old pasture for potting purposes. Stack in narrow ridges, and protect from snow and rain with thatch or shutters.

If fresh trees are required for potting up, a selection of clean handsome plants which have made firm, moderately strong wood, may now be made for lifting when the leaves are falling. Trees well set with bloom-buds may now be obtained from all the leading nurseries, and these, if carefully potted before the end of October, will give a moderate supply of fruit next season. Rivers' Nectarine Peach is worthy of extensive cultivation for giving a supply of late fruit. *W. Coleman.*

HARDY FRUIT GARDEN.

Most of the autumn kinds of Apples and Pears are unusually late in ripening, but as strong winds generally prevail about this season and may now be expected at any time, they should not be left on the trees a day longer than is necessary, as a slight shaking will cause them to fall, and fallen fruit is of little or no value except for immediate use, owing to the rapid decay of the bruised parts. It does not require much discrimination to determine when Plums, Peaches, Nectarines, &c., are fit to gather, but as regards Pears and Apples the case is different, and cultivators of these should make themselves well acquainted with the sorts, for without this knowledge they are often plucked too soon, and the result is that they become shrivelled, and never reach that degree of mellowness or finish with the rich melting flesh for which all dessert Pears are so highly prized. Late kinds, such as Joséphine de Malines, Bergamot d'Esperen, Glou Morçeau, and others of that class, should be allowed to hang at least a month later, or till such time as they part readily from the trees by just lifting them up, when if ripe they break off at the joint of the footstalk, and this is one of the best tests as to their fitness to gather. The handling in placing them in the baskets, and from thence to the fruit-room shelves, ought to be done as tenderly and carefully as would be necessary for eggs, and in laying them out there is nothing better than smooth, bare boards to store them on, as straw, hay, or sawdust is sure to impart an unpleasant flavour. Although such Pears as Williams' Bon Chrétien, Louise Bonne, Beurré d'Amanlis, and a few other autumn kinds do not keep long, the season for each may be considerably prolonged by introducing a portion of the forwardest where they can get a little warmth to accelerate ripening, and by placing the remainder in some cool, airy cellar or other situation where the temperature is low, and not liable to fluctuate.

It is to be hoped that nurserymen generally are well-stocked with young trees of Apricots, Peaches, and Nectarines, as the demand is likely to be great to replace those killed or crippled by the unpropitious weather we had during the early part of the season, and it would be well for those requiring such, and who desire to have the pick, to give their orders early, that they may secure what are likely to suit others, as those who come first are generally best served in matters of this kind.

As many may be at a loss which to select it may not be amiss to name a few of the most desirable, and among Nectarines Lord Napier is one of the very best, being of large size, highly coloured, and of first-rate flavour. To succeed this Elruge and Violette Hâtive are next in order of merit, and to follow these Pitmaston Orange or Pine-apple and Hardwicke Seedling are the most satisfactory. The Victoria is a first-class Nectarine and the latest of all to ripen, but is not to be depended on unless a warm, favoured situation can be afforded it.

Among the varieties of Peaches the most valuable in point of earliness is Early Louise, which ripens at the end of July, and is not deficient in either colour or flavour. Dr. Hogg or Early Alfred will succeed this, and both are good free-bearing hardy kinds; and to succeed these none are better than Royal George, Noblesse, Violette Hâtive, Barrington, and Walburton Admirable, the latter of which is equal to Noblesse, and the finest and best flavoured late Peach grown. All the above are sure to give satisfaction, and may be relied on as the most suitable to grow either outdoors or in.

The earliest amongst the Apricots are the Golden Drop and Mush-Mush, the latter of which is rather a shy bearer while the tree is in a young state. Moor Park, Hemskirk, and Peach are the three best of those that ripen later, and are all that are worth growing except for preserving, for which purpose the Roman and Turkey are most prized on account of being more juicy and of a sub-acid flavour. The trees, too, are hardier and not so liable to canker or go off in the way the Moor Park and Hemskirk generally do after they attain age or are growing in wet, cold soils or unsuitable situations. The late sunny weather has been very favourable for ripening the wood, but owing to the scarcity of fruit and the abundant rainfall most trees have made a grosser growth than usual, and root-pruning may in such cases be resorted to with considerable benefit. If this is taken in hand at once it will not be without effect next season, for although too late now to induce fruit-buds it will have that tendency in future by causing plenty of fibre and checking any further inclination to over-luxuriance. Filberts are now ripening, and will require close watching to save them from squirrels, which are sure to find them out and carry off the greater portion unless means are taken to prevent them. *J. Sheppard.*

THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 22, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept. 24 { Sale of Dutch Bulbs at Stevens' Rooms (and Wednesday)
THURSDAY, Sept. 27—Sale of Orchids, at Stevens' Rooms.
SATURDAY, Sept. 29—Sale of Dutch Bulbs at Stevens' Rooms.

THE details which we are enabled to publish relating to the work done at ROTHAMSTED for the last thirty-five years, constitute a record of the very highest interest and importance. They illustrate very forcibly one striking difference between the procedure in this country and that of others. In Germany, in France, in America, for instance, agricultural stations and physiological laboratories abound—all doing useful work, but all, with few exceptions, maintained by the several Governments or by public means. Rothamsted, on the other hand, is the hereditary property of an English gentleman, the establishment is maintained at his sole cost, and the vast series of experiments there carried out have been devised and fulfilled for purposes of pure science by Mr. LAWES, with the assistance of trained observers and experts, foremost among whom we must mention Dr. GILBERT. By private enterprise, then—by zeal, industry, and talent, which we may well call unrivalled, a long series of experiments have been carried out in magnitude and in importance superior in their way, we may say, to anything that has been done in the experimental farms and laboratories of the Continent.

The bare details given in another column are sufficient to justify this assertion. The general aim of these truly vast series of experiments has been to question Nature as to the best and most efficient means of feeding plants and animals for the benefit of the human race. Although these experiments have throughout been carried out from the point of view of pure science—utility having been a secondary consideration—yet it will be evident to any one who casts his eye over the records now given that direct utility has been served in a greater degree than by any other series of experiments of like character that have hitherto been made. The Rothamsted experiments offer, indeed, another proof that in the promotion and advance of pure science as the primary consideration lies the surest and most certain road to practical utility.

Little need be added by us to the record given in another column. Its bare record of work accomplished is the most impressive commentary that could be made. It will be seen that the experiments were made with a view to elicit from Nature herself in the most practical manner the mode in which the feeding of plants and animals can, under both natural and artificial circumstances, be conducted. To this end the life history of plants and animals has been studied, the nature of their food investigated, the relations between the living organisms and the world around them, the earth, the air, the water, the heat, the light, and their reciprocal interactions, investigated. The mineral theory of LIEBIG has been proved to be erroneous. New and unexpected light has been thrown on the requirements of particular plants. Thus the highly nitrogenous leguminous plants have been conclusively shown not to be specially benefited by nitrogenous manures, and, on the other hand, starch and sugar yielding crops have been proved to be particularly assisted by the application of nitrogenous manures. But we have no space to do more than hint at the general character of the researches made at Rothamsted. The general result is in the highest degree honourable to Mr. LAWES and his associates, and gratifying to our national self-esteem. These are no mere flower-pot experiments, they may be measured by the acre. These are no temporary or superficial trials, they have extended in most cases considerably over a quarter of a century; and the results have been in every case watched, observed, calculated, and tabulated with as much care as in the more minute proceedings of an analytical chemist. In the field, indeed, the same minute precautions and accuracy of observation and of record have been maintained, so far as the circumstances of the case have permitted, as are expected at the hands of the analytical chemist. Field observations and laboratory work have gone hand-in-hand together, have been carried out with the same method, treated in the same manner, and thus yield a body of observations unsurpassed in extent, in variety, and in accuracy. The results of all this labour and skill have, to a considerable extent, been given in the Journals of the Royal Agricultural and Royal Horticultural Societies and in other publications, but the very number of these scattered records and their prodigious wealth, variety, and complexity of detail render them difficult to be grasped by an ordinary scientific reader. Life is short, art is long. The time seems to us to have come when the directors of this noble experimental station should gather together into one harmonious consecutive treatise the main results of their labour and the legitimate inferences therefrom. We are, of course, aware that to some extent this has already been done. Most of the very numerous publications of Messrs. LAWES and GILBERT contain summaries, but these summaries themselves now require consolidating, and their mutual relationship made clearly evident. One other point remains to be mentioned.

In what other country would services so splendid and so disinterested be allowed to pass unnoticed by the nation? True, such honours as science can give have been bestowed, and agriculturists have not been unmindful of what has been done for them; but surely this is a case for Governmental recognition. Had Messrs. LAWES and GILBERT and their several associates in their respective degrees been soldiers or sailors, they need not have effected a tenth part of what they have done to have been the recipients of State honours and rewards. Doubtless their own satisfaction at the results of their labours is the best and sweetest reward they themselves could look for; but, as a matter of national honour, it is greatly to our discredit that services so long continued and so valuable should have been allowed to pass without State recognition.

Our illustrations represent the Jacobean mansion of Mr. LAWES at Rothamsted (fig. 75, p. 373). Fig. 74 the interior of the laboratory, with its myriads of *pièces justificatives* in the shape of analyses and records. Fig. 73 the rain-gauge, one-thousandth of an acre in area. Figs. 71 and 72 other drain-gauges of like area, but filled with soil of various depths, to show the quantity of rain that percolates through strata of different depths, and others again of smaller area arranged in a circle, and destined to show the amount of rain penetrating through soils of various characters, degrees of consistency, in a natural state or artificially consolidated, and mixed with farmyard and various artificial manures. Further, some of these gauges are intended to show the amount of rain that percolates through a given area and depth of soil when bearing a crop of cereals or other plants with different root and leaf action, &c. The rain so collected, together with the drainage-water from some of the fields, is not only measured but subjected to chemical analysis, to show its constitution. Some of the results of this wholesale plan of investigating the amount and composition of the rain according to different circumstances, are indicated in a suggestive manner in the paper at p. 360.

A REMARKABLE old plant of BRUGMANSIA SUAVEOLENS is now an object of considerable interest in one of the conservatories at CASTLE ASHBY, Northampton, the seat of the Marquis of NORTHAMPTON. It really forms a fine tree, for it completely fills the space allotted to it in the house in which it is planted out. The huge head is loaded with its large, pendent, trumpet-shaped, pure white flowers, which are very fragrant. It is quite a matter for conjecture how long this plant has been at Castle Ashby, but Mr. GEORGE BEECH, the gardener, informed us that an old man still on the place remembers it as having been there sixty years ago. Every year it is cut back hard to the old wood, something after the fashion of a pollard, and then at the proper time it bursts forth into growth, and the flowers may be said to be heaped up on the branches at this time of the year. In the same house there is a plant of Bignonia grandiflora, which it is believed is as old as the Brugmansia. It has a stem of considerable dimensions, suggestive of great age, and during the summer it produces an abundance of remarkably fine clusters of rich orange and scarlet trumpet-shaped flowers. In the same house Tecoma capensis, Plumbago capensis, Cassia corymbosa, trained against a wall, and various parterre flowers are now very attractive, and supply an abundance of bloom for cutting from. In one of the newer conservatories Sollya heterophylla, with its charming sky-blue flowers; Bignonia Cherere, Eupatorium glandulosum, are flowering very freely against a wall; and the old Parsley-leaved Pelargonium, P. apifolium, with its curious brown and blush flowers, are all of much interest to the visitor. A fine plant of Desfontainea spinosa against a pillar is making a fine growth, and its numerous red and orange flowers contrast strongly with its deep green leaves. In one of the stove houses at Castle Ashby Mr. BEECH has covered the wall at the back with various forms of Hibiscus, most of which are now in flower. The most striking are linearis variegata, with large carmine flowers; perfectus carminatus, with very large single red blossoms; luteocarpus, pale salmon-buff; miniatus semperflorens, very large red; and metallicus, single rosy red. Single flowers of these forms of Hibiscus, against a background of fronds of the Maidenhair Fern, are very useful for table decoration, indeed they are fine things to cut from. In the same house Meyenia erecta was growing and blooming freely against the back wall. Mr. BEECH has also been very successful in flowering Tritonia aurea; a large pot containing six bulbs is now highly attractive, the flowers are large, bold and well coloured. After the plants have gone out of bloom at the end of the summer they are dried off, then the soil shaken from the roots, and the bulbs repotted in loam, leaf soil and sand, and kept on a shelf in the stove house near the glass. It blooms both in the spring and autumn.

—— There are still some places remaining about the country where the more elaborate systems of modern FLOWER GARDENING have not altogether stamped out the old-fashioned characteristics of a flower garden. A flower garden at Castle Ashby, complete in itself, is wholly composed of beds of old-fashioned flowers. There are beds of sweet-scented Cloves, Asters, Stocks, Roses, Phlox Drummondi, Salpiglossis, &c., and one of them, a true bed of sweet-scented plants, contained a good selection of scented-leaved Pelargoniums, Balm of Gilead, Aloysia citriodora, and what is known as the Pine-apple-scented Salvia, which well deserves its name for the leaves are richly perfumed with a scent like that of the Pine-apple. Mr. BEECH obtained this from Miss HOPE, Wardie Lodge, Edinburgh, and he grows it in pots in the conservatory for the sake of its delicious fragrance. One of the finest of wall plants is Ceanothus Gloire de Versailles. It is a vigorous grower, but while free in growth blooms with great freedom, and it is just now highly attractive, the bunches of flowers being large and striking. A variety of C. rigidus with golden foliage is also a very desirable plant for warm walls, and though the yellow variegation is not particularly striking, the plant has always a cheerful appearance at all times of the year. Pavia californica is now a conspicuous object in the pleasure grounds at Castle Ashby. The specimens are growing in shady sheltered spots, but they are doing well, and are covered with large panicles of

white fragrant flowers. The foliage is ample and handsome, and in the autumn, when the trees bear fruit, the season of attractiveness is continued up to the fall of the leaf. This Pavia has been well described as "one of the handsomest introductions of recent date."

—— In connection with the SLOUGH LITERARY AND SCIENTIFIC INSTITUTION a course of instruction was commenced yesterday, September 21, in the subject of botany, which will be pursued in connection with the Science and Art Department. The course will embrace, besides the chemical preliminaries, the various departments of the science designated as histological, structural, physiological, systematic, economic, and geographical botany. The class will be held every Friday evening from 8.15 to 9.45. The instruction will be by means of class lectures, illustrated by diagrams and the use of the microscope. A constant reference to living specimens will be made, and these botanically described, with a view to impart a useful training in precision of expression, and to facilitate an acquirement of technical language. At the yearly Government examinations all students who are placed in the first class receive Queen's prizes: efforts will also be made to procure the offer of a local prize for the best worked paper in the examination of 1878. Mr. NEWLYN is the teacher, and in view of the admirable training botany well taught affords, as well as from its immediate advantage especially to young gardeners, we wish Mr. NEWLYN a large and appreciative class.

—— The Babool, or ACACIA ARABICA, seems to be a much more important tree in some parts of India than it is generally supposed to be. In a recently issued report of the Forest Department of the Bombay Presidency an account is given of the uses of this tree, from which we learn that its wood is preferred before any other for the construction of carts, and every village owns large numbers of these vehicles for the traffic of the country, which is carried on almost entirely by carts. Sugar and oil presses and grain pounders are made of it, and it is used for building the flat-roofed houses of the Deccan. Its branches, covered with long thorns, are invaluable for fencing material; thrown loosely down on the boundary line of a field they come into use at once as protectors to the crops, and are green and effective so long as the crops are on the ground. Its pods provide fodder for sheep and goats. It is prized above all woods for firewood. The gum it exudes is an article of commerce, and is used largely in the concoction of native medicines, cloth-dyeing, and printing. The bark is in request for tanning and dyeing; it is a powerful astringent, and when food is scarce it is eaten pounded and mixed with flour. The roots are also used for tanning, and for the distillation of a native liquor.

—— Our thanks are due to Mr. BULL for allowing us to see four fine fruits of the CASIMIROA EDULIS, ripened in the garden of MITCHELL HENRY, Esq., M.P., of Kylemore Castle, Galway. The fruit in question has been called the Mexican Apple. In appearance it resembles an Apple, but the leaves and flowers are more like those of the Orange. As we hope to give a figure of this very interesting fruit in a future issue we defer further notice of the plant at present, merely stating that Mr. GARNIER describes the fruit as superior to any tropical fruit he has ever tasted. It would probably succeed in an orchard-house in this country, and would be a valuable introduction into many of our colonies. We congratulate Mr. BULL as the fortunate introducer of this plant, and Mr. GARNIER on his success it fruiting it.

—— Writing on the cultivation of EUCALYPTUS GLOBULUS in Kanara, one of the forest officers says:—"There is one thing that may be said in its favour, and that is, that if found successful, the people would everywhere take to planting it about their homes, in consequence of the properties it is said to possess in preventing malaria, and in which such of the natives as have seen it fully believe. In Duarwar, near the market-place, where a few plants of Eucalyptus globulus were planted and enclosed, the perfume given off from them attracted many admirers, and the greatest desire was evinced to touch or take away a leaf or two. One plant, a great beauty, pulled about in this manner, succumbed to the attack thus made upon it."

—— Messrs. RUTLEY & SILVERLOCK, of 412, Strand, have sent us a cake of SOAP from China, stated to be made from the seed of the Tea plant, and to be very efficacious when used with water in destroying worms on lawns. The soap in question has somewhat

FIG. 74.—INTERIOR OF THE LABORATORY AT ROTHAMSTED.

of the appearance and smell of coarse oilcake. When broken up and mixed with a canful of water, so as to form a rather thick mixture, we found it very efficacious in bringing to the surface and killing a large number of worms from a lawn on cold, wet soil.

—— The successful extermination of weeds and creepers in the Indian forests is one of the difficulties the forest officers have to contend with, and one of the most difficult of these weeds to eradicate is the PRICKLY PEAR. This has become quite a pest, and it is satisfactory to learn that the plant is in future likely to become of some use. Its appearance in the Poona districts is, by a local tradition, attributed to a few seeds being brought to Poona from Delhi a century and a half ago. The rapid spread of the plant is due to birds being very fond of the seeds. Till very lately it was thought that the Prickly Pear could yield no return, but it has recently been discovered that the Babool seed sown in the ashes of the Prickly Pear germinated very quickly, and plants manured with the ash grew vigorously and strong. Further it has been said that this ash is a very valuable soil fertiliser. A series of experiments have been tried by the Deputy Conservator of Forests, Poona, in the use of Prickly Pear as manure, by crushing it and then applying it to the roots of plants and shrubs. The Superintendent of the Botanical Gardens, Gunesk Khind, writing to the Deputy Conservator of Forests, Poona, says:—"Since you drew my attention to Prickly Pear as manure, I have used several hundred cartloads of it. I put it into a tank through which water for irrigation passes; of course it decomposes rapidly, and the water carries away a large portion of the gases that are generated together with small pieces of half-decomposed vegetable tissue. What could be better plant food on a soil from which the vegetable matter has been collected and burned by so many generations?" These favourable opinions on the use of the Prickly Pear, however, are not shared in by all even of forest officers, for one writing on the subject says:—"The superintendent of a botanical garden may employ it as a manure without mischief, but it will be a very disastrous event if ever the cultivators make use of it generally for this purpose. They have no means of crushing it thoroughly, and its use as a manure would inevitably extend the growth of this mischievous plant." This writer also further says:—"I am so convinced of the impossibility of controlling the growth of the Prickly Pear when once introduced, owing to its propagation by birds and animals, that I would prohibit its use as a hedge to forests, or as a substitute for fire-paths." It will be gathered from this, that for the purpose of preventing the spread of fire in forests the Prickly Pear has been recommended, as it grows with such luxuriance, and establishes itself so readily, that impenetrable hedges are quickly formed, and if planted thickly on the outer boundary line of a reserve, it would be practically impossible for fire to penetrate from the outside into the forest. Several species of grass are also recommended as being admirably suited for the same purpose, Panicum spectabile being one of the best, and this is stated to grow luxuriantly in the hottest and driest places, shooting vigorously to 3 or four feet in height, with deep roots often a yard long, and 1 inch or 2 inches thick. "It is very sweet and succulent, and always green. A seedling will cover a square foot in one year with deep matted roots. Fire would not travel across it."

—— There seems some reason to fear the total extinction of the SCAMMONY PLANT (Convolvulus Scammonia) in Turkey. For many years, owing to the wholesale adulteration of Turkish scammony, which includes a large proportion of gum-arabic, flour, and other ingredients, the English drug-houses have preferred buying the root and preparing their own scammony. The following extract from a report by the British Consul at Smyrna will be read with interest, and should be taken some notice of before it is too late:—"The Government," we read, "having allowed the digging of the roots of this drug the crop is annually diminishing, and if the destruction of the plant is not put a stop to the article will totally disappear."

—— It may not be out of place just now when we are lamenting the exceeding SCARCITY OF HARDY FRUIT, to remind our readers that the humble VEGETABLE MARROW may be easily converted into a delicious preserve such as may well be acceptable in any family circle. The mode of its preparation was explained in these pages about this time last year, and shows that with the addition of such simple flavouring materials as sliced lemon peel and ground ginger, the flesh of the Marrow may be converted into a most pleasant luxury. The Vegetable Marrow is so easily cultivated that it may well form a staple product in every garden. It is also comparatively independent of seasons, as it is rare indeed that the crop is a failure. In this respect, although tender in constitution, yet it may well be classed as a most valuable and reliable hardy fruit.

—— NELUMBIUM ASPERICAULE is flowering in the Lily-house at Kew. It is a great improvement on N. speciosum for garden culture, requiring a lower temperature, blooming more profusely, and having flowers that are even more magnificent. The petals are broader than those of N. speciosum, narrowing less to the base, with deeper rose colour over the entire surface. The glow of colour within the flower is, to the eyes, almost like that of some molten metal. It was raised, we believe, by the late Mr. SYLVESTER. The above specimen is growing in a pot, which seems quite sufficient for its development.

—— We understand that it has been decided to hold the next spring exhibition of the Royal Caledonian Horticultural Society in the new Vegetable Market, Edinburgh. For light, space, &c., there cannot be a better situation for a flower show.

—— The RAINFALL which has characterised the past summer, especially in the North, has not been confined to "our tight little island." A private soldier, serving with the United States' troops now engaged in holding the Indians in check in the remote portions of Nebraska State, mentions in a letter to his friends here, dated August 21, that "the Indians have endeavoured to fire the woods repeatedly, and so burn out the camp, but owing to its having been such a wet season everything is too green to burn." In spite of this EXCESS OF MOISTURE, however, it is unpleasantly dry at times, as he further mentions his belief that "it is the worst country in the world for dust, as when the wind blows the air looks like a London fog in November, and no one will face it; and as to going against it, not even a mule could do it." At the date of the letter it was "already beginning to grow cold, and one finds it comfortable to stay near the stove, for the country is not blessed with a very long summer; but when it comes it comes with a vengeance, and thus makes up for its short stay. Last month it was as hot as I have found it when under the equator." Further on he makes a singular reference to the healthy character of the climate, as in advising his friends to have no fear for his health, he says:—"I am in the very best of health and spirits. This is a very healthy country, and a consumptive person is quite unknown here. There is a common saying that people never die here—they are gradually withered up, and finally blown away. A visit to the graveyard will support this opinion, inasmuch as it is found that few that lie there have died, but must have been murdered." This excessive prevalence of cold steel probably accounts for the health-giving qualities of the atmosphere. If, however, the denizens of that State would but be content to take it in smaller doses, perchance they might all live to be blown away in the end.

—— We learn from the *Revue Horticole* of the decease of Count LEONCE DE LAMBERTYE, one of the best known and most respected of French horticulturists.

—— Mr. R. GILBERT requests us to state that he intends showing at the Royal Horticultural Society's Fruit Committee, on Tuesday, October 3, what he terms the true Gros Colman Grape, and he will esteem it a favour if Grape growers will send a bunch of that variety for comparison. Mr. GILBERT also intends exhibiting another seedling Melon.

—— It would seem to lovers of hardy border plants almost impossible to write in terms too generous of the singular beauties of the varieties of the ANEMONE JAPONICA. We have in these probably the finest and most effective of hardy autumnal border flowers adapted to any soil, and when once planted simply requiring to be let alone. The original form of Anemone japonica, good and pleasing as it is, is greatly excelled in size of flower, height, and robustness of growth by its compeers, japonica alba and japonica intermedia, the latter a pink-shaded form of alba. We recently saw established plants of these, from 4 to 5 feet in height, and covered with hundreds of flower-buds; these must, ere now, have been truly grand specimens. This Anemone does remarkably well in pots, and it will be a strong recommendation to many persons in its favour that it seems to have been specially designed to gratify the modern passion for cut flowers.

—— We hear that the Hereford fungus meeting will be well attended this year, and that, amongst other visitors, MAX CORNU, of Paris, will be present.

—— The number of the *Hungarian Journal of Botany* for this month—*Magyar Növenytanilapok*—pays this country the compliment of publishing a biographical sketch of Dr. STEPHEN HALES, the vegetable physiologist, who was born on September 17, 1677. In the same issue a reprint of the portrait of our distinguished countryman, which appeared in our columns on January 6, 1877, is given. How many of our physiologists, we wonder, would have remembered the bi-centenary of HALES' birth. The institution, however, of the physiological laboratory at Kew may be taken as an augury that the study of vegetable physiology will not be neglected in the future as it has been in the past, from the time of HALES to our own day, with some exceptions.

—— M. CARRIÈRE records, in a recent number of the *Revue Horticole*, an instance of monœcism in Cephalotaxus Fortunei.

—— The TELEPHONE has already been made of practical utility in a deep mine in Cornwall, where it has been found serviceable in communicating from the surface to the interior of the mine. We may look forward to this electrical speaking-tube being made use of to communicate orders from the gardener's cottage to workmen at a distance. In fact, the practical utility of the invention is so apparent, that a very short time will ensue before the instrument becomes general.

—— A curious instance of bud variation is figured by M. CARRIÈRE in a recent number of the *Revue Horticole*, in the shape of a branch of PLATANUS ACERIFOLIA producing leaves of a different form from those of the ordinary Plane. The leaves on the sport are, in fact, nearly entire, and a little raised at the margins so as to present a hooded appearance.

—— The losses among leading botanists have been very great of late. France has lost BRONGNIART and WEDDELL, Germany laments BRAUN, and now Italy has to bear the loss of her foremost and best-known botanist, PHILIP PARLATORE, the Director of the Royal Museum of Natural History and Physics at Florence, and Professor of Botany. Professor PARLATORE was born at Palermo, and died on the 9th inst., in his sixty-first year. In this country he is best known for his "Monograph on Conifers" in DE CANDOLLE'S *Prodromus*, and for his unfinished *Flora Italiana*. These works, and the splendid and well-ordered museum and herbarium at Florence, will form his best monument. Professor PARLATORE was the president of the Royal Tuscan Horticultural Society, and of the committee for the Botanical Congress which met in Florence in 1874, but his ill-health prevented him from taking any active part in the actual business of the meeting, to the great regret of the botanists assembled from all parts of the world. Professor PARLATORE had numerous friends in this country, by whom he will be regretted as much for his personal qualities as for his scientific attainments.

—— The *Journal des Roses* gives an account of the Rose show at St. James' Hall in July last, which makes us wish that popular names of places, as well as of plants, could be abandoned in favour of appellations that could be made familiar to the educated reader of all nations. Where, for instance, is "Moulton Hyld, Chonnauck"? Can it be the forest where a certain "wyld savage" is supposed to roam?

—— Some correspondence lately took place with reference to the "wild Lily," stated to grow in a gravel path. The upshot was that some correspondents obligingly told us that the plant intended was

the common Bind-weed, CONVOLVULUS ARVENSIS. We see our American friends call it a "vine," the word vine being used in a very wide sense across the Atlantic. These instances ought to convince grumblers of the inconvenience of popular nomenclature; hard words are bad, but they are better than appellations which are not only vague but altogether misleading. Some people have vague notions on natural history matters: a lady the other day in our hearing declared the sea anemones in the Brighton Aquarium to be "something between Mushrooms and flowers."

—— We have before us the first part of the *Journal of the British Dairy Farmers' Association for the Improvement of the Dairy Husbandry of Great Britain.* The part opens with a simply written but most useful article on cheese-making, by Dr. VOELCKER, and various other articles and reports follow, all calculated in their degree to remove the imputation that in all parts of the country "the dairying of the district consists simply of spoiling good milk, cheese and butter being made that would not pay for the cost of the production of the raw material, milk." Those who know what London butter and London milk are will welcome the foundation of the Dairy Farmers' Association, and of their journal, which is well printed, well edited, and sufficiently illustrated.

—— Eucalyptus culture in the Isle of Bourbon seems to succeed and prove beneficial in rendering the climate healthier. In the temperate zone especially, at an altitude of between about 1500 and 3000 feet, large plantations already exist. A writer in the *Bulletin de la Société d'Acclimatation* mentions one of several acres in extent which had the appearance of a real forest. He says, "I regard the introduction of these trees as most serviceable. The marsh fevers which desolate the island have not been able to pass the belt of Gum trees which surround my estate; not a single member of my family or workpeople has been attacked by fever." The writer, a Mr. CHATEAUVIEUX, who was elected President of the Chamber of Agriculture of the colony in 1863, commenced operations about that date, and he has already felled trees which have furnished good planks 13 feet long. In what he calls the glacial zone—that is, above an altitude of about 3500 feet, where the mean winter minima are 20°.75, and the mean winter maxima are 54°.5—E. globulus grows slowly, but is less easily uprooted by hurricanes. At an altitude of 4000 there are large flourishing plantations, as mentioned above. At 1600 feet the Red Gum grows to a height of 65 feet in six years, but it does not succeed in the cold region. These little items of information are interesting and useful.

—— The third annual Conference of the CRYPTOGAMIC SOCIETY OF SCOTLAND has been postponed until October 17, 18, and 19, instead of October 10, 11, and 12, as previously announced.

—— The annual cost of keeping in order the TREES, SHRUBBERIES, and SEATS upon the boulevards and in the public squares and gardens of PARIS is nearly 2,000,000 fr. It is estimated, says the *Builder*, that the trees in the avenues and boulevards of Paris number 82,201; those in the cemeteries, 10,400; and those in the squares and courtyards of various buildings, 8300. There are also 8000 seats for the accommodation of the public. The expense of keeping up all the extra-mural recreation grounds, exclusive of the Bois de Boulogne and the Bois de Vincennes, is rather more than 300,000 fr.

—— The West of England still holds its own in the matter of FUCHSIA GROWING, and at the Bath floral *fête* on Wednesday, the 8th inst., Mr. J. LYE, gr. to the Hon. Mrs. HAY, Clyffe Hall, Market Lavington, was placed 1st, with nine plants of such merit that, though Fuchsias are invariably shown fine at Bath, these particular plants were considered some of the finest ever seen. The specimens were of medium size, graceful in contour, and superbly flowered. On this occasion the 1st prize for nine Fuchsias at Bath was a handsome silver cup, and Mr. LYE has crowned his previous efforts by winning it. He has this year taken eight 1st and two 2d prizes; and the latter were awarded him at Trowbridge, where he is generally invincible, as his large plants were not then in perfect condition, and he had to stage some smaller in size than usual. Why is it that while Fuchsias are generally so well grown in Wiltshire and Somersetshire, they are so indifferently grown elsewhere? There is scarcely another plant that repays good cultivation as the Fuchsia does, and when well done it is one of the most attractive features in an exhibition tent. And yet they are often a poor display, not at all up to the average of many other flowering plants.

—— A novel way of clearing a CORNFIELD of INSECT PESTS is reported from Budiańsk, Russia. It seems that the last harvest was a very unequal one, the produce of one farm being abundant, and of the next one almost *nil*. This was in great measure owing, it is said, to the ravages of "a species of black beetle." To remove these insects from the ears of Wheat some farmers adopted the plan of dragging a piece of rope held by two men over the plants, and this had to be frequently repeated. This plan must certainly be an expensive one, inasmuch as it does not exterminate the insects but simply removes them for a time. There is something comical in playing with insect pests in this manner.

—— We have been favoured with an inspection of a drawing of the fruit of HOYA CARNOSA which was produced in a garden at Wimbledon. Only a single follicle was ripened, and this of the elongated form so common in this order. The seeds, too, have the usual hairy appendage. The construction of the flower is such as to necessitate insect agency, but what the particular insect may have been in this case we cannot say.

—— The French Vice-Consul at Larnaca, Isle of Cyprus, M. DUBREUIL, in a communication to the President of the French Society for Promoting the Acclimatization of Useful and Ornamental Plants and Animals, respecting the vineyards, or rather Vines—for they are left pretty much to themselves—gives some account of a DISEASE which formerly attacked the VINES there, but which has since disappeared. During seven years, from 1859 to 1866, it is stated the Vines were stricken with a disease characterised by a kind of ash, covering the berry at the time when they ought to be ripe. No one attempted to find a remedy for it, though the ravages it committed were so serious that some of the Vine growers decided to root up their Vines. However, the disease seems to have died out, for no traces of it have been observed since 1866. What it really was nobody seems to know, but it is suggested that its exhaustion or extirpation might be due to the presence of the Sumach in the vineyards. After the outbreak of the disease the naturally indolent islanders took little care of their vineyards, allowing the shrub named to completely overrun them; and since it has spread so much the disease has not been seen. The total disappearance of the disease, whatever it may have been, is highly gratifying; but that the Rhus expelled it is exceedingly doubtful. It would be good news, indeed, if we could be sure that the Phylloxera was becoming less prolific and diminishing instead of extending its area of depredations. The same writer, referring to a report of an Oak growing in the same island, and bearing acorns as large as one's fist, states that as regards their actual size it has been considerably exaggerated. They are, however, very handsome, and three times as large as those of our largest Oaks.

Foreign Correspondence.

THE VALENCIA ORANGE GROVES.—Between the Orange groves and the sea for a width of several miles, there is a forest of Olive and Carouba trees from 20 to 30 feet high. They evidently serve to break the sea winds, and to protect the Orange trees from their contact. These Orange groves occupy the triangular plain above described, the two sides of which north-west and south-west are formed by sheltering mountains, whilst the base is protected from the easterly sea winds by the wide belt of Olive and Carouba trees. These protecting trees not being high the Orange trees are cultivated as bushes. The central stem is cut about 1 foot, or even less from the ground, and three, four, or five branches are carried up as a bush, and not allowed to grow above 10 or 12 feet high. To this mode of cultivation there is no exception whatever. Tens of thousands of these large Orange bushes are seen, but not one large regular Orange tree such as are found in Majorca, Sardinia, Sicily, and the Riviera. In the valley or vega of Valencia, above the city, the same system of cultivation is exclusively followed, as I found in a previous journey. Thus once more is the necessity of protection from wind exemplified in the cultivation of the Orange tree. In Majorca it is exclusively cultivated in a large crater-like valley; in Minorca it is only seen in a deep serpentine valley, formed by a fault in limestone rocks; and here on the east coast of Spain we find it cultivated like a low Apple bush, in order to ensure the necessary protection from wind. In all these countries and regions I have always found Orange trees growing in calcareous soils.

The trees seemed perfectly healthy—to have escaped so far from the terrible *secco*. I could not discover whether they had been grafted or not. The crop of Oranges had been so thoroughly gathered and disposed of that at the small town of Castillon, where I passed the night, we could not procure one for love or money. Castillon, the capital of the fertile Orange covered delta plain, was formerly a fortified town of some local importance, but appears now to be merely an agricultural centre. The accommodation is essentially Spanish, that is, the *fonda* or inn leaves much to be desired. I would, however, say that in Spain the habit of using exclusively iron bedsteads and a small amount of bed furniture, the absence of carpets, and the paucity of furniture generally, with the universal whitewashing of the walls, secure the travellers and inhabitants greatly from vermin. Then, although the meat is tough, naturally very indifferent, it is so long stewed that it becomes tender and eatable at last. I myself have always managed to live and flourish when travelling in Spain, finding therein "the elements of nutrition" even if not presented in the French or English style. The wine and bread are always good, which is not a bad foundation for a meal.

Pursuing our course the next day, northwards, a few miles from the shore, we left the irrigated delta and passed through an unirrigated, therefore arid region. Here we found the scrub Palm of Algeria, the Chamærops humilis, growing wild, freely, and abundantly, evidently a native of the soil. I had seen it previously in the south of Spain, in Murcia, and Andalusia, growing wild as a scrub plant under the same circumstances. This Chamærops may be said to belong to Europe, as well as to Africa. It was formerly a common plant in Provence and the South of France generally, although now quite extirpated, and only growing in gardens. Along with the Chamærops were numerous Aloes, the Lentiscus, and the prickly Broom of the South of Europe. The mountains in the background were very naked and arid, quite burnt up and denuded. There were water-courses, but no water or water plants; river beds, but not a drop of water in them. Every now and then we came to small towns or villages, very poverty-stricken, located evidently in places where some little water could be obtained by wells. Around them were fields of Wheat and Barley, very clean, Vines, and Mulberry, Fig, and Walnut trees. The wells were mostly worked by rope and pulley, sometimes by mules.

We were passing through a part of Spain that had been occupied and ravaged by the Carlists during the war, of which we were rather uncomfortably reminded. As the train slackened at each station there was a soldier with gun in hand on each side of the line, and on reaching the platform we usually found two or three more awaiting our arrival. On inquiry we were told that these troopers were there to secure the safety of the passengers. It appears that after the Carlist bands ceased stopping the trains themselves, as they were wont, some of the gentry who composed them set to work on their own account in the following way:—They used, singly or by twos, and well-dressed, to get into first or second-class carriages, and once the train was in motion to draw out revolvers and take all the money and jewellery of the passengers. On the train slackening, at the next station, they opened the door, got out, and ran away. The soldiers had orders to shoot all who did so, and we were cautioned never to get out before the train stopped thoroughly for fear of a mistake—a caution we took care to obey.

Emerging from this sunburnt, waterless, arid district, we suddenly came upon a fertile irrigated valley, in the midst of which was a broad yellow river, the Ebro, coming down from the glaciers of the Pyrenees, and making the land on each side laugh with wine, corn, oil, fruit, nuts, and Walnuts, for we had reached the southern limit of the Barcelona Nut region. There was a good-sized town on its banks, Tortosa. After leaving the smiling valley of the Ebro we once more emerged on a barren, waterless region, with bleak, sunburnt rocks, watercourses without water, and a scrub vegetation, principally Chamærops Palm and

Lentiscus; I think I may add Gorse, with here and there patches of miserable, half-starved cereals, Vines, and Olives, doing their best to live. We reached Tarragona, an old town formerly of great political importance, with a good port, the commercial outlet of the large and rich valley of the Ebro. At Tarragona I was principally struck by the number of new houses and streets, the former tall and built in the French style, one most unsuitable to a warm climate, and by the destruction of the fortifications which was being actively carried on. The massive thick walls were being pulled down, and the deep moat filled with the stones and rubbish of which they are composed. No doubt such destruction is progress, but it makes the traveller muse to find it going on everywhere on the Continent. Thus the olden times are passing away from us, and light and air are being let in physically as well as morally.

The next day we took the railroad that runs along the southern slopes of the Pyrenees to join the one from Madrid to Bayonne, and made a leisurely progress, sleeping at Lerida, Saragossa, and other towns on the road, so as to be able to study the country, its productions, and its people. I found the same agricultural and social conditions as in the central regions of Spain, Aragon, and Castille. The country is one rolling plain, presenting every variety and form of geological denudations, all but without trees, and principally cultivated with poor cereals on the fallow system.

The Spanish peasants think that birds eat the corn, and that trees harbour birds, so they cut down the trees, and the country presents the character of endless, melancholy, treeless plains with a poor stunted cereal vegetation. Then, owing, no doubt, in part to the lawless condition of the country the agricultural labourers live in the towns, not in farms or villages, so that these plains seem lifeless, unpopulated. The passing traveller wonders who does the agricultural work he sees carried out. Thus I was told at Saragossa that out of a population of 70,000 more than 40,000 were agricultural labourers, who tilled the land for 10 or 15 miles round. They were miserably clad, appeared miserably fed, and were evidently spending a mere animal existence, whilst observing rigidly all the outer forms of their religion. In every one of these wretched towns there was a magnificent cathedral. Some, such as the one at Saragossa, are undescribably beautiful, thrilling, awe-inspiring. These towns give the traveller the key to the social condition of the middle ages, still perpetuated, partially at least, in these out-of-the-way regions of Europe. At the entrance of the town the frowning feudal castle, around the town the massive walls and deep moat, in the centre the magnificent cathedral. Between the two the peasantry and citizens, like Olives between two millstones in an Olive mill, crushed between the two, absorbed between the two. It must have taken centuries of their labour to construct the double monuments, the castle and walls, the sumptuous, grand cathedral. To these poor souls the cathedral, with its sombre grandeur, its incense, its chants, its music must have always appeared a foretaste, an ante-chamber of heaven itself. The cathedral at Saragossa even had that effect upon me, the travelled, argumentative Anglo-Saxon.

For a hundred miles or more we followed the valley of the Ebro, always seeing the same facts reproduced; with irrigation fertility, without it sterility—all but barrenness. When along with water there was protection from the North, and the barometer showed that we were only some 500 feet above the sea, Olive trees appeared, and Vines became more numerous. We were constantly in sight of the Pyrenees sloping down to the south, with the higher summits still covered with snow (May 23), from whence came down wind still cold.

The vestiges of the late civil war were more decided than on the coast. In addition to the troopers at the stations we had before our eyes the evidence of past combats in the ruins of the stations. They had all been battered and destroyed by fire, and the station work was being done under sheds. Each station it appears had been a battle field, taken and retaken a dozen times.

As we approached the Atlantic the climate evidently changed, became less dry and scorching, moister. Trees, grass, pasturage appeared, a more careful system of agriculture, and numerous villages. We were entering into the Basque provinces, which are fertile, well cultivated, and populous. *J. Henry Bennet, M.D., The Ferns, Weybridge.*

INFLUENCE OF TREES AND PLANTATIONS ON SOIL AND CLIMATE.—One of the greatest and most important objects to be aimed at in the improvement of property is to produce shelter, for all animals (not even excepting poultry) are fond of warmth and shelter, and do not thrive well without it; and as our severest weather comes from the north and east these points should be best guarded and protected. In some cases summer as much as winter shelter is required, as in the case of stud farms; when the horses are housed in winter, and only remain out in summer, and when a cold and stormy day occurs, as is common in our variable climate, they suffer much without proper shelter. Upon many upland and Highland farms the stock cannot remain out during winter, but have to seek winter shelter in more congenial places. When a wintering is sought for, it is valued more for its dry soil and shelter than for the herbage upon it, and nothing pleases the shepherd better than an old plantation where the stems of the trees are all cleared of their dead and scraggy branches.

As the first and greatest of all improvements of land consists in drying it, draining is obviously the first thing to do, and may be done in various ways to suit the requirements of the case. Underground tile drainage is the best, both for arable land, pasture ground, and also plantation. But for the latter purpose the underground drains are objectionable on account of the roots entering and choking them, and for that reason open surface drains are often preferable, at least in extensive operations. Trees have a very absorbing and drying influence upon the ground, so much so, that when a piece of ground is planted that is termed wettish, in a very few years it becomes perfectly dry. This is eminently the case with soft mossy ground suitable for the growth of Norway Spruce, which is the best kind of tree to plant for the purpose of drying the ground, but has few other recommendations. While trees dry the ground very effectively when once they start growing freely, there is at first a difficulty in getting them to start growth, in consequence of the low temperature of the soil; hence the frequent, if not general necessity for draining the surface, with shallow drains, before planting. The drying influence of trees is so slow and imperceptible that by many it passes unobserved, and they only come to see the amount of water that has either been absorbed by the trees and evaporated, or through the shaking of their roots when the plantation is suddenly cut down. In cutting down a plantation two important results are produced, namely, the excessive heating of the soil in hot weather—I mean heating it beyond the temperature it attained while covered with wood, and soaking with water in the winter time in rainy weather. In confirmation of this view the late Lord Lovat, Beaufort Castle, told the writer that on one of his estates he used to creep while deer-stalking upon his hands and knees, through an extensive plantation quite dry and comfortable, and the first time he required to go over the same ground after the wood was cut down he would have required fishing boots, it being completely covered with water in many places, and all the ground very much wetter than he had ever seen it before. Now if cutting down a plantation so greatly increases its wetness in winter and dryness in summer it is evident that plantations keep the soil more uniformly dry, warm, and comfortable at all seasons than it would be without them.

Another benefit arising from the planting is that of raising the temperature. Drying the soil is only another term for heating it, but I think there are other ways by which trees raise the temperature besides merely drying the ground. I have noticed that snow melts sooner in a plantation than outside of it, and if a certain quantity of snow is laid near the base of an old tree it will melt sooner than the same quantity will at a distance from it or in the open field. The duramen, or heart-wood, of trees does not freeze. In cutting down old trees in frosty weather the heart-wood is as soft as at midsummer, but it is otherwise with the sap-wood, which becomes so hard at times as to resist the saw or axe. A dead tree is also warmer than a live one, until the former becomes soaked with water, when it becomes colder than the latter. Any one blindfolded can tell from the touch which is the dead and which is the live tree, and those who have studied the subject well can in like manner say from the touch which is the old and which is the young tree, assuming both to be healthy and growing.

A still further benefit from trees is that of opening the soil through the leverage of the stem over the roots during a breeze of wind. The upheaving of the soil amongst the roots is very considerable, and when the earth is thus opened and loosened heat and air are thereby admitted, to the great benefit of the trees and the heating of the ground.

Another advantage of planting is the strengthening of springs, probably not all, but many of them. I know of at least two springs which have greatly increased in volume as the plantations surrounding them have grown up, and both went dry soon after the plantations were cut down. The shading of the ground by means of the branches and leaves prevents it from ever becoming unduly heated in summer, or cooled in winter. The soil amongst trees is drier and warmer than in the open field, but, at the same time, the grass in a plantation after dew or rain is wet for hours after it is dry outside the fence. Whether plantations do most good or harm to grain crops as such is a subject of dispute. They help to increase sparrows, and other small birds which devour grain; they also encourage rabbits, which injure it. In late and wet seasons they prevent it from being harvested, and in some cases from ripening; they prevent frost from leaving the ground on the north side of the plantation. The roots of the trees extend far and wide, rob the soil and choke drains. These and other complaints may be truly lodged against plantations, but, on the other hand, there is much ground that was not worth 1*s.* 6*d.* per acre that is now letting at five times that amount, and at the same time bringing to perfection a crop of trees worth more than the ground they occupy. As various other important advantages arise from trees and plantations too numerous to denote at present, they must be left in abeyance and resumed in my next paper. *C. Y. Michie, Cullen House, Cullen, N.B., September* 8.

Home Correspondence.

The Fruit Crops.—There are, I believe, more Apples in this neighbourhood than there was at one time thought to be; but the fruit is in general small. Some kinds have very heavy crops, whilst others have little or no fruit; even the same kinds have not crops alike in the same garden or orchard. One tree happens to be heavily laden, whilst another of the same kind growing close by has no fruit. Some trees here are heavily laden, others have partial crops, whilst some have no fruit. The following are the sorts of Apples bearing fruit here:—Four trees of Cockpit have an abundant crop; one Cockpit, light crop; one Improved Cockpit, an abundant crop; one Improved Cockpit, moderate crop; one Keswick Codlin, a good crop; one Keswick, very light; two Dumelow's Seedling, light crop; two Yellow Ingestre, good crops: one London Pippin, a good crop; one Lamb Abbey Pearmain, a good crop; one Claygate Pearmain, a moderate crop; one Yorkshire Greening, moderate crop, fruit small and some deformed; two Wormsley Pippin, moderate crop; two Hawthornden, heavy crops; one Sykehouse Russet, a good crop; one Old Nonpareil, moderate; one Manks' Codlin, moderate; one King of the Pippins, abundant; one Sir Walter Blackett's Favourite, good; one Ribston Pippin, a few fruit; two Warner's Pippin, moderate; two Court Pendu-Plat, moderate; two, of a kind I do not know, good; also one tree each of two sorts I do not know, good crops. There are several trees with a few fruit and some with scarcely any. The nearest tree to the Keswick Codlin that has a good crop, is another Keswick that has no fruit; then at no very great distance from the King of the Pippins tree that has an abundant crop, is another of the same kind that has very few fruit. There can be no question as to the injurious effects of the severe weather of the past spring on fruit trees whilst in bud and blossom, but the severe weather, in my opinion, was not the sole cause of the great failure of the fruit crops. I believe the great fall of rain in September and October last year also contributed to the failure of the crops—the wood and buds never got properly perfected and matured, and when the buds expanded in spring, being weak, they succumbed to the long continuance of severe weather. The Keswick Codlin and King of the Pippins that have crops this season had, if I remember rightly, very few fruit last year, whilst the Keswick Codlin and King of the Pippins that have little fruit this year had good crops last year. Several of the trees that have crops this season had very few fruit last year. The Cockpit is a well-known and a favourite Apple in Yorkshire. The tree

is of a stiff, sturdy habit of growth, forms strong, close spurs, and is a most abundant and a very certain bearer. It is only a small Apple. The sort that I know by the name of Improved Cockpit is a much larger and flatter Apple than the Cockpit. The tree is of a vigorous habit of growth, and a great bearer, but the fruit does not keep very long. With me they generally decay rapidly in December, whilst the Cockpit keeps until January and sometimes through February. Pears are a lighter crop here than they have been for some years. On the standards there are only a few Beurré Diel, Beurré Bosc, and Louise Bonne of Jersey. The pyramids are a great failure, only a few fruit on a Ne Plus Meuris, Bergamot d'Esperen, and one or two other sorts. Even on the wall trees this year the crops are very light. The following are the best here :—Two Easter Beurré, a good crop ; two Beurré Rance, a fair crop ; two Glou Morçeau, moderate ; one Winter Nelis, moderate ; one Beurré Diel, fair crop ; one Vicar of Winkfield, moderate ; one Hacon's Incomparable, moderate. There are a few fruit on some of the other trees. On stem. *M. Leichtlin.* [Mr. Fitch sends us a tracing from his original drawing of the plant at Kew, which certainly does not indicate the habit described by M. Max Leichtlin ; moreover, the specimen from which the drawing was taken has been preserved, and this, Mr. Fitch tells us, shows leaves commencing a few inches from the ground, gradually decreasing in size upwards till they pass into bracts. The flowers produced were about 5 inches long, but native specimens show a spike with eight flowers, each 6½ inches long. Eds.]

Strawberries.—In your excellent Fruit Supplement last week, after mentioning several varieties of Strawberry as good for growing, "Z." says if only one sort can be grown he would recommend that this should be the Viscomtesse Héricart de Thury. Allow me to give my experience of this year. Out of over 250 plants I did not get 2 quarts of fruit from the Viscomtesse, although there was a profusion of bloom —the spring frosts have cut them off ; while from the Stirling Castle Pine, which is by some considered quainted with. It certainly would make a noble plant for massing in beds, singular in form and attractive in colour ; a single plant will cover more space than a dozen Echeverias, equally handsome and far from being so commonplace ; it is of the easiest possible culture, hardy and evergreen, or persistent in its foliage. Those who indulge in making carpets with plants should look out for this. *Thomas Williams, Ormskirk.*

Autumn-flowering Iris.—Accompanying I send you a plant of Iris ruthenica, with a flower on it, which has been blooming for some time freely at my grounds at Tooting ; at the same time last year it flowered in the same position. Paxton gives it as flowering in May, but it is evident that in this country its time of flowering is in September. It is a remarkably distinctive plant, forming a circle of fan-shaped foliage, and from the heel of each fan come one, two, or three flowers. We have had this plant in our possession for many years, but only succeeded in flowering it last year and the present, having

Fig. 75.—The Manor House, Rothamsted.

Marie Louise, of which there are here several very fine healthy trees, there are very few fruit. Apricots have not been so scarce in this neighbourhood for some years. Peaches are also scarce here ; there are three trees that have a moderate crop—one Walburton Admirable (or what I have as that sort), the other two sorts I do not know. Plums, with the exception of Victoria, are very scarce ; here there are several trees of Green Gage, and I cannot see a single fruit on any of them. The present and last year have been very bad ones for fruit growers in this neighbourhood. Labour is dear, the crops have been light, and the importations from the Continent have been great. The immense quantities of foreign fruit that come into the market keep down the price of home-grown, to the benefit of the consumer but to the detriment of the grower. *M. Saul, Stourton, Yorkshire.*

Lilium cordifolium.—Allow me to say that your artist has made a mistake in the portrait of L. cordifolium ; unlike L. giganteum, the stalk is not leafy, but rises bare to the height of 1 to 2 feet, and then six to eight leaves appear in a sort of rosette. This is one of the principal features in its distinction from giganteum, which is clothed regularly all along the identical, I got over a quart to the root. But Sir Charles Napier was my best cropper. After many years of trial of a number of varieties, I should say that either of the two last, the former for choice, were the best when only one sort could be grown ; they are good in flavour and colour, and abundant bearers. So is the Viscomtesse, but so early that the late spring frosts spoil it. *Harrison Weir, Weirleigh, Brenchley.*

Euphorbia Myrsinites.—Perhaps no race or tribe of plants are more diversified in form and habit than the Euphorbias. Many of them are so singular and grotesque that they appear to connect themselves with the vegetation of the coal period. They assume every possible shape and size, from the tree to the small annual. Many of the herbaceous forms are very handsome, and our native E. Paralias is no despicable plant, but certainly the most handsome of the herbaceous kinds is E. Myrsinites. I scarce know of a handsomer hardy plant than this : it throws up a number of stems about 1 foot long, densely clothed with bold, almost imbricated foliage, so decidedly glaucous as to be almost blue—the stem, close to the ground, giving the plant a strange, yet very handsome appearance, unlike any other plant I am ac- changed the situation and the class of soil. At the present time it is growing in a bed between two lines of Poplars, and in a dampish part of the grounds. I send you at the same time some flowers of Iris pumila, which has been blooming tolerably freely for some time past with me. You will see from the specimens sent—some being over, others open, and others in bud—that the succession of bloom is likely to be continued for some time yet. *P. Barr.*

Flow of the Sap.—Seeing an article on this subject, I thought my experience bearing upon the same subject might be worth giving. About ten years since, I planted many young fruit trees, two of which (Blenheim Pippin Apple) grew more freely than all the others, but neither of these two had any blossom from year to year. I was advised to root-prune them, and gave orders to a new gardener to do this. To my great annoyance he took upon himself to ring them, by cutting out the bark, about an inch wide, entirely round the collar of the stem, about 2 inches below the branches. I told him he had killed the trees. He was very indignant, and said he had done many so in his time, with great success. The next spring nearly every bud on the tree was a bloom, scarcely a leaf

worth the name making its appearance; all the bloom dropped off without setting a single Apple. The next year there was a similar result, but very much more feeble, and the following year both the trees were quite dead. During this time the bark below the ring appeared to dry up, and became very thin, while that above the ring became much thicker, which appeared to me very extraordinary, and altogether to suggest many points worthy of study to those who are interested in the subject. *C. A.*

Fruit of the Wild Rose.—The French have a mode of preparing the fruit of the Dog Rose as a confection for dessert and as a table sauce, but it requires a great deal of attention in consequence of the bristly hairs which line the interior of the hep. The hair and seeds have to be removed, and then the pulp has to be steeped in warm water or a little white wine for three days, until it is quite softened, when it requires bruising in a marble mortar with a wooden pestle and straining through very fine muslin or a close hair sieve. The sweetish, acidulous taste found in the pulp is said to depend on citric and malic acids. *H. E. Watney.*

The Potato Disease.—I have seen Mr. Worthington Smith's instructive illustrated contributions on the above subject. Beach Cottage having a seaside garden the care of the Potato plot there has enabled me to verify his painstaking researches. Thanks to the light of his revelation, the true nature of the disease is now discovered, but a remedy is one of the pressing wants of the time. Thinking often over Mr. Smith's investigations, the question has occurred to me several times to ask if the importance of their result might not be usefully extended over the agricultural world and their good more widely known than they are? I gladly lent the papers containing Mr. Smith's papers to both farmers and labourers as the best persons to be made acquainted with the welcome disclosures, but I am sorry to say with wretchedly unfruitful returns. I might as well have given them the Bible in the original tongue; men don't like to be dumbfounded, and stubborn ignorance, ashamed, won't own its defects, so that my good intentions were baffled by bucolic stolidity and conceit, that, entrenched in old ways and self-love, refused to admit the innovations of science they could not understand. How slow is the progress of knowledge! Believing, as I still continue to do, that the primal cause of the complaint is the coarse treatment of the root in its mode of culture, permit me to ask if it would not be possible to popularise Mr. Smith's well-tested observations and results, totally dismissing all hard words or scientific terms, and finding their equivalent in easily appreciated English names, or even local ones render his remarks comprehensible to all? Such a work, I think, could hardly fail to be both individually and nationally common good, and "do yeoman's service," particularly if it laid the main stress on the value of insuring for the future a more cleanly and wholesome mode of culture? Unfortunately, the malady has become hereditary, and being established for forty years, its long malignant prevalence will be hard to eradicate or cure. My opinion is, that throughout England, Scotland, and Ireland the Potato is the victim of gross treatment, by applying the manure to it in too direct a manner. The Cornish mode of cultivation is as follows:—The workman digs a trench with a spade, and walks in the cutting as he progresses. The result of his labour is a shallow gutter, and, of course, detrimentally trodden down and hardened with his feet, and in its hollow the sets are placed at intervals, each part perhaps fresh cut, with unhealed wounds on the sets; the dabs of dung (or manure of some sort) are placed in the cutting, being smothered with corrupting festering filth, suggestive of a vegetable plague. I know no plant that would stand such treatment and live, and the wonder is that the Potato has not degenerated before. In making the next parallel, the earth that is dug out of the second groove is thrown over the first, and that row is complete. The manure used is a compound variety of all kinds of refuse that the locality can furnish, putting aside lime and guano as exceptional (though both are occasionally applied). The following dressings are most prevalent in the county. Deposits from muck-middens, a collection of house contributions thrown out daily, cinder-ashes, cow and horse dung, pig-dung, human fæces, urine, soot, street or road sweepings, all left to fester in a heap exposed to the sun! Near the coast seaweed is available, also sea-sand, often black and putrid (sometimes shelly) decayed fish, and the salt sweepings of pilchard cellars; all these ingredients dug in the ground and left to assimilate with it would be beneficial if put in three months before the plants, but applied to them when sown (as in the case of the Potato) the surprise is how the hardy tuber should have stood it so long. The result of my observations—unassisted by scientific research—is, that an impression has prevailed in my mind for some years that the evil of the disease is communicated by the Potato's early contamination with the manure, a deleterious application of refuse, in which the root of no plant can be placed and survive—that is noxious to all vegetation, in the first festering fermentation of its decay, and in which ultimately, when its virulence has passed away, is shown its affinity for mildew and fungus, the first outgrowth of all mouldering corruption through the world. *W. Browne, Beach Cottage, Fowey, Cornwall.*

Lapageria alba.—I have forwarded for your inspection a bunch of Lapageria alba flowers. I have occasionally observed clusters of four or five flowers together, but never one so large as the one I have sent you, and I shall be glad to know if such have before come under your notice. Its production I attribute to the vigorous health of the plant. I planted it nine years' since, together with one of the best variety of rosea, in a span-roofed house 20 feet long, which have nearly covered the north side of the roof, and is now bespangled with these gaudy and strongly contrasted coloured flowers, the number of which can only be calculated by the hundreds and more probably thousands. It is a very general idea that alba is much more spare in its growth than rosea, which I do not find is the case when properly treated and careful watching of the growths when emerging from the roots. We have some which come to the surface of the bed during last spring, which at first appeared exactly like real good stocks or heads of Asparagus, which are now 28 feet in length, and probably will in November have some dozens of flowers on them. *R. Westcott, Raby Castle, Darlington.* [A truly superb specimen. EDS.]

An Interesting Conservatory Plant: Kniphofia Macowani (Tritoma Macowani). — I have a large stock of these blooming in 48 and 60 sized pots, the plants ranging in height from 1 to 2 feet, and with graceful slender foliage. Looking at the batch this morning I could not help feeling that those who are fond of characteristic plants in their greenhouse would find this an acceptable addition at the present season. I have not yet planted any out-of-doors, but purpose doing so next season. Herr Max Leichtlin considers it hardier than Tritoma glaucescens, which has remained for many years in my grounds without protection. It is a free-flowering plant, and, from what I have said, you may judge of its grand effect as a border plant. I send you herewith specimens of the flowers, that you may judge. The beautiful rich soft orange spikes, with from twenty to fifty from an established stool, would be an object not to be despised in a mixed flower border, or associated with dwarf flowering shrubs in American borders or beds. *P. Barr.*

Mildew on Grapes.—A correspondent mentions, in the number for September 1, having heard of a case where "scraping off the bark" of mildewed Vines—that is, in the following season—was a "perfect cure." I have this season succeeded very fairly in saving a badly mildewed crop of Grapes in one house by wiping the berries about once a week for six weeks. The Grapes are quite saleable, and will be sold for the London market thus wiped. The bloom is gone, and they are not so large as usual, still they are ripening well, and are as fairly coloured this unfavourable season as many others not mildewed. I showed them to a good judge this week, to his immense surprise; and one importer on a large scale smiled at the notion of much bloom remaining on any Grapes by the time they reached their destination. If mildew remains even for a very short period unnoticed on Vines it will stain the shoots, but in the older wood this would hardly be perceptible. Why not try wiping the berries the moment you notice any mildew with soft muslin? If neglected, then wipe the leaves also and the wood. By painting the canes and shoots in the winter, and watching for any renewed symptoms next season, there is no reason why mildew should not be stamped out. Sudden draughts should also be avoided. These dry roots, with a cold, damp inner temperature, favour the introduction of this pest. Still there are mysterious causes besides these as yet unknown. *T. C. Bréhaut.*

Deutzia gracilis is a plant that is largely grown for the London market, and though there are many fine things that flower during the dull months of the year, I find the commoner things when well done are as greatly admired as the tenderest exotic, and a well done Deutzia in any sized pot is a very interesting object. In many places they are huddled together in any out-of-the-way corner, on the half-starved system, but when liberally treated, as they are by the grower for market, they soon make lovely objects in their wonderful 4-inch pots. They are easily propagated by cuttings and layers, but provision must be made according to the demand. If by cuttings, put as many into a 4 or 6-inch pot as possible, harden well off by May, shake all out of the pots, and plant them in well prepared nursery beds; if by layers, plant as many stools as will supply the requisite number of layers, peg the shoots all round the stock, next spring take them up and plant in nursery rows, and treat as the cuttings: always replace those that are taken off by last year's growths; this system gives good healthy plants. The next spring cut them all back to within 3 or 4 inches of the ground, and pinch them back twice during the summer; the following February or March pot them in 4-inch pots in good loamy soil, and plunge in prepared beds of ashes or tan; during the summer pinch any shoots that show signs of grossness, keep well watered, and as the season advances give occasional waterings of liquid manure. About the end of October the preparation for forcing begins, by getting as many as possible under cover from the drenching rains and frosts, introducing them in batches into a nice heat of from 45° to 55°, shutting up early with plenty of moisture till they begin to show flower, then move into a dryer and cooler house to harden off for market. When grown for private establishments they can be grown on the same principle into any sizes, by cutting well back as soon as done flowering; give them a little heat to get a good break, harden well off, and plant out on prepared beds. By always keeping up a succession of young plants by cuttings or layers, it is not requisite to divide the old plants, which seldom give satisfaction. It is wonderful how long they can be kept in smallish pots, by plunging and liberal treatment. Lilacs, Primroses, Gueldres Roses, Callas, Cytisus racemosus, Habrothamnus elegans, &c., do well on the same treatment. The three latter ought to be taken out of the plunging material about the end of September. The plunging system saves a great amount of labour in watering. *E. W.*

The Roseless Autumn.—I believe your correspondent, Mr. D. T. Fish, is right, and I speak from what I see as well as from what I hear. Letters from large and experienced growers are reaching me from all parts of England reiterating his remarks. The growth after the summer blooming has been generally fitful and uneven, and there are more wood-shoots than usual, and consequently less flowers. *William Paul, Paul's Nurseries, Waltham Cross.* [In our own experience summer roses were destroyed by spring frosts, autumn roses have been most abundant. Soil, Middlesex clay. EDS.]

The Colorado Beetle.—Ever since I saw the cut of the Potato-bug in the *Gardeners' Chronicle* of July 28, I have been wishing to say that it is in every way quite natural except that the artist was too sparing with the bugs, as we consider five or six perfect insects, with twenty-five or thirty larvæ (of different sizes) to the square inch, to be a fair average crop. But you will doubtless have abundant opportunity for observation in this line after his bugship has established himself upon your shores. I suppose you await his arrival with considerable anxiety, but doubtless England will rise to a man to expel the invader, in which case (if every man does his duty) the victory will be an easy one. I see that Paris-green is recommended for their destruction. I am not aware of anything having been discovered up to this date that is as efficient; 1 lb. of Paris-green to 25 lb. of rye or wheat flour, thoroughly intermixed and thinly sprinkled over the plants, is the usual method of application, and is much more economical both in time and material than mixing the Paris-green with water. Quite a large experience has taught me this. But this season I have adopted a still more economical method, as follows:—I have this season mixed Paris-green with common fine-ground plaster of Paris, in the proportion of 2 lb. of Paris-green to 250 lb. of plaster. This is applied to the plants by means of a fine flour-sieve, with a stick fastened across the top for a handle. This answers every purpose. It is fatal to the vermin, and every way satisfactory, and the advantages of plaster over flour are several:—1, cheapness; 2, being much heavier than flour it fixes the Paris-green, allowing none to escape on to the adjoining crops, and general safety in application; 3, two or three such applications of plaster during the season becomes a valuable fertiliser to the land. I have applied it twice to our crops of Potatos, and have succeeded in making a thorough clearance of the bugs and larva at each application. *H. E. Chitty, Bellevue Nursery, Paterson, New Jersey, U.S.A.*

Hardiness of White-Flowered Plants. — I came lately upon a rather noticeable instance of the supposed superior hardiness of plants with white flowers over the same varieties with coloured flowers. I cannot say how far it is always the case. I do not know that I ever observed it before, though most flowers sometimes occur white. The charming Solanum Dulcamara is I think rather capricious as to soil, and here in Scotland it is not very common, though it grows luxuriantly in many places, but I have never seen it except near the sea, or nearly on a level with it. But lately passing for a good many miles through a corn country, where I rather missed it in the hedges, and certainly had not seen a single specimen, I was struck, on reaching the top of a ridge, exposed to the winds

as much as it could possibly be, and 200 or 300 feet above the sea some 8 miles off, to see the more sheltered bank of the road half-covered with the white-flowered variety of Solanum Dulcamara. I saw no signs of the common kind in the neighbourhood. *J. M., N. B.*

Striped Petunias Seeding.—I observe a query at p. 343 from a correspondent respecting the seeding of striped Petunias. My experience for several years has been that these Petunias are free seeders, especially towards the autumn after the plants have somewhat exhausted the soil and are making less growth. During September, especially if the weather be fine, they seed very freely. The striped forms having fimbriated edges, on the other hand, seed but sparsely, they make a very robust woody growth that is almost too luxuriant for the open ground except in poor soil. Striped Petunias, if a good strain, come very true from seed, and will make a most charming mass of mixed colours in a flower bed. *A. D.*

Sutton's Magnum Bonum Potato. — This Potato with me this season has withstood the disease better than any other variety grown here. A peck was purchased and planted in the ordinary way of field culture, making as many sets as possible. The crop was lifted to-day, and the produce from the 1 peck is about 8 bushels of large, handsome Potatos, and not a single diseased one was found amongst them. When cooked it is of first-class quality. In the same field, right and left of Magnum Bonum, are ten other sorts planted, and I should say, as near as possible, half the crop are diseased. In all I grow a little over 3 acres, and the other sorts less diseased are Early Don, an excellent Potato; and the well-known Dalmahoy. Surely if any Potato will resist disease as Magoum Bonum has done, combined with productiveness and good quality, it is entitled to special notice and extended cultivation by all. *Thomas Carlton, Ashtead Park Gardens, Epsom.*

The Potato Crop of 1877. — Having had continued rain since July 14 in North Wales, it seems to touch upon the old proverb of forty days' rain. We have had considerably more than that, but have during the last few days had splendid harvest weather. The Potato crops at this place are most extraordinary, many of Myatt's Prolific, Mona's Pride, and others, weighing a pound each; but in all my experience of many years I never saw the disease so destructive as this year. It will be a very great loss to many of the large growers for market in the neighbourhood of Llandudno; we see whole fields completely dried up in the foliage. The last week or ten days, it matters not whether on the mountain or in the vale, all appear the same. *T. Capers.*

Orchard-house Experience.—I have just read Mr. Bréhaut's very interesting article on Orchard-houses, p. 334. I also am among the "early orchard-house workers." My trees came from Mr. Rivers in 1856. Mr. Bréhaut's houses appear to be not more than 15 feet wide, but he says, "as to ordinary span-roofed houses, I consider those of Mr. Rivers as of the best dimensions—say, 100 feet by 30." He also states, "Cherries and Apricots are impossible, save in immense houses—they need too much air." While entirely agreeing with most of Mr. Bréhaut's paper, I must demur to the last two propositions. I believe it to be true in practice, as it is in theory, that with most fruit the nearer the glass, and the freer circulation of air, the higher the flavour and the better health of the trees, and better setting of the fruit. The objection to narrow low houses is their little power of keeping out severe frost. I believe the best practice to be to have two houses, one for storing the more delicate fruit trees, such as Peaches and Nectarines, the other for placing them to ripen their fruit. Our plan is this—we grow Peaches, Nectarines, Apricots, Cherries, Figs, Plums, Pears, and Apples, to say nothing of the Diospyros Kaki. Almost all the trees are in pots, the first named five, except for a turn-out in autumn after the fruit is pulled, live in the houses, the others are only kept in till safe from frost, or, in the case of Plums, put in in wet weather, to prevent cracking. Our largest house is 60 feet by 20 in the clear, and 10 feet 6 inches high to the ridge-board, with raised middle bed as originally recommended. In this all the better-class fruit trees live, rather closely packed, through the cold weather. In the second house, 60 feet by 15, 6 feet 6 inches high to ridge-board, Plums, Pears, and Apples are huddled together till danger from frost is over, they are then turned out to make room for their betters. I believe in this low, narrow glass shed; where all the trees are close to the glass, and where the air circulates freely through their leaves better results are obtained than in any wide, high houses, especially with Apricots. Our Cherry trees live in the larger house. They always bear well, and from their earliness are amongst the most popular of the orchard-house productions. I used to wonder that orchard-houses were not very much more general. I believe the reason why they seldom succeed in great gardens to be this. They require hard, constant work and attention, and there is much less honour and glory attached to them than there is to the growing of Pines, forced Grapes, Orchids, and stove plants, so a skilled, highly-trained gardener is apt to look down upon them. I believe the way to make them succeed is to put an under-man in charge, and lead him to take a pride in making a success. Our old trees, more than twenty years in pots, many of them subjected in old days to experiments, chemical and mechanical, and of shapes of which the less is said the better, give regular crops. I only remember one failure, that was with a cold, sunless spring, when the blossoms did not set (a neighbour who had the dangerous luxury of a hot-water pipe turned on heat and got a crop). Some of the Pear trees have the base of their trunks more than a third the diameter of the pot. They have arrived at the full weight for a man and boy to carry, and so can have no further shifts. So far they are in perfect health. I have more than once heard orchard-houses called toys, but as long as in a cottage garden, where our orchard-houses are, we get more and better fruit than is produced in most large gardens, I shall continue to think them very satisfactory toys to play with. *George F. Wilson.*

Rainfall in North Derby.—I have thought that a copy of the register of rainfall here (N.E. Derbyshire, bordering on North Notts), from September 1, 1876, to the end of August, 1877, may be acceptable to your readers, which though not a chronological year includes 365 days, out of which on 230 days .01 inch or more rain fell. I will quote each month separately, the number of days on which .01 or more rain fell with the date and amount of greatest fall in twenty-four hours, and total for each month. The monthly average is 3.576 inches, or a little over 3½ inches:—

	Days.	Date.	Depth.	Total.
1876.				
September	24	30	0.84	4.59
October	14	8	0.76	2.12
November	20	12	0.92	3.82
December	26	6	0.77	7.09
1877.				
January	24	3	1.31	3.93
February	21	25	0.76	2.42
March	21	24	0.65	2.60
April	19	9	0.64	2.69
May	16	10	0.54	3.24
June	9	1	0.80	2.01
July	16	14	0.87	2.98
August	22	25	1.25	5.43
	230			42.92

In this exceptional season from seed-time to harvest the husbandman has had much need of patience for the fine weather, rather than "for the early and latter rain." The average summer heat, too, has been very low, which, following a very cold spring, has made harvest unusually late. In respect to fruit we have shared the common lot; we had a good crop of Gooseberries and Currants on bushes sheltered by orchard trees—though light, the latter are nearly bare of fruit, with two or three exceptions in Apples, Duchess of Oldenburg, Nonsuch, and Wellington. We have a few Pears on walls of Passe Colmar and Jargonelle; the latter bloomed and had set its fruit before the very cold frosty winds came that cut off a splendid show of bloom on most other sorts, which confirms what has been often noticed before, that the young fruit can withstand more cold than the blossom, especially if accompanied by wet. The Jargonelle being an early bloomer frequently gets cut off when later blooming sorts have a good crop. By way of supplement to the above account of rainfall, I may add that we have had up to the 14th inst. 3.31 inch of rain this month, of which 1.55 fell on the 2d. Harvest operations are consequently very much impeded. The disease in Potatos is developing itself very rapidly—some crops are nearly all bad. *R. Rolfe, Gr., Stuffynwood Hall, near Mansfield.*

Notices of Books.

Arboretum Segrezianum. Paris: Baillière.

Under this title M. Alph. Lavallée has published a classified list of the trees and shrubs grown on his estate at Segrez, near Paris. The collection dates from 1857, with the exception of a few fine old trees already in the park. The preface tells us of the difficulties experienced in grouping the trees and shrubs so as to place them in the situations best adapted for them. M. Lavallée's efforts have been rewarded by obtaining a nearly complete collection of all the species of trees and shrubs hardy in the centre of France. The total number of reputed species and varieties is estimated at 4267, not including mere garden varieties, of which about a thousand are grown. Of these eighty-four are Monocotyledons, 4081 Dicotyledons, and about 160 have not been determined.

The nomenclature presented an enormous difficulty, and M. Lavallée tells us that in preparing specimens for the herbarium and for future identification, he found it the best plan to forget or to ignore the name under which he received the plant in question, keeping a record, however, of this name, the source whence obtained, the date of receipt, the place where planted, and other necessary details. In addition to catalogues and plans, each tree bears a provisional label, containing similar information, destined to be superseded by a permanent label when the correct name has been decisively made out. The difficulties M. Lavallée has had to contend with in maintaining these collections in proper order are greater than those encountered in forming the collections. Without rigorous accuracy, continual revision, infinite precautions that each species should be represented by numerous examples, it would have been impossible to have preserved order amid so large a number of plants. In the formation of his arboretum, M. Lavallée has had the assistance of M. Herincq and of M. Decaisne, so that the correctness of the nomenclature may be relied on. An herbarium, a collection of books and plates relating to trees, a museum for specimens of woods and fruits, have all been established at Segrez, and have resulted in the present catalogue, acknowledged to be imperfect, but likely to be of great service in promoting the correct nomenclature of trees, and in unravelling their intricate synonymy. Gardens and nurseries, says M. Lavallée, abound in imperfectly known species. Many reputed common do not exist in cultivation; others, supposed to be rare, exist in profusion. Of these errors and misapprehensions M. Lavallée cites several instances which are familiar enough to all who make collections of living plants.

M. Lavallée brings a rather serious charge against *quelques horticulteurs* of purposely changing the name of old and long-cultivated species, and applying to them some new name. We do not believe that such a practice is wilfully followed in this country, unless in quite exceptional cases. Another cause of complaint brought by the author against nurserymen is that if they are applied to for a particular species not in their collection, they do not scruple to send something else, possessing none of the attributes of the required species but the name; thus in a plantation of twenty-six *noyers* (Walnuts) only two were correctly named.

M. Lavallée gives some interesting details relating to former collections of trees and shrubs in France. One of the most remarkable was that of René du Bellay, Bishop of Mans, established at Towvoye, and which formed the object of the praise of the botanist Gesner. This collection owed much to Pierre Belon, a physician and traveller of the period (1558). Of these collections not a trace now exists, and even the records of the bishopric were destroyed in the first French Revolution. From the mention of this the first arboretum in France the author passes on to the history of the Jardin des Plantes (which has been given in our columns) and to that of several other establishments, devoting, as is most due, some little space to the labours of Duhamel. The arboretum formed by this noted arboriculturist was situated at Vrigny and de Monceau. His brother at Denainvilliers seconded his efforts, so that in 1755 appeared the first instalments of the *Traité des Arbres et Arbustes qui se cultivent en France*—a work not completed till fifty years later by Loiseleur-Deslongchamps, but a veritable monument of French learning and industry. Passing over other names and establishments of minor interest to us on this side of the Channel we come to the names of Michaux, whose work on North American trees is still of very great value. The Michaux, father and son, introduced a large number of American trees to France. In 1810 De Vilmorin established at Des Barres an arboretum comprising some 260 species suitable for forestry purposes. This collection is now the property of the State. About the same time the great tree nurseries of Audibert at Tarascon, Baumann of Bollwyller, André Leroy at Angers, and Simon at Metz, were established. Incidentally the author laments the too frequent dispersal of private collections at the death of the founder, and to more than one the epithet *saccagé* during some political disturbance or other has unfortunately to be applied.

M. Lavallée's sketch of the history of arboriculture applies almost exclusively to those in the neighbourhood of Paris, or at such a distance from the metropolis as to enjoy a similar climate. From what we

have said it will be seen how much of interest attaches to the details given by M. Lavallée, an interest so great that we could wish M. Lavallée would expand the brief sketch here given, and publish a general history of French arboriculture, using the word in the sense in which it is employed in this country. Of the intrinsic merit of such a list as M. Lavallée has given us there can be no two opinions—each species mentioned, with the authority for the name, the native country, and the synonyms. Use, not mere casual inspection, must determine the relative value of this catalogue, but it is] quite certain that all tree lovers owe a debt of gratitude to the compiler for this valuable list. Incidentally we may remark that Vitis Weitchii (*sic*) was published in these columns soon after its first introduction. It is the Ampelopsis tricuspidata of Siebold and Zuccarini, and the Ampelopsis Veitchii of the nurseries. Cissus Roylei, often confounded with it, is sufficiently distinct in character, and comes from a different country. Under Acer we find no mention of A. Schweidleri, under Pyrus or Eriobotrya no mention of P. Maulei, under Vitis no mention of orientalis, under Quercus no mention of Q. pannonica, under Thamnocalamus Falconeri no hint is given that this is the plant generally, but incorrectly, known as Arundinaria falcata. Q. nobilis should be referred to Q. nigra. The references to figures and descriptions are also not so numerous as they might be. A more complete search through the horticultural and botanical publications would have enabled the author to add many more citations and references to figures, and which would have considerably augmented the value of his catalogue.

Taking it, however, as a whole, we can but express the gratitude of lovers of trees and shrubs, and trust soon to see a reissue in a more complete form.

Stock and Share Investments. By Albert Sharwood. *Bazaar* Office.—A little pamphlet containing just the information that is required by small investors, and which, if perused, may save much disappointment, not to say misery.

PUBLICATIONS RECEIVED.—Scotch Live Stock, by James Bruce (Edmonston).—Victorian Year-Book for 1875.—The Clematis as a Garden Flower, new edition, by Thomas Moore and George Jackman.—Journal of the British Dairy Farmers' Association.—The Royal Guide to the London Charities for 1877, by Herbert Fry.—The Tannahill Bouquet, by William Elder.—Le Journal des Roses.

Reports of Societies.

Brentwood Horticultural: *September* 6.—This society held their autumn exhibition in the grounds of Hampton House, by kind permission of the liberal proprietor, W.A. Ogg, Esq., who also lent his grounds for the spring show. The competition was generally abundant and the productions good. Especially pleased were we to see the numerous vegetables staged—and that more particularly in the cottagers' classes. Prizes which were offered for "miscellaneous stove and greenhouse plants, foliage plants, and Ferns, arranged for effect," were won by collections of plants far beyond the average in such classes. Here instead of massing for effect somewhat small plants in groups, as is generally done, the competition was carried out in each instances with the best specimen plants arranged single and in two rows, as is the case when a given number of stove or greenhouse plants are asked for. D. McIntosh, Esq., Havering Park (gr., Mr. W. Bones), won the 1st prize, having excellent specimens of Eucharis amazonica, Bougainvillea glabra, Allamandas, Erica æmula (an excellent specimen), Ferns, &c. Major-General Fytche, C.S.I., Pyrgo Park, Havering (gr., Mr. Lane) was a good 2d, with amongst others a fine specimen and well bloomed of Phœnocoma prolifera Baruesi, Croton undulatus, Adiantum farleyense, Palms, &c. W. A. Ogg, Esq., Hampton House, was also a very excellent 3d, his plants being larger, though both the 2d and 3d prize plants were greatly wanting in flowers compared with their more successful compeer. Mr. Rank, Brick House, Rainham, staged some thoroughly well bloomed double Zonal Pelargoniums. The six Pelargoniums for beauty of foliage brought out some splendid collections, all of which were of a very high order of merit. Mr. Meadmore, Romford, was placed 1st—Messrs. T. Hill, Brentwood (W. North, gr.), and Saltmarsh, Chelmsford, being respectively 2d and 3d. Fuchsias were well shown by W. A. Ogg, Esq. (Mr. Wise, gr.). The best arranged baskets of pot plants were won by the three nurserymen, Messrs. Saltmarsh, Ford, and Meadmore, in the order here given.

Cut flowers were very numerous and good. For twenty-four Dahlias, Messrs. Salmarsh (1st) and Rawlings (2d) deserve every praise, their stands being very highly finished, Mr. Rawlings had the largest blooms, but the finish of those of Messrs. Saltmarsh was so good as to warrant the award. Mr. J. C. Quennell, of Brentwood, won the 3d prize well as an amateur. For twelve Dahlias, Messrs. Quennell, E. Mitchell (W. Harrington, gr.), stood respectively 1st and 2d. Mr. Atkins, Warley, was 1st with Roses, good for the season. For twelve Asters, quilled and not quilled, respectively, Messrs. Saltmarsh received 1st prizes. Their stands were splendidly grown and staged. Messrs. Harrington and Atkinson had the best amongst amateurs. The best basket of cut flowers came from Mr. Quennell, showing real taste in arrangement. The winners of the Maiden prizes for vase of cut flowers were, the Misses Wise 1st, and Soder 2d. For the prizes offered for table decorations (open) Mrs. Burley showed a splendid arrangement. Using more flowers than is customary, her display, though light and elegant, was one of the gayest we have yet seen, yet being within the legitimate margin of taste without overcrowding. Mrs. Bailey, Brentwood, was an admirable 2d; indeed, for an amateur, we have rarely seen better taste displayed, the only fault, if any, being that the flowers used were somewhat too dull. This the best taste possible failed to neutralise. Miss Haws won the 1st prize for bouquets.

Fruits were tolerably numerous in all but Melons and Pines. For best collection of six kinds, Pines excluded, D. McIntosh, Esq., was 1st, Major-General Fytche being 2d; the Grapes in Mr. Bone's collection being large in bunch. Major-General Fytche also carried premier awards for black Grapes and Muscats. Fine Peaches were shown by Mr. Clark, Figs and Plums by Mr. Constable, a grand dish of Cox's Orange Pippin Apples by Mr. T. Simpson, Chelmsford, &c.

For a collection of nine sorts of vegetables Mr. J. Rank was 1st, and for six sorts Mr. Soder—the Onions, for weight, of the latter exhibitor being very fine.

Mr. Burley, nurseryman, Brentwood, received an extra prize for a large collection of plants, including large baskets of the chaste new Pelargoniums Miss C. Quennell, white variegated foliage, and light blooms with salmon eye; Boadicea, similar in habit, &c.; Mrs. Hanbury, and the popular Snowdrift. *W. E.*

Wellingborough Horticultural: *Sept.* 7.—This, one of the great centres of the shoemaking industry, dressed itself out with becoming taste on the occasion of the above exhibition; archways were thrown across the street, and many of the houses put on quite a festive appearance. It was held in a field in the town, and a thoroughly good show rewarded the labours of the promoters.

In the classes open to all England, stove and greenhouse plants were nicely represented, the lateness of the year considered. The best group of twelve, for which a handsome 1st prize of £10 was offered, came from Mr. J. Parker, nurseryman, Rugby, who had Statice imbricata, Vinca alba, V. rosea, Dipladenia amabilis, Clerodendron Balfourianum, Allamanda Hendersoni, A. Schotti, Cycas revoluta, Allamanda nobilis, &c.; 2d, Mr. J. House, nurseryman, Peterborough, who was strong in fine-foliage plants, but generally weak in those in bloom, the best specimens being Phormium tenax variegatum, P. Colensoi variegatum, Croton interruptus, C. pictus, Allamanda Hendersoni, and Latania borbonica. In the class for six foliage plants Mr. House was 1st and Mr. P. Daventry 2d. With six Palms—very fair examples of good kinds—Mr. Parker was 1st and Mr. House 2d. With six new plants Mr. J. Parker was placed 1st, with Cupania filicifolia, Ixora Williamsii, Phyllanthus nivosus, very nicely variegated; Croton majesticus, C. Youngi, and C. Weismanni. 2d, Mr. J. Jackson, Blakedown Nursery, Kidderminster, who had Croton Weismanni, C. Disraeli, C. Youngi, Cocos Weddelliana, Livingstonia Jenkinsi, and Aralia elegantissima. Exotic Ferns, as well as hardy kinds, were moderately shown.

In the cut flower classes, Mr. W. Corp, nurseryman, Oxford, set up a stand of forty-eight Roses of excellent quality from the seedling Brier, and it would appear that if autumnal Roses are to be had this stock must be mainly relied on for the purpose. The best flowers were Madame Hunnebelle, Sir Garnet Wolseley, Madame H. Jamain, La France, Duc de Rohan, Pierre Notting, Belle Lyonnaise, Marie Finger, Madame Laurent, Marie Rady, Paul Néron, Avocat Duvivier, François Michelon, Horace Vernet, Beauty of Waltham, Star of Waltham, and Marie Van Houtte; 2d, Mr. J. Bond, with some very fine flowers. Mr. Cross was 1st in two other classes, and in that for twelve Tea-scented and Noisette Roses he set up very charming examples of Marie Van Houtte, Bouquet d'Or, Madame Bernard, Belle Lyonnaise, Devoniensis, and Louise de Sarvie among others. The best thirty-six Dahlias came from Mr. P. Painter, Smallwood, and included fine blooms of Annie Delevanté (large white), Criterion, Vice-President, Mr. Saunders, Royal Queen, Perfection, Yellow Globe, and Royal Purple; 2d, Mr. W. Jackson, Kidderminster; 3d, Mr. G. H. Feukes, Erdington.

The other divisions of the schedule were, to a great extent, a repetition of the foregoing classes, but as far as the exhibits were generally concerned in descending scales of quality; but a good effect was secured, and the four commodious tents were completely filled.

The best collection of six dishes of fruit came from Mr. G. Day, Daventry, and consisted of good White Muscat and Black Hamburgh Grapes, Peaches, Nectarines, Melons, and Morello Cherries; 2d, Mr. W. Watts. Mr. Day also had the best three bunches of white Grapes, consisting of Duke of Buccleuch, Bowood Muscat, and Muscat of Alexandria; and the best three bunches of black Grapes also, in Black Hamburgh, Alicante, and Lady Downe's.

The best collection of eight kinds of vegetables came from Mr. T. Eads, gr. to J. Becke, Esq., Northampton, and consisted of fine Cauliflowers, Carrots, Beet, Turnips, Porter's Excelsior Potatos, Onions, and Cucumbers—a remarkably good even lot; 2d, Mr. G. Day, with a very good lot also; and the six collections staged in this class were highly creditable. In all the classes vegetables were finely shown. An extra prize was awarded to Mr. T. Eads for an excellent collection of ten dishes of Potatos, consisting of Fenn's Perfection, Snowflake, International Kidney, very fine; Bountiful, Waterloo Kidney, King of Potatos, Model, Emperor, Porter's Excelsior, and Schoolmaster.

Hardy fruits were well represented, the culinary and dessert Apples being remarkably good. A pretty Apple, named Lord Lennox, was much shown as a dessert variety.

Collections of wild flowers were in pretty bunches of distinct sorts, shown as they should be. Bouquets of wild flowers were also very attractive. Collections of Grapes were similarly shown as the wild flowers, and two sisters, Ellen and Emily Coles, had the leading prizes in both classes. Designs in wild flowers were in the form of gardens to villa residences.

Factory Hands' Flower and Vegetable Show at Guide Bridge.—We are again able to speak in terms of commendation of the results of the cottage horticulture set on foot some few years ago by Mr. Hugh Mason in connection with his great cotton mills at Guide Bridge, 7 miles from Manchester. Closely adjacent to the mills there are more than a dozen nice little gardens, separated by hedges and paths, and let, at a merely nominal rent, to such of the workpeople as have an aptitude for the cultivation of flowers and vegetables, and who through good conduct or long service are entitled to claim priority in the privilege of possession. The most cordial encouragement is also given to the cultivation of pot plants in the windows of the workpeople who live around, so that on approaching the mills the spectacle of domestic leaf and flower is most refreshing. Why cannot every great mill-owner in the country follow this good example! If it were only for appearance sake how much good might be effected by the placing in every cottage parlour in the land of some pretty flowering plant, or little shrub. A flower in the window sweetens the air, makes the room look graceful, gives the light of the sun as it shines through it a new charm, and helps to develope love of neatness, cleanliness, and order.

Mr. Hugh Mason's factories are called the Oxford Mills, and familiarly, in the neighbourhood, Oxford. The Oxford gardeners, with others of the workpeople who reside near, and who have independent gardens of their own—the latter formed under the inspiration of what is done close to the mills, have constituted themselves into a little horticultural association, not with a view to any public display, but purely for the sake of good fellowship and co-operation. Under Mr. Mason's influence every year, about this time, a show is held of the best of the produce, both garden and window, and very pretty and creditable the display has always been. The show is held in the lecture-room of the Oxford Institute, which building, we may remark, erected by Mr. Mason at his own cost, is one of the completest things we know of in regard to its providing for every kind of rational human want. There is a capital library, with news-room, of course; there are baths also, and at a little distance, in outdoor supplement, there is a spacious drying-ground for the women who work in the laundry, and a bowling-green for the men. The whole place has an air of cleanliness, neatness, and finish, such as it is seldom our good fortune to meet with in the neighbourhood of a large manufacturing establishment. The current year's show came off on Saturday, September 1, and was quite equal to any of its predecessors, though in some respects declaring only too plainly the hurtful character of the recent weather. Not to mention the incessant rain, the Oxford gardeners have this year had an uncommon plague of caterpillars. The most effective of the vegetables were the Cauliflowers, all very good and meritorious. It was natural, however, that the greatest amount in prizes should go to a vegetable of humbler description—the immemorial

Onion, which was excellently done both in purple and white. Besides these, there were Potatos, Greens, Carrots, Peas and Beans, Cucumbers, salad plants and seasoning herbs. The Oxford gardeners, of course, cannot have it all their own way. They succeed least satisfactorily perhaps with their Peas. Gardening, wherever carried on, like all other human enterprises, of course, has its failures and disappointments. It tries not only one's powers of perseverance, but one's patience and one's faith. Still, in the most ill-favoured of localities, and in the worst of seasons, there is always plenty to rejoice in, and more that gratifies than disappoints, and this we take to be one of the best facts or principles connected with the promotion of horticulture for the million, especially in and near our great manufacturing centres. The trials, the hopes and fears, the rewards and discomfitures connected with gardening, constitute a very salutary part of education; and as the truest and best results of education, rightly so-called, are shown in men becoming more manly and self-reliant, more content and more generous, it follows that a garden is one of the best schools of moral discipline. A cottage garden is not only a source of wholesome vegetable good, it does good to a man's whole character. The prizes awarded at Oxford consist, not of money, but of useful household articles, rocking-chairs, kettles, knives and forks, &c., so that all in the family may participate. This is very wise, as it shows to all the home circle that the idea of a garden is never intended to be selfish and exclusive, but in one way or another promotive of the pleasure and welfare of all who are connected with it. The idea of a selfish garden is one of the most shocking and inconsistent things in the world. Every man, of course, has a right to do what he likes with his own—provided he likes to do with it what is right, and that which is right can never be done with a garden if, in one way or another, God's good gifts, as displayed in it, are not opened to the enjoyment of many. The window plants comprised chiefly Fuchsias, Pelargoniums, Vallotas, Agapanthus, and Japan Lilies, all very pretty and delightful to look at, the more so because so certainly the recipients of plenty of human care, for that they had been tended well-nigh as carefully as a child was quite evident. Herein is found another good use of cottage window-gardening—it tends to awaken kindly sympathies, and with these to improve the taste. The cut flowers consisted principally of Dablias, scarlet Gladiolus, Asters, Antirrhinums, and French Marigolds, with a sprinkling of Carnations. A tray of Roses, from somewhere close by, was also very creditable. Fruit, of course, could not be expected in quantity. Some of the Oxford gardeners have little greenhouses, in which they manage to raise a few Grapes. We would recommend them, with the kindliest recognition of their industry and their desires, to try instead of Vines a Maréchal Niel Rose, for the blooms of which they would find a good market in the town, and thus add to their pecuniary profit. For the sake of decoration, Messrs. Taylor Bros. sent 150 ornamental tender plants; and Mr. John Shaw, jun., of Bowden, a quantity of Palms and Cycads.

The Oxford Institute supports a band, which at intervals "discoursed sweet music;" and at an appropriate hour an address was given by Mr. Leo Grindon, of Manchester, on the origin, history, &c., of the best descriptions of fruits at present cultivated in Great Britain. We cannot speak in terms too high of the practical value of the work thus set going by Mr. Hugh Mason, with results already so marked. The example is worthy of imitation wherever an employer has generous instincts, and if it cannot be carried out on a scale so extensive as at Guide Bridge, it can at all events be tried on a smaller one, improving and extending by degrees.

Prizes are given, we must not forget to add, for the neatest and best-kept gardens. They were awarded, on this occasion, to Wm. Whittaker, Joseph Bridge, and Thomas Moss. Commendation was also given to J. A. Isherwood. (*From a Correspondent.*)

Stevenage Horticultural Society: *Sept* 14—The usual autumn exhibition of this Society took place in the Town Hall on the above date, and was one of the best exhibitions the Society has held for some time past. Particularly does this remark apply to the cottagers' produce, which is the more satisfactory as the real object of the Society is to give encouragement to the many cottage and allotment gardeners in Stevenage and the surrounding villages covered by the operations of the Society. The cottagers' productions as a whole were in advance of those shown by amateur and professional gardeners.

In the class for a single plant in a pot not less than twenty-two plants were staged; the best was a remarkable Hydrangea, showing indisputable signs of window growth—a large, well-grown, healthy, clean, bushy plant, having seven large trusses of bloom. This came from Henry Baldry. Next in importance came some good specimens of Vallota purpurea in bloom, Fuchsias, Coleus, a well-grown Gladiolus in a pot, &c. The collections of wild flowers arranged with taste were remarkably good; and the sauce and table Apples excelleot. The basket of mixed vegetables shown by W. Hough, to which the 1st prize was awarded, was some way in advance of those shown by amateurs. The cottagers' vegetables were remarkably good, and, with the exception of the Vegetable Marrows, were such as any gardener might have sent to his employer's kitchen.

In the amateurs' and general classes the leading exhibitors were Colonel Metcalfe, C.B., Ashton House; the Rev. J. O. Seager, Stevenage; the Rev. J. F. G. Jenyns, Knebworth; the Rev. J. E. Pryor, Bennington; Lieut.-Colonel Wilkinson; Mr. G. H. Smith, Stevenage; G. Salmon, Esq., &c. The Rev. C. E. Segar had the best basket of fruit as well as the best bunch of Grapes. Mr. G. Salmon's stand of twelve Dahlias was highly creditable, and the Asters from Colonel Metcalfe, C.B., remarkably good.

Dessert and culinary Apples were numerous and fine, and in the former the Rev. W. Jowitt staged a good dish of Early Codlin. Among vegetables, Potatos and Celery were specially fine.

The plants comprised miscellaneous groups, also Fuchsias, Coleus, Balsams, &c.; all fair for a locality in which outdoor rather than indoor gardening appears to be most generally followed.

A leading feature is the baskets of mixed vegetables in the general class. On this occasion the best came from G. Salmon, Esq., and second best from Captain Fellowes. We were sorry to learn from the active honorary secretary, Mr. George Dunn, that the necessary support to maintain two exhibitions yearly is declining. The Society depends mainly on annual subscriptions for support, for the proceeds in the way of gate-money are very poor indeed; and it would be a decided calamity were the shows to be discontinued through lack of public support, for they have done much to improve the social position of many of the cottagers.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, SEPT. 19, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Sept.	In.	In.	°	°	°	°	°	°			In.
13	29.80	—0.09	65.5	52.7	12.8	58.3	+ 0.9	53.0	83	WSW: S.S.W.	0.01
14	29.77	—0.11	67.0	59.1	7.9	61.6	+ 4.4	59.6	93	S.W.	0.00
15	29.82	—0.05	63.4	56.0	7.4	59.2	+ 2.1	52.6	79	WSW: NNW	0.06
16	30.11	+0.25	63.5	47.5	16.0	53.8	— 3.1	49.3	85	WNW: NNW	0.00
17	30.12	+0.27	59.5	49.5	10.0	53.6	— 3.0	48.3	82	NNW: N.	0.00
18	30.09	+0.25	61.8	50.2	11.6	53.8	— 2.8	48.3	81	N.: NNE	0.00
19	29.83	0.00	59.8	52.7	7.1	55.3	— 0.8	50.8	85	N.: N.N.E.	0.00
Mean	29.93	+0.07	62.9	52.5	10.4	56.5	— 0.3	51.7	84	N.W.	sum 0.07

Sept. 13.—A dull, stormy day. Occasional slight rain. Gale at times.
— 14.—Overcast, dull, and windy throughout. Slight shower of rain at 2 P.M.
— 15.—Generally fine, dull at times. Showery in morning.
— 16.—Dull and foggy till 11 A.M., fine and bright after. Cool.
— 17.—Fine, but dull and cloudy. Cool breeze.
— 18.—A fine day, partially cloudy. Cold.
— 19.—Overcast and dull throughout. Few drops of rain at 5 P.M.

LONDON: *Barometer.*—During the week ending Saturday, September 15, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.99 inches at the beginning of the week to 30.04 inches by the morning of the 10th, decreased to 29.75 inches by the afternoon of the 11th, increased to 30.03 inches by noon on the 13th, decreased to 29.80 inches by the morning of the 15th, and increased to 30.18 inches by the end of the week. The mean reading for the week at sea level was 29.95 inches, being 0.07 inch below that of the preceding week, and 0.13 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 71½° on the 11th to 63½° on the 10th and 15th; the mean value for the week was 66¼°. The lowest temperatures of the air observed by night varied from 49° on the 9th to 59° on the 14th; the mean for the week was 53½°. The mean daily range of temperature in the week was 12¾°, the greatest range in the day being 18½°, on the 11th, and the least 7½°, on the 15th.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows:—9th, 56°.7, − 1°.4; 10th, 56°.2, − 1°.8; 11th, 60°.6, +2°.8; 12th, 59°.3, +1°.7; 13th, 58°.3, +0°.9; 14th, 61°.6, +4°.4; 15th, 59°.2, +2°.1. The mean temperature of the air for the week was 58°.8, being 1°.2 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 128° on the 9th, and 114° on the 12th; on the 14th it did not rise above 71½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 45° on the 15th, and 45¼° both on the 9th and 13th. The mean of the seven low readings was 48°.

Wind.—The direction of the wind was variable, and its strength brisk. The weather during the week was dull, and the sky cloudy.

Rain fell on four days during the week; the amount measured was 0.17 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 72° at Cambridge, and 71½° at both Blackheath and Nottingham; the highest temperature at Bradford was 62½°; the mean value from all stations was 67°. The lowest temperatures of the air observed by night were 40° at Cambridge, 41° at Hull, and 41¼° at Eccles; the lowest temperature at Truro was 53°; the general mean from all stations was 47°. The range of temperature in the week was the greatest at Cambridge, 32°, and the least at Plymouth, 12½°; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Cambridge, 69°, and at Blackheath and Norwich 66¼°, and the lowest at Bradford, 60¼°; the mean value from all stations was 63¾°. The mean of the seven low night temperatures was the lowest at Eccles, 48¼°, and Wolverhampton, 49½°; and the highest at Truro, Brighton, and Plymouth, all 56°; the general mean from all stations was 52½°. The mean daily range of temperature in the week was the greatest at Cambridge, 18°, and the least at Plymouth, 5¾; the mean daily range from all stations was 11¼°.

The mean temperature of the air for the week from all stations was 56¾°, being 5¼° higher than the value for the corresponding week in 1876. The highest was 59½°, at Brighton, and the lowest 54¼°, at Wolverhampton and Bradford.

Rain fell on four or five days in the week at most stations. The amounts varied from 2 inches at Hull, and 1½ inch at Bristol and Plymouth, to one-tenth of an inch at Norwich; the average fall over the country was 1 inch.

The weather during the week was generally dull and showery, and the sky cloudy. Lightning was seen at Liverpool on the 11th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air observed by day varied from 67½° at Edinburgh to 62° at Perth; the mean value from all stations was 64¼°. The lowest temperatures of the air observed by night ranged from 35° at Paisley to 42° at Greenock; the mean from all stations was 39°. The mean range of temperature from all stations was 25¼°.

The mean temperature of the air for the week from all stations was 54¼°, being 3° higher than the value for the corresponding week in 1876. The highest was 55½°, at Glasgow, and the lowest 53¼°, at Paisley.

Rain.—The falls of rain varied from 2¼ inches at Greenock to six-tenths of an inch at Edinburgh, Aberdeen, and Leith. The average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 67¾°, the lowest 40¾°, the range 27°, and the mean 57¼°. The fall of rain was 1.16 inch.

JAMES GLAISHER.

Variorum.

PRICES OF TIMBER IN KENT.—The annual sale of Oak timber, blackrinds, and Oak-top faggots upon the Surrenden-Dering estate, in the parishes of Pluckley, Little Chart, Smarden, Westwell, and Bethersden, took place on the 26th ult., when about 180 lots were submitted to public competition by Messrs. Bayley & Son, of Ashford. The timber was not of the class usually offered on this estate, as most of the last winter's falls of underwood, from which the thinnings are made, were upon the inferior woods of the estate. The company was, however, a large one, and the sale correspondingly brisk. The Oak timber ranged in price from 1*s.* 6*d.* to 2*s.* 8*d.* per foot; blackrinds from 2*s.* 6*d.* to 9*s.* each; and Oak-top faggots from 25*s.* to 30*s.* per 100. The terms of pay-

ment in this locality are, for purchases of less than £5, prompt cash; £5 and upwards, half the purchase-money at the time of the sale, and the remainder early in October. The demand for timber of all kinds has been good throughout the season. Hop-poles have not, however, attained the prices of former years. Norwegian Fir poles, so extensively used in the best Hop plantations for lows, and for carrying the wire and string now employed in Hop-growing, have commanded very high prices upon the Maidstone and Faversham wharves. Ordinary home-grown hop-poles have realised from 10s. to 36s. per 100, according to length and quality of wood. Ash and Sweet Chestnut have been much sought after. *A. J. B., in "Journal of Forestry."*

PHENOMENA OF LIFE.—Sufficient knowledge has now been acquired of vital phenomena, to justify the assertion that the notion that there is anything exceptional about these phenomena receives not a particle of support from any known fact. On the contrary, there is a vast and increasing mass of evidence that birth and death, health and disease, are as much parts of the ordinary stream of events as the rising and setting of the sun, or the changes of the moon; and that the living body is a mechanism, the proper working of which we term health; its disturbance, disease; its stoppage, death. The activity of this mechanism is dependent upon many and complicated conditions, some of which are hopelessly beyond our control, while others are readily accessible, and are capable of being indefinitely modified by our own actions. The business of the hygienist and of the physician is to know the range of these modifiable conditions, and how to influence them towards the maintenance of health and the prolongation of life; the business of the general public is to give an intelligent assent, and a ready obedience based upon that assent, to the rules laid down for their guidance by such experts. But an intelligent assent is an assent based upon knowledge, and the knowledge which is here in question means an acquaintance with the elements of physiology. It is not difficult to acquire such knowledge. What is true, to a certain extent, of all the physical sciences, is eminently characteristic of physiology—the difficulty of the subject begins beyond the stage of elementary knowledge, and increases with every stage of progress. While the most highly trained and best furnished intellect may find all its resources insufficient when it strives to reach the heights and penetrate into the depths of the problems of physiology, the elementary and fundamental truths can be made clear to a child. *Professor Huxley in the "Society of Arts' Journal."*

Enquiries.

He that questioneth much shall learn much.—BACON.

205. CORDONS.—Will any of your correspondents kindly favour me with their experience as to the angle at which Pear trees are best trained to wires in diagonal cordons? I observe Mr. Rivers, in his Catalogue of Fruit Trees, 1876, fig. 5, p. 4, has a woodcut showing a tree trained at an angle of 45°; while further on, p. 39, fig. 23 shows two trees trained at an angle of 60°. My trees have been planted and stood a few years at an angle of 60°; if it is likely that a less angle would produce fruit better in quality or quantity I would alter the angle, which I should not feel inclined to do without a fair prospect of improvement. *Cordon.*

206. LADY HENNIKER APPLE.—Will any of your readers kindly inform me if they have fruited the Lady Henniker Apple, and if they think it suitable for a market gardener to plant? *G. H. K.*

207. HAUTBOIS STRAWBERRY.—I cannot get these to fruit. What management is necessary? *B.* [It is well known that many Strawberries are practically unisexual, even if both sexes be apparently present. Probably the male plants are deficient in your plantation. EDS.]

Answers to Correspondents.

ANALYSIS OF FLOWERING PLANTS: *G. N. T.* Of course the composition depends not only on the particular flower but on the circumstances under which it is grown. See Watts' *Dictionary of Chemistry.*

CARLISLE SHOW.—Messrs. James Dickson & Sons, Newton Nurseries, Chester, write that they were awarded the 1st prize for a pair of Tree Ferns, Dicksonia antarctica, and obtained a First-class Certificate for a new variety of Cupressus Lawsoniana. The same firm exhibited a general collection. Under no circumstances can we undertake to mention all the awards, least of all when a telegraphic report has to be sent us as we are going to press.

CATERPILLAR: *T. C. H.* The insect had escaped from the box.

DAHLIAS AT THE ALEXANDRA PALACE.—Messrs. Rawlings write that the flower with a pin in it, which was the subject of some comment at this show, was not exhibited by them, as might be inferred from a passage in our report.

EGG-FRUIT DISEASED: *E. H.* The diseased fruit of the Egg-plant was completely traversed by the mycelium of some fungus, probably belonging to some common mould; such cases are frequent.

FUNGUS ON VIOLET LEAVES: *W. C. B.* Your Violet leaves are attacked by a minute fungus, Septoria violæ. It is one of those pests against which there is no remedy. The spores are extremely minute and multitudinous. Pick the infected leaves and burn them. We fear, however, it is too late, and the weather is highly favourable for their development. We have something closely allied from Scotland, if not identical. *M. J. B.*

GREENHOUSES: *J. Parrott.* We believe they are rateable, but as varying circumstances sometimes affect these legal matters you had better consult your solicitor.

INSECTS: *W. T. T.* The whitish objects on the seed-heads of Rush are the cases of the larvæ of a very small moth (Coleophora cæspititiella). They are universally abundant on Rushes; the larvæ feed upon the seeds, and carry the cases about with them when they move from one capsule to another. We fail to find the "very small, pale brown cocoons," unless some loose seeds of the Rush represent them. *R. McL.*

LEAVES FOR GARNISHING PURPOSES: *Olivia.* The plant you mean is probably Farfugium grande. In winter you must take what you can get. Aucuba, Mahonia, Magnolia, and other evergreens will do best. If you have access to a shrubbery you only further require common sense and taste.

OAK SPANGLES: *T. E. Badman.* Very common in all seasons, but more than usually abundant this year.

FIG. 76.—OAK SPANGLES: 3 AND 4, SILK-BUTTON-GALL.

They are the work of a gall insect, a species of cynips. (See fig. 76.)

NAMES OF PLANTS: *S.* 1, Escallonia macrantha; 2, Nepeta Mussinii; 3, Capsella Bursa-pastoris (Shepherds's Purse).—*Subscriber, Co. Down.* 2, Gentiana asclepiadea; 3, Silene valesia (?). The others, the numbers of which are obliterated, are Dianthus deltoides and Teucrium Chamædrys. Write the numbers on paper in future.—*K.* Coccoloba platyclada.—*W. B.* 5, Mesembryanthemum deltoides; 6, M. echinatum.—*J. G. M.* Escallonia montevidensis; propagated by layers and cuttings.—*Enquirer.* A species of Sanguisorba. If wild, it is S. officinalis; otherwise it is probably S. media, but the specimen is insufficient.—*L. M. S.* Actæa spicata.—*E. L. A.* The Fulham Oak.—*F. S. C.* Mentha arvensis.—*T. S. Newry.* 1, The wild Scotch Rose, Rosa spinosissima; 2, apparently a Lespedeza, but the materials are insufficient.—*No Signature.* 1, Colutea arborescens; 2, Francoa ramosa.—*T. R.* 1, Sedum album; 2, Sedum lydium; 3, Sedum carneum variegatum; 4, Veronica incana; 5, Lycopodium clavatum.—*Fechney.* 1, Nephrolepis tuberosa; 2, Asplenium flabellifolium; 3, Adiantum cuneatum probably, but very imperfect; 4, Pteris tremula; 5, Selaginella pubescens; 6, Platyloma rotundifolium.—*Southampton.* 1, Ptarmica vulgaris; 2, Sedum Sieboldii variegatum; 3, Plumbago Larpentæ; 4, Veronica spicata variegata; 5, Poterium sanguisorba; 6, Apargia hispida.—*L. H.* 1, Oncidium obryzatum; 2, Oncidium holochrysum; 3, is curious, but indeterminable. Why do you send such wretched scraps? Do you think it is an easy matter to determine a miserable scrap, crushed and dried before it reaches us?—and do you think that we have nothing else to do? Perhaps our time is as valuable as yours.

POPLAR CUTTINGS: *G. B.* We believe you will succeed in a warm border not too wet.

RABBITS: *H. & Co.* Try Mr. Tillery's plan: well mix a quantity of cow-dung with quicklime and some train-oil, and paint the stem of the trees with the mixture.

THAMNOCALAMUS FALCONERI OR ARUNDINARIA FALCATA: *B.* See *Gardeners' Chronicle*, June 16, 1877, and numerous notices in our volume for 1876.

TUBEROUS BEGONIAS: *P. G.* Keep them in pots of dry earth, in a place quite safe from damp and frost. The pots might be placed on a dry greenhouse shelf, or in a store-room.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—Messrs. Hooper & Co. (Covent Garden Market, London, W.C.), Catalogue of Bulbs, &c.—Messrs. Edmondson Bros. (10, Dame Street, Dublin), Catalogue of Bulbs, &c.—Auguste Van Geert (Ghent, Belgium), English Edition of General Plant Catalogue.—R. B. Matthews (65 and 67, Victoria Street, Belfast), Descriptive Catalogue of Dutch Flower Roots.—Thomas Meehan (Germantown Nurseries, Philadelphia), Wholesale Catalogue of Trees, Shrubs, &c.—Messrs. Daniel Bros. (Norwich), Illustrated Catalogue of Dutch Flower Roots.—W. H. Rogers, 132, High Street, Southampton), Catalogue of Dutch Bulbs, &c.—Messrs. Carter & Co. (237, High Holborn, London, W.C.), Catalogue of Dutch Flower Roots.—Messrs. W. Paul & Son (Waltham Cross, Herts), Catalogue of Roses.

ERRATA.—We are requested to state that the Dahlia "Mr. Seaman," mentioned in our report of the Bishop Auckland show as "a new Northern flower," was sent out by Messrs. R. Edwards & Son in 1875.—In our report of the Sevenoaks Show, Miss Don Seale should have been 1st for single epergne, and Mrs. Bolton 2d.

COMMUNICATIONS RECEIVED.—W. Pontey (we did not consider it to be better than others now in cultivation).—C. Ford.—W. Pain.—D. T. D.—N. S.—W. D.—M.—A. G.—H. H.—Rchb. f.—Messrs. Backhouse (thanks).—J. F. R.—E. S. D.—T. R. (small box not received).—W. B. H.—G. M.—T. B.—R. D.—E. W.—G. M., Broseley.—A. W.—A. C.—W. M.—W. B.—W. C.—A. F.—T. W. W.

DIED, on September 18, aged 57, Mr. JOHN MORSE, of The Nurseries, Dursley, Gloucestershire.

Markets.

COVENT GARDEN, September 20.

Business has been steady during the last few days, and in all home-grown produce prices remain the same. Heavy consignments of Kent Cobs have reached us, and a slight reduction has been made to effect clearances. *James Webber, Wholesale Apple Market.*

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	3 0– 9 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch.	3 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, p. bun.	0 6– 1 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses(outdr.),12 bun.	2 0– 9 0
Eschscholizia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	4 0–12 0
Gardenia, per doz.	3 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0
Lilies (in var. 12 spr.	1 0– 2 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Ficus elastica, each	2 6–15 0
Begonias, per doz.	6 0–12 0	Fuchsias, per dozen	2 0–12 0
Bouvardias, do.	12 0–24 0	Heliotrope, per doz.	4 0–12 0
China Asters, dozen	3 0–12 0	Liliums in var., each	1 6– 6 0
Chrysanth., per doz.	5 0–12 0	Mignonette, per doz.	6 0– 9 0
Clematis	6 0–24 0	Myrtles, do.	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen	3 0– 9 0	Pelargon., scarlet, p. dozen	2 0– 9 0
Cyclamen, per doz.	18 0–24 0	Petunias, per doz.	4 0–12 0
Cyperus, do.	4 0–12 0	Roses, fairy, p. doz.	4 0–12 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Valotta purpur., doz.	9 0–18 0
Ferns, in var., p. doz.	4 0– ..		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Horse Radish, p. bun.	4 0– ..
Aubergines, p. doz.	2 0– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per bushel	8 0– ..	Lettuces, per score	2 0– ..
— Scarlet Runners, per bushel	4 0– ..	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Brussels Sprouts, p. bush.	8 0– ..	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per busbel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos:—Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Oranges, per 100	..12 0–20 0
Grapes, per lb.	.. 0 9– 6 0	Peaches, per doz.	.. 6 0–15 0
Lemons, per 100	.. 8 0–12 0	Pears, per doz.	.. 1 0– 3 0
Melons, each	.. 2 0– 5 0	Pine-apples, per lb.	.. 4 0– 8 0
Nuts, Cobs, per lb.	.. 0 4– 0 6	Figs, green, doz.	.. 1 0– 3 0

SEEDS.

LONDON: *Sept.* 19.—There is more business now doing in red Clovers. Offers of new seed are to hand from both the north and south of France, and also from Germany. Further advices from across the Atlantic describe the prospects of the American crop as good; similar accounts are also received from Canada. With the promise, therefore, of an abundant supply from various sources, currencies will, it is hoped, remain at a moderate level. Alsike, as the result of recent speculative dealings, has crept up to a good figure. White Clovers are steady, but present quotations cannot be pronounced high. For Trefoil, holders manifest great firmness; the undoubted shortness of this season's crop naturally enhances values. There is still, for the time of year, a fair sale for Trifolium on former terms. In neither Mustard nor Rape seed is there this week any material alteration. Fine samples of new Essex white Mustard have been realising long prices: a good supply, it is said, may be expected from Cambridgeshire. In grass seeds there have lately been a few transactions, at slightly enhanced rates. For sowing Rye the sale is slow. Winter Tares, however, move off briskly, at fully the late advance; the yield nowhere appears satisfactory. For bird seeds we have a moderate inquiry, at last week's prices. Blue Peas are rather dearer. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was decidedly firm, and there was a steady demand for all good produce. The supply of new English Wheat was small, while the prices realised ranged up to 65*s.* per quarter. Feeding Barley was 6*d.* to 1*s.* dearer than on Monday se'nnight; malting qualities were fully as dear. Malt was steady on former terms. Oats were quite 6*d.* per quarter higher, while there was a like improvement in the value of Maize. Beans and Peas were much the same in price. Flour was sold at rather better prices in some instances without leading to a general advance being reported.—On Thursday the supply of English Wheat on sale was moderate and condition poor. Choice qualities were in steady request, at full prices, but for inferior produce the trade was slow. Good and fine dry fresh Wheat was held at fully late rates, and the trade for feeding descriptions was decidedly firm. Oats, Beans, and Peas were in fair average request, and no material change took place in their value. Flour was in moderate demand at full prices.—Average prices of corn for the week ending Sept. 15:—Wheat, 59*s.*; Barley, 40*s.* 1*d.*; Oats, 27*s.* 2*d.* For the corresponding period last year:—Wheat, 46*s.* 11*d.*; Barley, 37*s.* 7*d.*; Oats, 26*s.* 3*d.*

CATTLE.

At Copenhagen Fields on Monday there was a large increase in the supply of beasts and a heavy trade, consequently prices were lower. The number of sheep were about the same as on Monday se'nnight, but the demand was decreased, and prices were lower on the average, with a slow trade. Choice calves were scarce, and made fully late rates. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 5*s.* to 6*s.* 4*d.*; sheep, 5*s.* 4*d.* to 5*s.* 10*d.*, and 6*s.* 4*d.* to 6*s.* 10*d.*; pigs, 4*s.* to 5*s.* 4*d.*—On Thursday, notwithstanding very short supplies, trade was quiet. Both beasts and sheep sold slowly, and the prices realised were about on a par with those of Monday. Calves were unaltered, and pigs sold at about late rates.

HAY.

The Whitechapel report for Tuesday says that, with a moderate supply, trade was steady, at firmer prices. Quotations:—Prime old Clover, 100*s.* to 150*s.*; inferior, 85*s.* to 95*s.*; good new, 100*s.* to 135*s.*; prime old meadow hay, 90*s.* to 120*s.*; inferior, 70*s.* to 85*s.*; good new, 80*s.* to 100*s.*; straw, 44*s.* to 57*s.* per load.—On Thursday a good supply of fodder was on sale. With a fair trade prices were as on Tuesday.—Cumberland Market quotations:—Superior meadow hay, 116*s.* to 126*s.*; inferior, 84*s.* to 96*s.*; superior Clover, 138*s.* to 147*s.*; inferior, 110*s.* to 126*s.*; and straw, 54*s.* to 58*s.* per load.

POTATOS.

The Borough and Spitalfields markets reports state that with moderate supplies trade continues steady, the following being the current quotations:—Kent Regents, 95*s.* to 120*s.* per ton; Essex ditto, 85*s.* to 110*s.*; Victorias, 100*s.* to 130*s.*; kidneys, 80*s.* to 120*s.*; Early Rose, 90*s.* to 115*s.*; rocks, 80*s.* to 90*s.*—The imports into London continue upon a very limited scale. During the past week 962 bags were received from Hamburg, 196 Antwerp, 183 Rouen, and 152 from Harlingen.

COALS.

The following prices were current at market on Wednesday:—Bebside West Hartley, 17*s.* 3*d.*; East Wylam, 17*s.*; Hastings Hartley, 17*s.* 3*d.*; Walls End—Haswell, 20*s.* 6*d.*; Hetton, 20*s.* 6*d.*; Hawthorns, 18*s.* 3*d.*; Lambton, 20*s.*; Original Hartlepool, 20*s.* 6*d.*; South Hetton, 20*s.* 6*d.*; East Hartlepool, 20*s.* 3*d.*; South Hartlepool, 18*s.* 6*d.*; Tees, 20*s.* 3*d.*

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

TO THE TRADE.

Dick Radclyffe & Co.'s

WHOLESALE BULB and SEEDSMEN'S SUNDRY LIST

HAS BEEN POSTED TO ALL CUSTOMERS.

Please apply if not received.

128 and 129, HIGH HOLBORN, LONDON, W.C.

THE QUEEN'S SEEDSMEN,

HIGH HOLBORN, LONDON, W.C.

Come and See.

Harrison's Musk.
VALUABLE BEDDING PLANT.

H. CANNELL begs to assure the Public generally that the above now creates quite a sensation in Covent Garden—in fact, there is quite a mania for it, probably a more saleable and profitable was never sent out. H. C. will send two plants, post-free, for 1*s.*, 20*s.* per 100.

Seedlings.

H. CANNELL begs to announce that he has many thousands of PRIMULAS, CALCEOLARIAS, and CINERARIAS, at 1*s.* 6*d.* per dozen. They are now just ready for potting off. Those established in small pots, 1*s.* per dozen extra. All of them are of James' First Prize Exhibition varieties. Special prices for large quantities.

Strawberries all the Year Round.
GARIBALDI (true).

H. CANNELL begs to inform the Public that he has many thousands of the above invaluable variety, established in small 60's, just ready for shifting, 15*s.* per 100; Plants from Ground, 6*s.* per 100. From the fact of his being situated in the midst of hundreds of acres of the Kentish Fruit Plantations H. C. is enabled to offer really all the best and most approved kinds of Strawberries in cultivation. A half-penny card will bring you full and valuable particulars.
Swanley, Kent.

QUANTITY and QUALITY.

FRUIT TREES, ROSES,
CLEMATISES,
ORNAMENTAL TREES & SHRUBS.

Charges Moderate. Lists Free.

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THE ROYAL NORFOLK NURSERIES,
EATON, NEAR NORWICH.

Vines, Vines, Vines.

F. AND A. SMITH offer strong, close-jointed, well-grown Canes of the above, both fruiting and planting. LIST on application.
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Vines and Strawberries,

"Plant now to ensure a full crop of fruit next season."

FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3*s.* 6*d.* to 5*s.* each; strong Fruiting ditto, 7*s.* 6*d.* to 10*s.* 6*d.* each.

Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16*s.* to 20*s.* per 100; from the open ground, 3*s.* to 5*s.* per 100.

Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.
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ESTABLISHED 1785.

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ROSES, FRUIT TREES,
CONIFERS.

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COCOA-NUT FIBRE REFUSE, newly made. Reduced price:—In 4 bushel bags, at 1*s.* (not less than 5 bags), or truck load, 30*s.* (delivered free to rail in London).
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COCOA-NUT FIBRE, PEAT, LOAM, SAND, all MANURES as supplied to Veitch & Sons, Carters, Wills, Bull, Ewing, &c. Russia Mats, Raffia, and every kind of Nurserymen's and Seedsmen's Sundries. Write for free Price List.
M. H. BENTOTE, 8, Castle Street, Long Acre, Covent Garden. Factory: Nunhead.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
WALKER AND CO., Farnborough Station, Hants.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

SCOTT'S WASP DESTROYER.—The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 1*s.* 6*d.*, 2*s.* 6*d.* and 5*s.* each. The larger sizes are the cheapest. May be obtained through any Seedsman, or direct from
JOHN SCOTT, The Royal Seed Stores, Veovil.

B G L Oilcake.

ARREST YOUR PURCHASES of all other Cake until you have read the "Book of Testimonials" from users of this cake. Sent post-free by the Agent for the County, or by the Makers.
Mills, Shad Thames, London, S.E.

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This Manure, after six years' trial, is unapproached in its results by any other manure. It is suitable for all soils, and permanently improves the fertility of even the poorest. It provides the necessary foods for plants, creates a vigorous growth without over-stimulating, and it increases the produce. It is a powerful insecticide. It has been used with perfect success on

FLOWERS, SHRUBS, VEGETABLES, FRUITS, GRASS, VINES.

PREPARED IN A FINE, DRY, INODOROUS POWDER.

Price, £12 per Ton; 15s. per Cwt.; and in Canisters, 1s., 2s. and 4s. each.

Trial Orders of the Manure are invited, to be used in comparison with other Manures.

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AMIES' CHEMICAL MANURE CO. (LIMITED),
79, MARK LANE, LONDON, E.C.

THE EUREKA POST BOX.—Specially adapted for the postal transit of Fruit, Plants, Flowers, &c. Price 4s. 6d. per dozen. Sample Box, with Grapes or Strawberry Plants enclosed, post-free, 1s.
W. LOVEL, Weaverthorpe, York.

Cheapest House in the Trade.

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Prices on application.

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BETHAM & SON,

9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

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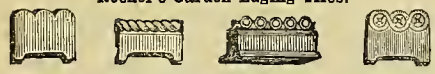

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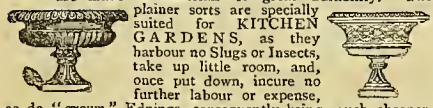

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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.
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N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.
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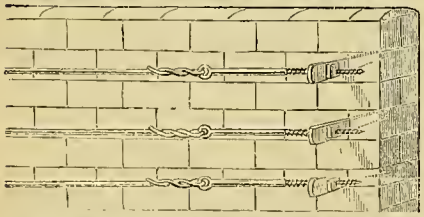
FITTINGS for WIRING WALLS.

NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall:	20 yds.	40 yds.	60 yds.	80 yds.	100 yds
	s. d.	s. d.	s. d.	s. d.	s. d.
No. 14 Gauge Wire	1 0	1 7	2 1	2 7	3 1
No. 13 ,, ,,	1 3	1 10	2 5	3 0	3 7

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.
Five per cent. discount allowed for prompt cash on Orders amounting to 20s. and upwards.
Special quotations for larger quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
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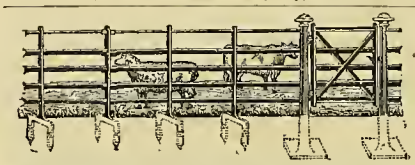
THE CHEAPEST and MOST DURABLE SHADING.—"Lasting for years."
MADE of PREPARED WOOL and HAIR.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied.
Patronised by Her Majesty the Queen, for Windsor Castle; Prince Christian, for Frogmore Gardens; the late Sir J. Paxton; the late A. F. Paxton, Esq.; the late S. Rucker, Esq., &c.
"FRIGI DOMO" CANVAS.

2 yards wide	1s. 10d.
3 yards wide	3s. 0d.
4 yards wide	3s. 10d.

"FRIGI DOMO" NETTING, 1s. 6d. per yard.
Can be had from all Florists and Seedsmen, and of E. T. ARCHER, Brockley Road, Forest Hill, London, S.E.
*** Late of Cannon Street, City, E.C.



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Catalogues free on application.

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HENRY HOPE (late Clark & Hope, formerly Clark),
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55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5s. each.
☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

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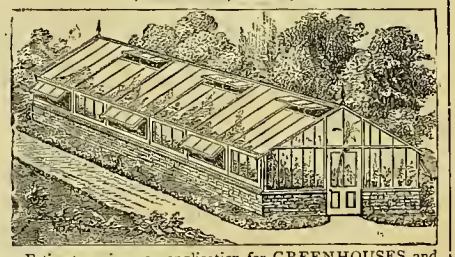
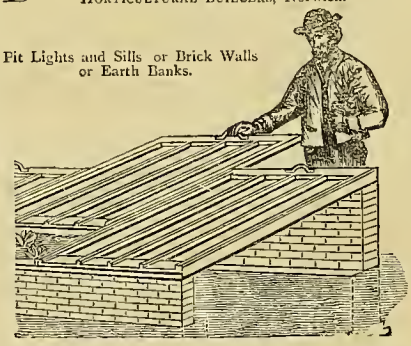


Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.	Each. s.	d.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	35	0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65	0
LIGHTS ONLY.		
3 feet by 4 feet Light, not painted nor glazed	3	6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10	0
6 feet by 4 feet, not painted nor glazed	6	0
Ditto glazed and painted four coats	16	6

BOULTON AND PAUL, HORTICULTURAL BUILDERS, Norwich.

Pit Lights and Sills or Brick Walls or Earth Banks.



PIT LIGHTS and FRAMES complete for fixing on Brickwork, made in two sizes of Lights to work 6 ft. by 4 ft. 2 in. thick, 7 ft. 6 in. by 4 ft. 2½ in. thick, Lights glazed with 21 oz. British sheet glass, painted four times, sills 4½ in. by 3 in., with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.
Cash Prices. Carriage paid to any Railway Station in England and Wales; also to Edinburgh, Glasgow, Dublin, Belfast, or Cork.
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Catalogue of every description of Horticultural Building, post-free, 24 stamps. Plant Preserver Lists, Melon Frame Lists and Greenhouse Lists, post-free.

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GREENHOUSES—every description,
VINERIES—all the latest improvements,
GLASSHOUSES—perfect ventilation,
} From £10 to £1000.
HORTICULTURAL BUILDER and TIMBER MERCHANT,
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HORTICULTURAL BUILDINGS

Designed, Built, and efficiently Ventilated and Heated.

Estimates given to Architects' Plans, or to Rough Sketches, with Sizes, &c.

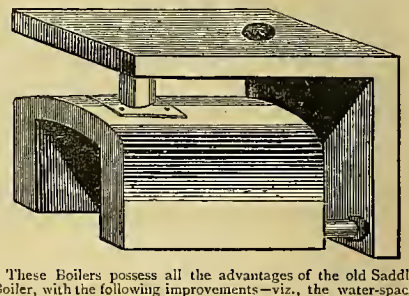
Country Works at Gloucester, Coventry (near Ulverstone), Paisley, and Aberdeen only.
A PAMPHLET with Illustrations, Testimonials, &c., and PRICE LISTS of Sir J. Paxton's Hothouses, for 3d. post free.
A HANDBOOK of Vine and Fruit Tree Cultivation, with Plans of Glass Houses, Heating, &c., post free, 13d.

HEREMAN AND MORTON,
HORTICULTURAL ENGINEERS,
2, GLOUCESTER STREET, REGENT'S PARK,
LONDON, N.W.

For Sale, a

STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
HILL AND SMITH, Brierley Hill Ironworks, Dudley.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes. High.	Wide.	Long.	To heat of 4-in. Pipe. Feet.	Price. £	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

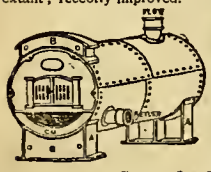
Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

STEVENS' TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Copy of a Testimonial.

"Royal Exotic Nursery, King's Road, Chelsea, S.W.—Aug. 8, 1877.

"Messrs. SILVESTER.

"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

"For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hot-houses during the cold winter months as we do now.

"We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.

"We are, Gentlemen, yours faithfully,

"JAMES VEITCH AND SONS."

For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER,

HOT-WATER ENGINEERS, &c., &c., Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

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STEAM PLOUGHING MACHINERY,

ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES, STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers,

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AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

GREENHOUSE BOILERS.—Two for Sale. For particulars apply to GARDENER, 31, Upper Hamilton Terrace, St. John's Wood, N.W.

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HORTICULTURAL WARMING ENGINEERS VENTILATING & SANITARY

ARCHITECTURE APPLIED TO CONSERVATORIES

HEATING APPARATUS OF EVERY DESCRIPTION. BY HOT WATER, STEAM OR WARMED AIR

SEE ILLUSTRATED CATALOGUE POST FREE

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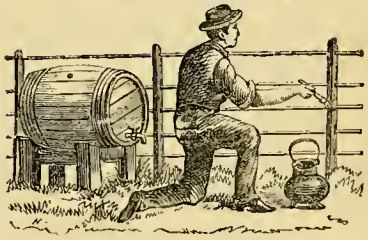
OFFICES & SHOWROOMS. 46 CHARING CROSS.

WORKS QUEENS WHARF HAMMERSMITH.

Oil Paint No Longer Necessary.



HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL RECEIVED MAY 3, 1877.

"*The Kyleys, Alderly Edge, Manchester.*—Messrs. Hill & Smith.—Sirs,—For some 20 years I have used your 'Black Varnish,' and shall be glad if you will forward me another cask, *as I consider it the best thing known for the preservation of all outdoor work, either wood or iron,* that requires to be painted. —Yours respectfully, ALFRED LOWE, J.P."

Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

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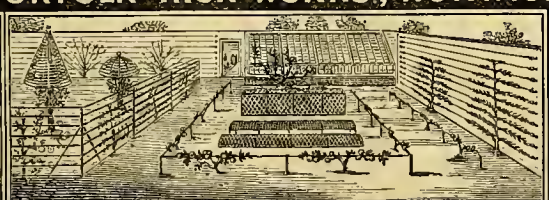

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ILLUSTRATED PRICE LISTS FREE ON APPLICATION.

ALL ORDERS EXECUTED FROM STOCK ON RECEIPT.

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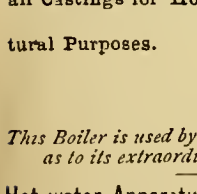

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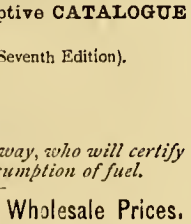
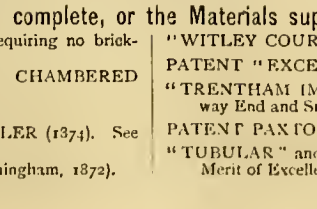
UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),



Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



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This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.

THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.

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"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.

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"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

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The British, Indian and Colonial Governments, 10,000 of the Nobility, Gentry, and Clergy, Railway and Canal Companies, Collieries, Ironmasters, &c., &c.,

Is extensively used for all kinds of

OUTDOOR WORK.

It is especially applicable to

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CAN BE LAID ON BY UNSKILLED LABOUR.

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No one cultivating plants under glass should be without one.

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PORTABLE TERRA-COTTA.

ROBERTS'S PATENT—FOR COAL.

Emit pure heat twenty-four hours for about 1*d.*, without attention. For Greenhouses, Bed-rooms, or almost any purpose. Prospectus, drawings, and authenticated testimonials can be had. In use daily at offices of Patentee—Thomas Roberts,

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Wholesale Russia Mat Merchants.

NEW ARCHANGEL MATS, ST. PETERSBURG MATS, of all qualities and sizes. RAFFIA FIBRE, &c. Firms are requested to send cash or reference in first transactions.

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BAMBOO CANES, East Indian and Japan; MANILLA and RATTAN CANES, in various lengths, sound; also VIRGIN CORKWOOD BARK, on Sale at P. B. HARKINS, Timber Yard, 22, Dutton Street, Liverpool.

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The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens. sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.

MAW AND CO., Benthall Works, Broseley.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12*s.* 6*d.*; 21-oz., 16*s.* 6*d.* per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36*s.*; 3ds, 46*s.* per 300 feet;—21-oz. 4ths, 36*s.*; 3ds., 46*s.* per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

Free by Post, 3s. 6d.,

THE ORCHARDIST.

ALL FRUIT GROWERS SHOULD OBTAIN A COPY BEFORE ORDERING THEIR TREES.

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Whose Collection is the finest in the Kingdom—2000 sorts of PEAR, 1500 sorts of APPLE, 150 sorts of PLUM, with other kinds in proportion, being grown. The great bulk of these are described in the "*ORCHARDIST*," the best work on Fruit Trees in the English language.

The Advertiser has numbers of Letters from Britain, America, Australia, France, Belgium, &c., all eulogising the work as the best the writers have seen.

☞ **The Trees are this season in fine health. Price Lists forwarded.**

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A Guide to the Formation and Management of the Kitchen, Fruit, and Flower Gardens, and the Cultivation of Conservatory, Greenhouse, and Stove Plants; with a copious Calendar of Gardening Operations, and Select Lists of Plants, Fruits, and Vegetables.

BY ROBERT THOMPSON,

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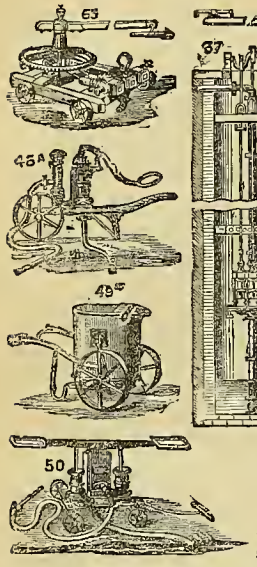
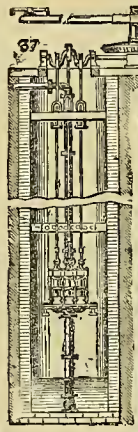

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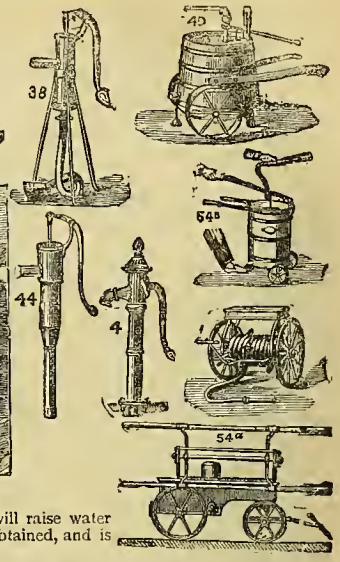

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THE

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Established 1841.

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VOLUME for JANUARY to JUNE, 1877.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE. — FRUIT and FLORAL COMMITTEES' MEETINGS, on TUESDAY NEXT, October 2, in the Council Room, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS, at 3 o'Clock.

THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3, 4, and 5, when Prizes amounting to upwards of ONE HUNDRED and TWENTY POUNDS will be awarded. ENTRIES CLOSE on September 25. For further particulars apply to

Mr. J. A. McKENZIE,
1 and 2, Great Winchester Street Buildings, London, E.C.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

LILY OF THE VALLEY.—Strong flowering plants, 40s. per 1000 roots. Stock at present 250,000.
JULIUS HOFFMANN, Nurseryman, 131, Köpnickerstrasse, Berlin S. O., Germany.

LILY OF THE VALLEY.—I beg to inform all my numerous Customers, buyers of the above, that the Roots are unusually fine this year, and that I can furnish extra strong flowering roots at 45s. per 1000, carriage free to London. Orders are requested as early as possible.
ROBERT NEWMANN, Nurseries, Erfurt, Prussia.

PHEASANT-EYED NARCISSUS.—For Sale, Bulbs of this sweet-scented Narciss, 10s. per bushel. Likewise Bulbs of LILIUM BULBIFERUM, 12s. per 100. Terms cash with order. Package free. Post-office Orders payable Vauxhall.
C. W. ALDERSON, Laogley Lane, South Lambeth, Surrey.

Late Flowering Fuchsias.

RODGER McCLELLAND AND CO. have to offer to the Trade a very fine lot of clean splendid stuff, just coming into fine bloom. From 1½ to 2 feet high, at 40s. and 50s. per 100.
64, Hill Street, Newry.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

SUTTON'S FLOWER ROOTS for Early Forcing.
EARLY ROMAN HYACINTHS,
DOUBLE SNOWDROPS,
SINGLE SNOWDROPS,
NARCISSUS, of sorts.
For Prices and full particulars see SUTTON'S AUTUMN CATALOGUE, price 6d. post-free, or gratis to customers.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Planting Season.

EVERGREENS IN GREAT VARIETY and of all ages and Sizes, including HOLLIES, &c., in the best transplanted condition for safe removal. The largest and best stock in Britain. CATALOGUES post-free.
JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

To the Trade.

ASH, OAK, BEECH, ALDER, SYCAMORE, BIRCH, PINE, Austrian and Native Scotch, 1-yr. and 2-yr. Seedlings. Samples and price on application to
PETER BLAKE, Summerhill, Enfield, Ireland.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers AZALEA INDICA, MOLLIS and PONTICA, CAMELLIAS, SPIRÆA JAPONICA, PALMS and DRACÆNAS. CATALOGUES free on application.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.
Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

To the Trade.

ROSE BLOOMS.
Price until further notice 8s. per 100, at
CRANSTON'S NURSERIES, King's Acre, Hereford.

FOR SALE, many Thousands of AUCUBAS, HOLLIES, EUONYMUS, ARBOR-VITÆ, CUPRESSUS, &c., suitable for pots, together with a large quantity of GENERAL NURSERY STOCK.
J. B. BUTTERFIELD, Nurseries, Baker Street, Enfield, Middlesex.

EUCHARIS AMAZONICA.—Fine flowering Bulbs of the above, 15s. per dozen, for cash.
WILLIAM PRITCHARD, Nurseryman, Shrewsbury.

Notice to the Trade.

JAMES FARRAR AND CO. beg to announce the arrival, in excellent condition, of their First Consignment of DUTCH BULBS. Wholesale CATALOGUE forwarded on application.
Seed Warehouse, 86, Golden Lane, Barbican, London, E.C.

Hyacinths, Tulips, Crocus, Gladioli, &c.

OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.
ANT. ROOZEN AND SON, Overveen, near Haarlem, Holland.

Azalea amœna Caldwellii, Eucharis amazonica.

W. G. CALDWELL AND SONS beg to offer strong bushy plants of their new Azalea, well set with flower-buds, at 24s. per dozen, £7 10s. per 100; also strong flowering bulbs of Eucharis, at 18s. per doz., £5 per 100.
The Nurseries, Knutsford, Cheshire.

Dutch and other Bulbs.

CHARLES TURNER is prepared to execute Orders at the shortest notice, from a large stock.
CATALOGUES on application.
The Royal Nurseries, Slough.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING

GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

Specimen Palms and Tree Fern.

FOR SALE or EXCHANGE, a handsome pair of LATANIA BORBONICA, in 18-inch pots, in the best possible health; also a DICKSONIA ANTARCTICA, 4 feet high in the trunk. For particulars apply to
FREDERICK EVERSON, The Gardens, Ford Place, Thetford.

Chamærops Fortunei.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to offer to the Trade a few dozen strong Plants of the above fine hardy PALM, in various sizes, for which he would be willing to receive any kind of HARDY BULBS in EXCHANGE.
Prices from 18s. to 24s. per dozen.

WANTED, healthy SCOTCH FIR, 1½ foot to 3 feet high, recently transplanted. State price per 1000. Also some good HAZEL.
T. TARPLETT, Wilcote, Charlbury, Oxon.

WANTED, strong IVY REGNERIANA, in pots. State size and price per 100, to
WITTY AND SON, Nurserymen, Cottingham, near Hull.

WANTED, a large SECOND-HAND BOILER, and several thousand feet of PIPING, TEES, BENDS, VALVES, &c., cheap. Full particulars to
BUILDER, Post-office, Braintree.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.
The New CATALOGUE, just issued, sent to applicants.

TO THE TRADE.

SPIRÆA JAPONICA, extra strong clumps, 25s. per 100.
VINES, extra strong fruiting canes of Black Hamburgh, Foster's Seedling, and Mrs. Pince, 5s. 6d. each.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

Special Offer.

ESCALLONIA MACRANTHA, average 1 foot, 10s. per 100.
AUCUBA JAPONICA, average 1½ foot, 12s. 6d. per 100.
LAURUSTINUS, average 1 foot, 7s. 6d. per 100.
„ average 1½ foot, 10s. per 100.
WILLIAM ABRAHAM, Nurseryman, Limerick.

CLEMATIS JACKMANII and others, 55s. per 100; DEUTZIA GRACILIS, 21s. per 100, or £10 per 1000.
RICHARD MASON, Nurseryman, Bagshot, Surrey.

Tree Carnations.

CHARLES TURNER can supply these in great variety, fine healthy plants, showing bloom, at 18s. to 30s. per dozen; also PINKS for immediate planting, 9s. and 12s. per dozen pairs; and extra strong forcing PINKS, 9s. and 12s. per dozen.
The Royal Nurseries, Slough.

Common Sainfoin and Giant Sainfoin.

MESSRS. LEVAVASSEUR AND SON, Seedsmen, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on Commission.

Fruit Trees in Pots.

THE ORCHARD HOUSE CATALOGUE is now ready, and will be sent post-free on application.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

SPECIAL CLEARANCE OFFER.
7000 finest pyramid APPLES, PEARS, PLUMS, and CHERRIES, strong, 5 to 7 feet, 40s. per 100, £15 per 1000; 3000 strong Black, White, and Red CURRANTS, 6s. to 8s. per 100. Special trade offer of SHRUBS on application.
R. THORNHILL, Bowdon Nurseries, Bowdon, Manchester.

Strawberries.

CHARLES TURNER can supply all the leading varieties, from the ground, in small and large pots, for forcing.
Descriptive priced CATALOGUE on application.
The Royal Nurseries, Slough.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

VINES.—Magnificent Canes, splendidly ripened, short jointed, all leading kinds, for Fruiting or Planting. Cannot be surpassed. Warranted clean. Inspection invited. The Trade supplied. Priced LIST on application to
FRANCIS & ARTHUR DICKSON & SONS, The "Upton" Nurseries, Chester.

Vines, Vines, Vines.

F. AND A. SMITH offer strong, close-jointed, well-grown Canes of the above, both fruiting and planting. LIST on application.
The Nurseries, West Dulwich.

Vines for Fruiting and Planting.

JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

Cabbage Plants.

H. J. HARDY begs to offer fine strong Plants of—
ROBINSON'S DRUMHEAD, ENFIELD MARKET, } 3s. per 1000.
CARTER'S HEARTWELL, 5s. per 1000.
Carriage and package free. Terms cash.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

For Present Planting or Sowing.

CABBAGE PLANTS. — Gee's Superior Early Enfield Market, Drumhead, and Thousand-headed, all at 3s. per 1000; Purple Sprouting BROCCOLI, and BRUSSELS SPROUTS, 5s. per 1000; Winter LETTUCE PLANTS, Brown Cos and Hardy Green, at 7s. 6d. per 1000. Terms cash with order. Gee's noted stocks of Winter ONIONS, CAULIFLOWER, CABBAGE, and all other kinds of Seeds and Plants for present use, of best quality. CATALOGUES on application to FREDK. GEE, Seed and Plant Grower, Nurseryman, &c., Biggleswade, Beds.

Cabbage Plants, Cabbage Plants.

W. VIRGO AND SON can now supply in any quantity good strong, healthy plants, viz., Early Battersea, Early Enfield Market, Early Nonpariel, and Sugar-loaf Cabbages, all at 3s. 6d. per 1000, delivered free on rail. Post-office Orders must accompany all orders from unknown correspondents.
W. VIRGO AND SON, Wonersh Nursery, near Guildford.

SALES BY AUCTION.

Unreserved Sale of a Large Consignment of Choice HYACINTHS, TULIPS, CROCUS, POLYANTHUS, NARCISSUS, SNOWDROPS, LILIES, and other FLOWER ROOTS from Holland.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, E.C., near the Bank, on MONDAY NEXT, at half-past 11 o'Clock to the minute.

On view morning of Sale, and Catalogues had.

West Wickham, Kent.

Close to the Swan Inn, 3 miles from Beckenham and Bromley Stations.

TWO DAYS' SALE of beautifully-grown and well rooted NURSERY STOCK, consisting of 3000 Laurels, 2500 fine Hollies and Yews, 5000 handsome Spruce and Scotch Firs, Austrian Pines, fine Cupressus, and other Coniferæ; a quantity of choice assorted Border Shrubs, Standard Ornamental Trees, clean-grown Fruit Trees, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Kircaldy to SELL the above stock by AUCTION, without reserve, on the Premises, on TUESDAY and WEDNESDAY, October 9 and 10, at 12 for half-past 12 o'Clock precisely each day.

Stock now on view. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C.

Hale Farm Nurseries, Tottenham.

IMPORTANT SALE of beautifully-grown NURSERY STOCK, including 600 Standard Planes, 7 to 11 feet, fine Limes and other Ornamental Trees, thousands of young and thriving Shrubs, a considerable number of Fruit Trees of all kinds, unequalled for growth and quality; 2000 remarkably fine Standard Roses, a fine Collection of Bulbous and choice Alpine and Herbaceous Plants, Climbers, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Thomas Ware to SELL the above Stock by AUCTION, on the Premises, on TUESDAY, October 16, at 11 for 12 o'Clock precisely. One month allowed for clearing the Stock.

May at any time be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Exeter Nurseries, Exeter.

GREAT UNRESERVED SALE of a considerable quantity of young and thriving NURSERY STOCK, in fine variety, consisting of thousands of choice and useful Evergreens and Coniferæ, a capital assortment of selected Fruit Trees of every description, STANDARD ROSES, together with several thousands of unrivalled Specimens for Ornamental Planting, in excellent condition for removal, the whole having been carefully prepared.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Messrs. Lucombe, Pince & Co., to SELL this beautiful Stock by AUCTION, on the Premises, on TUESDAY, October 16, and three successive days, at 11 o'Clock precisely each day.

Now on view. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Heatherside Nursery, Bagshot, Surrey.

(3 miles from Farnborough Station.)

THREE DAYS' CLEARANCE SALE of valuable NURSERY STOCK, arranged in large lots to suit the Trade and Others engaged in making extensive Plantations; also the whole of the Glass Erections and Fittings thereto.

MESSRS. PROTHEROE AND MORRIS are instructed by the Proprietor to SELL by AUCTION, without reserve, on the Premises as above, on WEDNESDAY, October 17, and two following days, at 11 for 12 o'Clock precisely each day, a considerable quantity of valuable NURSERY STOCK, comprising, in addition to a large assortment of handsome Specimen Coniferæ and Evergreens, many thousands of Border Shrubs in endless variety, also Forest and Ornamental Trees covering several acres, likewise many thousands of Fruit Trees; 1500 Camellias, large and small; Azaleas, and a few other Greenhouse Plants; together with 18 GREENHOUSES and PITS, containing about 8000 feet super, 3000 feet of Hot-water Piping, 3 and 4-inch, and a capital SADDLE BOILER, 6 feet by 2 feet.

May be viewed any day prior to the Sale. Catalogues may be had of Mr. SHEPHERD, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Preliminary Notice of Other

SALES of NURSERY STOCK already arranged by PROTHEROE AND MORRIS.

OCTOBER 22 and 23.—EXOTIC NURSERY, Tooting, S.W. By order of Mr. R. Parker.

OCTOBER 29 and four following days.—The MILFORD NURSERIES, Godalming, Surrey. By order of Mr. Maurice Young.

NOVEMBER 6, 7, and 8.—The FILLEBROOK and AMERICAN NURSERIES, Leytonstone, E. By order of Mr. A. Protheroe.

NOVEMBER 13 and following days.—The EMBER NURSERIES, Thames Ditton, Surrey. By order of the Executors of the late Mr. Lewis.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during October, consignments of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS arriving from well-known farms in Holland.

On view the mornings of Sale, and Catalogues had.

Lilies.

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, October 4, at half-past 12 o'Clock precisely, LILIUM AURATUM, and a very choice Collection of other HOME-GROWN LILIES, including Liliums Wallichianum, Leichtliniana, giganteum, Krameri roseum, Krameri purpureum, callosum, Bloomerianum, Humboldtii, pulchellum, Washingtonianum, Brownii, Buschianum, tenuifolium, &c; also a choice collection of beautiful hardy BULBOUS PLANTS, CYPRIPEDIUMS, &c.

On view morning of Sale, and Catalogues had.

Great Clearence Sale of Nursery Stock.

EXPIRATION OF LEASE.

MR. JOSEPH WALTON will SELL by AUCTION, by order of B. Whitham, at his Nurseries, Reddish, near Stockport, on WEDNESDAY and THURSDAY, October 3 and 4, 1877, a Large Assortment of TREES, SHRUBS, &c. Sale to commence each day at 12 o'Clock prompt.

Catalogues may be had at the Nurseries; at the "Falstaff Hotel," Market Place, Manchester; and at the Auctioneer's Office, Wilmstow.

Stamford Nursery, Bowdon, Cheshire.

SALE of the IMPORTANT NURSERY STOCK of Mr. Shaw.

MESSRS. CAPES, DUNN, AND PILCHER are instructed by Mr. Shaw, who is retiring from the Nursery Business, to SELL by AUCTION, on WEDNESDAY and THURSDAY, October 10 and 11, at 12 o'Clock each day, on the Premises, near to Dunham Park, Cheshire, and within a few miles of Manchester, the whole of his HARDY ORNAMENTAL TREES, FRUIT TREES, FLOWERING SHRUBS, EVERGREENS, ROSES, CONIFERÆ, JAPANESE and other CHOICE PLANTS. Mr. Shaw's Collection is well-known, and comprises every variety suitable for the district. Many are large specimens, some exceedingly rare, and all are well-rooted and healthy.

Catalogues are in preparation, and will be forwarded from the Nursery at Bowdon; from Mr. SHAW'S Manchester address—29, Oxford Street; or from the Offices of the Auctioneers, 8, Clarence Street, Albert Square, Manchester.

Great Sale of Nursery Stock.

MR. J. WALTON will SELL by AUCTION on October 17, 19, and 20, the valuable stock of TREES, SHRUBS, and PLANTS, at the Bowdon Nurseries, Hale Road, Bowdon, Cheshire, the proprietor, Mr. Thornhill, being about to retire from the business.

Catalogues on application at the Nunseries.

Edmonton.

TO BE SOLD, a small NURSERY, with Houses and Stock. Apply to

Mr. L. R. THOMPSON, 2, Prospect Cottages, Snell's Park, Edmonton.

MONRO'S NURSERY, POTTERS BAR,

TO FLORISTS, FRUIT GROWERS, AND MARKET GARDENERS.

TO BE LET OR SOLD.

TO BE LET for any number of years that may be agreed upon, or J. MONRO will SELL the FREEHOLD; and three-fourths of the Purchase Money may remain on mortgage at five per cent. per annum.

This very extensive establishment (14 miles from London on the Great Northern Railway and within 1 mile from Potters Bar station) offers a most excellent opportunity to a practical and energetic person either as a Tenant or Purchaser.

The property is capable of being developed to such an extent as might make it a matter for favourable consideration by a Company.

In the event of the above neither being Let or Sold on the conditions as stated, J. M. will be glad to treat with a thoroughly competent person as PARTNER, who would take the Management of the Glass Department.

For full particulars, apply to Mr. JOHN MONRO, Potters Bar, N.; or to Mr. GEORGE MONRO, Fruit Salesman, Covent Garden Market, London, W.C.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. B. S. W. has much pleasure in offering this fine new Grape, believing it to be a decided acquisition. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each.

NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10s. 6d. each. Extra sized fruiting plants, 21s. each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To be Sold Cheap, for Want of Room,

THE FOLLOWING SPECIMENS and strong plants:—

1 Adiantum formosum, 1 Aralia reticulata, 1 Aralia Sieboldii, 2 Acacia spinosa, about 8 feet; 2 Acacia longifolia magnifica, about 8 feet; 1 Bougainvillea spectablis, 2 Coprosma Baueriana, 4 Clethra arborea, 2 Dracæna congesta, 1 Grisliena, 1 Hemerocallis var., 2 Musa Canendishii, 1 Pandanus Veitchii, 4 Plumbago capensis, 1 Stephanotis floribunda, 1 Nephrolepis exaltata, 1 Todea superba. Also 50 Abutilon Boule de Neige, 3 Allamanda nobilis, 12 foliage Begonias, Cannas, Coprosma Baueriana, Dracæna Draco, Dracæna gentifolia, 100 Ferns, in variety; 24 Libonia grandiflora; 100 Hydrangea Thos. Hogg, in 3-inch pots, at 8s. per dozen. For size, &c., apply to

WM. GROVE, Tupsley and St. Owens Nurseries, Hereford.

TO GENTLEMEN INTENDING TO PLANT.—In consequence of the decease of the late Mr. R. WEBB, of Calcot Gardens, near Reading, his valuable Collection of Young Prize NUT TREES, of named sorts, are offered at half the usual selling prices. Printed LISTS will be forwarded on application.

Immediate Orders are solicited, as the Trees will be supplied in the rotation in which the orders are received; delivery commencing on October 1. Apply to

The MANAGER, Calcot Gardens, near Reading, Berks.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

Address, HENRY SHEPHERD, Manager.

Rhododendrons.

ISAAC MATTHEWS AND SON have to offer the following RHODODENDRONS—100,000 fine bushy plants, thinly grown and well rooted, nice round plants:—

RHODODENDRON SPLENDIDUM, white, 1 to 1½ foot, 37s. 6d. per 100; 1½ to 2 feet, 50s. per 100; 2 feet, 60s. per 100.

,, CAUCASICUM PICTUM, scarlet, 1 to 1½ foot, 50s. per 100; 1½ to 2 feet, 60s. per 100.

,, JACKSONII, scarlet, 1 foot, 50s. per 100; 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, 75s. per 100.

,, WOOLLERII, scarlet, 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, £5 per 100.

,, HYBRIDS, from all choicest named varieties, 1 foot, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100; 2 to 2½ feet, 60s. per 100.

,, PONTICUM, 9 to 12 inches, 50s. per 1000; 12 to 15 inches, 10s. per 100; 15 to 18 inches, 15s. per 100; 18 to 21 inches, 40s per 100; 2 to 3 feet, 50s. per 100.

,, very bushy, 3 to 3½ feet, 80s. per 100.

YEW, English, 6 to 9 inches, 40s. per 1000; 9 to 12 inches, 50s. per 1000; 12 to 15 inches, 70s. per 1000.

,, English, bushy, 15 to 18 inches, 20s. per 100; 1½ to 2 feet, 30s. per 100; 2 to 2½ feet, 40s. per 100.

,, English, very bushy, 2½ to 3 feet, 60s. per 100.

CURRANTS, Black, very strong, 10s. per 100.

GOOSEBERRIES, strong, 10s. to 12s. 6d. per 100.

CATALOGUES can be had on application to

The Nurseries, Milton, Stoke-on-Trent.

SPECIAL OFFER TO THE TRADE.

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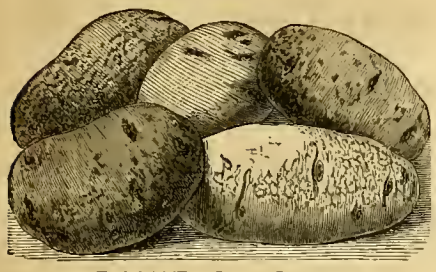

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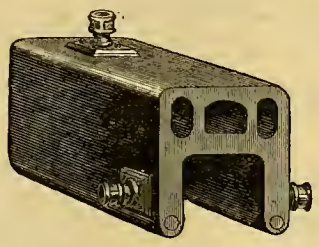

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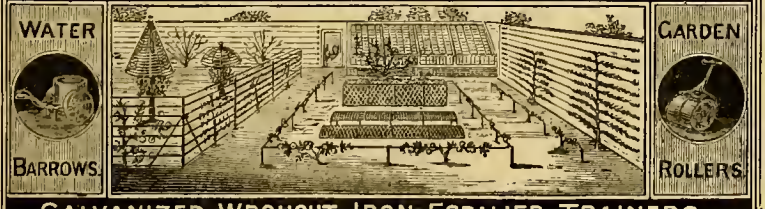

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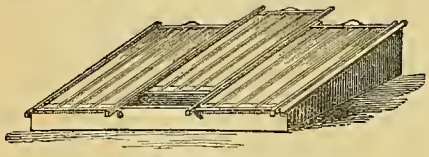

CASH PRICES (Carriage paid).

	Length.	Width.	£ s. d.
1-light frame	4 feet ..	6 feet	1 17 6
2 " "	8 feet ..	6 feet	3 5 0
3 " "	12 feet ..	6 feet	4 17 6
4 " "	16 feet ..	6 feet	6 7 6
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Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh, on Orders of 40*s.* and upwards.

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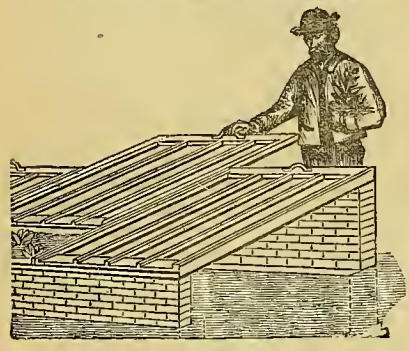

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SILLS or FRAMES.	£ s. d.
With 2 lights, 6 feet by 4 feet, 8 feet long by 6 feet wide	2 16 0
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With 2 lights, 7 feet 6 inches by 4 feet, 8 feet long by 7 feet 6 inches wide	3 10 0
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THE QUEEN'S SEEDSMEN, READING.

SATURDAY, SEPTEMBER 29, 1877.

LESSONS OF THE POTATO DISEASE.

THE near approach of the International Potato Exhibition, and with it the customary gathering of the leading cultivators of the Potato, presents a fitting opportunity to consider how far we have, as a nation of cultivators of this most valuable vegetable, profited by the sharp and severe lessons the dread disease that affects the tuber have set us, and whether an annual display of the best samples of Potato probably to be found in the kingdom serves in any material way "to promote the best methods of culture, as well as the introduction and diffusion of new or improved varieties."

It may be accepted at the outset as an undoubted truism that no kind of Potato is impregnable to the attacks of the disease. The foolish and preposterous claims made on behalf of one or two certain kinds were ruthlessly demolished a few years since by the remarkable test instituted by the Council of the Royal Agricultural Society, and proof of the most positive kind was afforded that no variety of Potato possesses any special immunity from the effects of its dread enemy, the Peronospora infestans. The occasional freedom from disease which some sorts have enjoyed led to the inception of the boast that these were disease-proof. Another partial immunity this year of a few kinds will doubtless lead to similar boastings. It is, however, well to say at once, that no season passes, let the disease be ever so prevalent, but some sorts are worse and others less affected. There is, indeed, little to guide us in this matter that can be put to practical use, but so far as it can be, we propose to do so in this short paper.

During the present year the wide prevalence of the Potato disease has read us another severe lesson as to the value or otherwise of the prevailing modes of Potato culture, and we have to confess that we are either unable or unwilling to learn anything thereby. In a few cases men really desirous of securing clean, healthy crops of tubers try this or that method, not always on a systematic basis, but rather as their own lights or crotchets lead them, and perhaps partially succeed. Still, the inevitable result is disease more or less, and thus no specific gain to our present stock of useful knowledge has resulted. It is hardly worth speculating as to how the disease first became a denizen in our midst—we know that it came upon us more than thirty years since like the shock of an earthquake, that from the eventful year of 1844 down to the present time it has appeared here with more or less virulence, its efforts for ill being at times held in check by a warm, dry season. But in spite of all the science lavished in inquiry, in spite of the experience of so many years, and the consequent closer acquaintance with the operation of the disease that has resulted, we are still its apparently helpless victims, still unable to check its inroads upon our crops, or offer to it any tangible opposition.

Just as—to use a homely phrase—"It's no use crying over spilt milk," so also it is of no use to mourn over our past losses. What we ought to set ourselves to do is to see how far the past has served to aid us in obtaining some immunity in the future. It will, perchance, be looked upon as a startling assertion, and perhaps as one indicative of questionable sanity, when we propound the belief that the conversion of the Potato from a mere garden luxury into an article of general consumption, has had something to do with the widespread destructiveness of the disease. Looked at superficially, it may be said that this is a self-evident assertion, as the greater the area under cultivation the greater the destruction wrought in the crops. We, however, mean something wholly dissimilar from this, and say more plainly that it is the element of size in the Potato—that is, "bulk"—both in crop and in tuber, that has so much to answer for. Growers of roots hesitate to accept the statement of the chemist that the larger the bulbs or tubers, the greater the proportion of water, the less of nutritive matter; in fact, the larger the roots the less do they become healthy and health-giving compounds, and the nearer do they approach to diseased bodies, to which disease easily assimilates.

It is a well known fact in physiology that the human frame presents elements of disease or direct tendency thereto in proportion to its fatty development, and it is a notorious fact that the bloated pampered frames of brewers' men, publicans, gentlemen's servants, &c., offer to the medical faculty the worst possible subjects when affected by disease. Just so it may be with the Potato, and indeed is. Wherever high culture, so called, allied to rich soil and an abundance of manures, has promoted a rank growth in the haulm, and large tuberous development, there is the disease the worst, the most virulent, and invariably almost wholly deadly.

This presents a somewhat extreme, but by no means uncommon, form of culture, and growers who have seen the same results follow their labours for twenty years, with occasional exceptions, still follow the same foolish routine, infatuated in the belief that "this year" at least their crops will escape. Next planting time they will have forgotten all that they are now being taught. Ordinary cultivation is that which prevails in our market gardens and large Potato fields in all parts of the kingdom. This is applied for the production of crops for general consumption, and to make it a paying business the tubers must be large and plentiful. Now and then, favoured by the season, the crop is fairly clean and healthy, and then a good profit results, but as a rule there is partial failure, that is, from one-third to two-thirds of the produce is diseased, and then the outcry is great and the loss very heavy; indeed, it may perhaps be safely asserted, taking the average of the past ten years, that growers have been heavy losers by the cultivation of the Potato. It is difficult to reason with consumers who will have their Potatos at all costs. It is as difficult to reason with growers who are infatuated in the belief that clean healthy crops under the present mode of cultivation will come some day. It is, alas! only too probable that nothing but radical and complete change in our modes of Potato culture and taste will ever enable us to combat effectively with our enemy the disease.

We must determine to forego our love for big tubers, we must find other substitutes for the public taste, we must rather starve the Potato than grow it, and thus by its very meagreness, its leanness and the lack of predisposition to disease consequent thereupon, eventually hope to starve the Peronospora out of existence. Our friends of the International Potato Exhibition, in their love and admiration for large samples, will doubtless stand aghast at such a doctrine, and carefully wipe from their reputations the charge or reflection that in favouring through their prizes and their judgments the largest tubers they are, therefore, aiding the development of the disease. The possibility of such being the case, however, admits of serious reflection, and in rejoicing

over their success and the remarkable rise of their prize samples, it will hardly tend to self-congratulation if their minds should at times wander towards the thought that after all they are only promoting the production of skins full of moisture, sappy and bloated, ready soil in which the disease will prosper and fatten rather than—as their preface puts it—"best methods of culture and the introduction of improved varieties." Small Potatos are rarely affected with the disease, it is less destructive in poor soil, it is less destructive in a light, dry, gravelly soil, but is worse in soil that is moist and retentive, or where there is an abundance of rich manures. Small Potatos, or those grown on poor land that is dry and porous, and where there is no contact with manure, are ever the most mealy and nutritious and best adapted for food. Large Potatos grown in rich soil or forced into size by an excess of moisture, are all that we have shown them to be, and nothing better. Let us agree to regard Potatos in the future less as an indispensable article of general consumption, and more as a delicious adjunct to our vegetable produce, to be grown only to secure a clean healthy crop of small tubers, free from all fungus, and full of nutriment.

It has long been one of the pet ideas of certain theorists that the disease has generated from the careless modes of culture in vogue, by which the strength and health of the Potato has been squandered and its constitution destroyed, but these have all held the necessity of liberal growth, big seed, and the production of strong haulm and large tubers. It is in the process and in the conclusion wherein we differ from these. We hold that strong liberal culture is the worst, and that deterioration has resulted, not from poverty of culture, but rather from an excess of richness. It is truly pitiful to note how some writers continue to drone about the sad results that follow from imperfect seed-storing, and that this led to the rapid deterioration of the Potato. If disease fell only upon the produce of such seed there might be sense in the proposition, but inasmuch as it operates with equal destructiveness upon plants raised from seed saved in the most fitting and suitable way, the argument will not hold water. The seedling theory has also been pretty well ventilated, with no better result. Never were more seedling varieties in cultivation than now, and with what result also? These have not saved us from the disease yet. One writer, in his utter distraction, vehemently calls upon the Government to come and aid him and his fellow growers in their misfortune and distress. To him we would reply by paraphrasing a well known proverb—Government only helps those who help themselves. If the Potato cart has got its wheels fast set in a rut, call not upon the Governmental Jupiter for aid, put your and your fellows shoulders to the wheel, and pull it out yourselves, and then your victory over the disease will be complete.

The present season's lessons to be gathered from the disease are just those that have forced themselves upon our minds for many seasons past. We want a new and precocious race of Potatos that shall be planted late enough to escape frost, and be lifted early enough to escape disease. Of course it will not be enough that these should have sizeable tubers to make them fit to lift. We want varieties that will ripen in ten or twelve weeks, be of good table quality, will produce a fair crop, and, further, will keep well for six months from the time of lifting. With such a breed as this, two crops in the year would be easily practicable, inasmuch as it is an oft-proved fact that the disease is in its worst form from the middle of July till the middle of August, and is seldom very injurious later on. Thus the first crop would be lifted before the disease appeared, and the later crop planted to be lifted in October would not be sufficiently advanced to be in harm's way. A most valuable section of the Potatos of the future, however, will be found in the very strong growing kinds that produce large tubers of good quality. It is to this section we made special reference earlier in this paper, as their occasional comparative immunity from disease has led to their being termed disease-resisting. These large coarse-growing kinds are the very sorts to grow on dry, porous, poor land to produce a crop of clean, medium-sized tubers late in the autumn, to furnish the late winter and spring supply. They have one possible danger. A dry summer is apt to produce a check in the growth, and then moisture following will promote super-tuberation, but this form of growth is only occasional, and is not an unmitigated evil. These late robust sorts have a very erect woody haulm that, if not too luxuriant during the period of disease activity, is sometimes capable of coming through that season of danger with no great injury. If grown with manure and the elements of high culture they will go the way of all other sorts, but if grown only in poor dry land in the open field, and thus made to produce stems of a hard fibrous nature it is most probable that a clean healthy crop of medium-sized tubers will follow.

Here, then, lies the most pressing necessity in future Potato culture. Grow first early sorts, and lift ere the disease is rampant. Grow also late robust sorts to lift in the late autumn for a winter supply. Grow all on poor land, free from moisture and manure, remembering that a bushel of small sound tubers is worth more than a thousand bushels of diseased big ones.

New Garden Plants.

SPATHOGLOTTIS PETRI, *n. sp.**

Spathoglottids are very rare plants in our gardens. Spathoglottis Lobbii has flowered with Sir Trevor Lawrence, at Dorking; Spathoglottis ixioides may just now be in flower with Herr Stadtrath Leichtlin, at Baden-Baden; and this new one just at hand, is a fresh inflorescence sent from the Royal Exotic Nursery of Messrs. Veitch. It has been sent from the Archipelagos of the South Sea, by Mr. Peter Veitch, who has likewise sent home such splendid flowers of the Spathoglottis pacifica as I never saw berore, although I have had it before from six localities. It is but justice to name the novelty in memory of this gentleman, who may kindly accept the delicacy *cum grano salis*, viz., as a *captatio benevolentiæ* for having more dried specimens and with exact localities. If they have to be kept secret, we will do so as in so many other cases. The plant is in the way of a good terrestrial Bletia or some Phajuses, though it is not so succulent (s. v. v.) as the last. The long peduncle exceeds 2 feet in length. It is green, with long brown sheaths and becomes sordid purplish, or, to accept Dr. Lindley's expression, port-wine colour at the top, where it has finally a very few very short hairs. The inflorescence has eleven flowers, and may become much richer; they stand in a corymbosely arranged raceme, and four flowers are open at once. The bracts are very large, conspicuous, elliptical, with an apiculus excavately glabrous, whitish, with some traces of light purplish nerves, the apicula dark purplish; the beautiful flower-case much of the colour of those of a well coloured Phalænopsis Schilleriana, and fully as large as those of a very rich panicle (smaller of course than those of a few-flowered inflorescence). The sepals are ligulate acute. The petals are much broader. The trifid lip has ligulate blunt side laciniæ, and the middle lacinia is cuneate, dilated into a transverse short broad three-lobed body, the middle lobe very short, nearly acute, the side lobes spreading outside, blunt; it is beautifully purplish, white in the centre, and there is a rhomboid callosity with three furrows and two longitudinal lines of long hairs just standing between the side laciniæ, ochre colour. The column is arched and light purplish outside, white inside. Spathoglottis Paulowoa (also called Bletia Paulowna by a very great mistake) has much smaller flowers and the lip is exceedingly distinct, the most by the simply cuneate ligulate middle lacinia. I am lucky to know it from the type, as it cannot be recognised from the erroneous descriptions. Spathoglottis Viellardii, from New Caledonia, stands very near it, but it has a very different callus and standing much nearer the base of the anterior lacinia. The base of our new plant is plaited, broad, lanceolate. The flowers of the Spathoglottids with even lips are cut much like those of certain Phalænopsids. The grand Spathoglottis aurea, never seen alive in Europe, has them so much like those of a Phalænopsis Lüddemanniana and the precious violacea and sumatrana (zebrina) that I bid every Orchidist of the United Kingdom, including the most skillful ones, would judge a single flower of it that of a Phalænopsis of the group alluded to. *H. G. Rchb. f.*

* *Spathoglottis Petri*, n. sp.—Foliis latis plicatis lanceolatis; pedunculo elongato, distanter vaginato, apice summo minute subvelutino cæterum calvo; racemo densifloro, corymboso; floribus nonnullis synanthiis; bracteis ovatis apiculatis excavatis calvis deciduis ovariis pedicellatis multo longioribus velutinis; sepalis ligulatis acutis; petalis ellipticis acutis multo latioribus; labello trifido, laciniis lateralibus ligulatis obtusis, lacinia antica cuneata transverso dilatata in laminam brevissimam latam ligulato trilobam lateribus extus obtusis, medio antice acutam; callo interlaciniis laterales rhombeo trisulcato, lineis villosis longitudinalibus latiusculis geminis, villis ante callum paucis, post callum ante columnæ pedem abruptum biseriatis; columna arcuata.—Flores læte lilacini. Labellum purpureum, disco albidum, callo ochroleuco, maculis purpureis parvulis appositis. —Ex insulis australasicis misit Petrus Veitch. *H. G. Rchb. f.*

PHALÆNOPSIS STOBARTIANA, *n. sp.**

A curious plant in the way of P. amethystina, with very uncommon colours for a Phalænopsis. Sepals and tepals of a beautiful apple-green colour, ultimately yellowish green. Lip with the lateral partitions white with yellow and amethyst coloured, the middle lobe totally amethyst coloured. This bright amethyst colour finally changes into a nearly cinnabarine red. The base of the white column is also amethyst coloured. I had a branch or top of inflorescence with eight flowers, a little smaller than those of P. equestris (rosea). That is all I know. Perhaps I may learn more one day. It is dedicated to its possessor, Mr. William C. Stobart, Etherley Lodge, Darlington, and it was grown by Mr. L. Hartley. *H. G. Rchb. f.*

ONCIDIUM HOLOCHRYSUM, *Rchb. f.*

It is a bad thing for an Orchid to be horn as an Oncidium, for the majority of amateurs get nervous at hearing the name alone. Some species begin to be better regarded, and we may venture to recommend this one. It is rather unique in the genus by having grand dense nodding racemes, like some good fox-brush Aerides, consisting of beautiful yellow flowers, as large as those of Oncidium ampliatum. The callus of lip is very distinct, forming one lobed blade. The wings of the small column are linear. The species appears to be very difficult to grow. I saw it first in 1862 at Mr. Borsig's garden, under the able management of Mr. Gaerdt, now Herr Garten-Inspector Gaerdt, of Moabot, whose health is much superior to that of his little Oncidium. I had not the least idea of the beauty of the plant till Messrs. Backhouse, of York, sent me Dr. Krause's specimen from Ecuador, and nearly at the same time Mr. Linden favoured me with some vestiges dried by Mr. Wallis at the same place, sent in a letter. It had, however, been found before by Mr. William Lobb in Ecuador. So far as my knowledge goes it had only flowered afterwards at Mr. Linden's establishment, who sent me fresh flowers. I obtained recently a single very large flower from the garden of Mr. William C. Stobart, Etherley Lodge, Darlington, grown by Mr. L. Hartley, sent by Messrs. the Editors of the *Gardeners' Chronicle*.

I am sorry to say I have ascertained the plant was known to Dr. Lindley. It is his Oncidium onustum, Lindl. (Folia, No. 35), stated to have sword-like ancipitous leaves, apparently white flowers, and to come from Panama and Western Columbia (Cuming, 1208). Since it stands in a group, where nobody can search (its leaves being sometimes folded together, but flat), I am not very clear whether I may cancel my name, as it would have been a fault to name it correctly. I have ascertained by looking to the type that the description of the leaf is wrong, the indicated colour of flowers is decidedly erroneous, and as to the origin a mistake may be suspected. *H. G. Rchb. f.*

PEZIZA COCHLEATA.

IT is always a far greater pleasure to the botanist to clear up some old and doubtful point, than it is to discover a new species. We have now such an opportunity, in consequence of the reception of a very curious fungus from Professor Dyer. It forms a complicated cinnamon-brown mass, simulating Tremella foliacea so completely, and so exactly agreeing with Bulliard's figure, tab. 499, fig. vi., x y, that at first we concluded that it must be that species, and on a hasty glance we should have committed a serious error in so determining it. It is, however, always well with fungi to have recourse to the microscope; and

* *Phalænopsis Stobartiana*, H. G. Rchb.—Radicibus, foliis et inflorescentia ignotis (racemi parte?) plurifloro; sepalis tepalisque cuneato-oblongis acutis; labellotri partito; partitionibus lateralibus ligulatis retusiusculis; callo utrinque ante basin; aristula in disco antico; lacinia media obovata medio carinata; callo obcordato et callo anteposito bicuspidato inter partitiones laterales. *H. G. Rchb. f.*

this at once showed that we had a Peziza before us; and, anomalous as it seemed, that it was a state of Peziza cochleata. We fortunately possessed very characteristic specimens of the brown form, gathered some years since at Lea, in Lincolnshire; and also an authentic specimen of the pale variety from Fries, as also abundant samples gathered by Mr. J. Henderson, at Milton, in Northamptonshire, in 1842. In all we found the paraphyses curved at the tips, as represented by Cooke in Peziza leporina, and not simply clavate, as in his figure of P. cochleatus. It is, however, quite certain that he had not the true species, as the cup is not turned in after the fashion of an ear, as in the true species, and both Montagne's and Greville's specimens might be badly determined. On turning to Fries' account of the Peziza, we find him remarking that he had never seen specimens like those figured by Nees in his *System*, fig. 280, but this is exactly what is before us. Nees von Esenbeck states (p. 262) that the curious malformation he has figured is scarcely to be distinguished from a Melephora. It forms, he says, a curled labyrinthiform mass of a dark red cinnamon-brown, the single cups measuring from 2 lines to 1 inch in diameter. The outer surface consists of beautiful moniliform, globose articulations. The sporidia, which measure the two-thousandth part of an inch in length, have two large nuclei, so as to present a pretty object under the microscope. Our figure (fig. 77) gives the general appearance of the plant, and a magnified representation of the asci with their sporidia and paraphyses. The specimen was sent by G. E. Frere, F.R.S., of Roydon Hall, Diss. He simply states that it was found in the afternoon of August 28 in a shaded pasture under Oak trees. Helvella crispa and Morchella esculenta are found occasionally near the spot, but he had never seen before anything exactly like this. *M. J. B.*

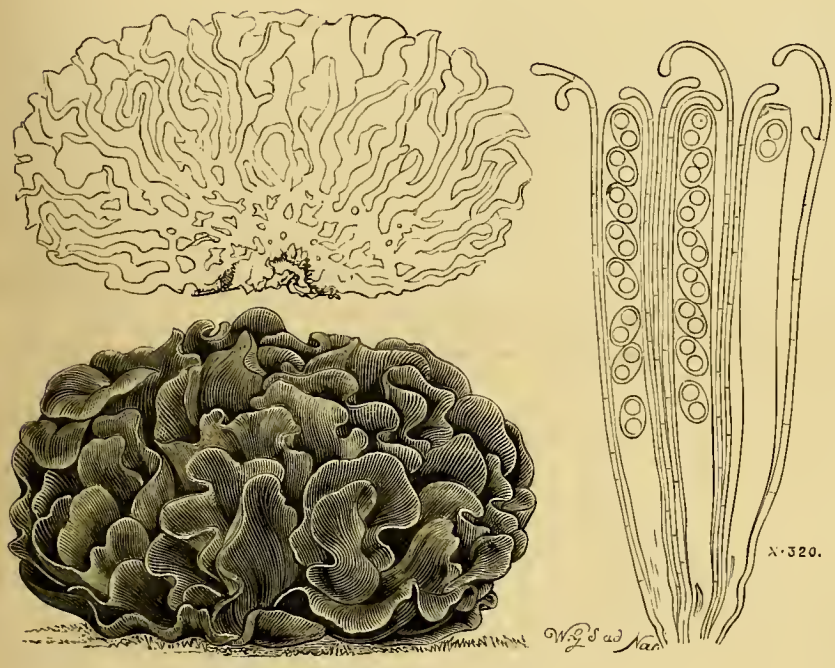


FIG 77.—PEZIZA COCHLEATA.

RECOLLECTIONS OF CALCOT.

AMONG all the nursery grounds or market gardens I have visited, Calcot stands out most distinctly as being unique in its staple productions, unique in its appearance, and unique in the character of its owner.

After a delightful walk along the Bath Road out of Reading one morning in the early autumn some five or six years ago, I made a first attempt to see Calcot, and interview, as our American cousins would say, the genial proprietor; but I was fated to disappointment. The place had been pointed out to me, but so little did it resemble in its surroundings what I had expected to see, that I thought I must have been misinformed. A footpath across the fields from the road brought me in front of a fine old wall some 7 or 8 feet high; in this wall was a small postern-gate, at the side of which hung a bell, such a one as we might imagine to have hung at the gate of a monastery in the olden time; indeed, the whole scene bore the same character. A huge canopy of Ivy overhung the gate, which it almost hid from view; and my pull at the bell caused such a peal as might have been supposed to be necessary to call some prayer-enwrapt friar from his devotions; yet, loudly as the reverberation sounded, no one appeared to answer my summons, which repeated over and over again seemed each time more and more a sacrilegious break upon the monastic stillness of the air. With a high wall in front of me, instead of a rugged rock, I began to emulate the ragged ruffian who went round and round the place without any ostensible result, when a distant voice, emanating from a person I could not see, informed me in broad Berkshire that it was no use ringing any more, for Mr. Webb had left at 6 o'clock in the morning, with all his people, to spend the day at the Crystal Palace. I was thus compelled to renounce my purpose for a time; but a few days later I again visited the gardens, meeting Mr. Webb by appointment, and passed some very pleasant hours in his company.

The first thing that strikes the eye is the unlikeness—so to speak—of the place to most gardens, whether nursery or market. In these trimming and pruning are, as a rule, carried out to the fullest extent, and rows upon rows of trees and bushes corresponding in form and size cover acres of ground. At Calcot the pruning knife and scissors were thrown on one side—nut and Apple trees, Roses and Figs, growing in natural luxuriance and most marvellous profusion. Without entering into a long and verbose description of this land of fruit, I will touch only upon some salient and interesting features, which always remain fresh in my memory. One of the most prominent is the vision of the obelisk, which stands a conspicuous object on the left hand side after passing the ivy-clad portal. Many men will do a great deal in defence of their particular opinions, but few would have the courage to make the sacrifice which must ever be associated with the name of the late proprietor of the most celebrated nut gardens in England. When Mr. Webb first took possession of Calcot—such was his utter aversion to any kind of intoxicating drink—he had a collection, which was considerable, made of all the alcoholic beverages, and the whole thrown into a deep pit dug for the purpose and buried, over which he had erected the aforementioned monument bearing the inscription, "To the execrated memory of alcohol." Among the features of the garden proper was a gnarled old Apple tree which might from its appearance have begun the world with Methuselah. Throwing out its arms in every direction this patriarch of the grounds bore each season a goodly crop of Apples, and was pointed out to me as a favourite instance of what could be accomplished by unchecked natural growth: Quite as beautiful and no less profitable was a glorious specimen of Maréchal Niel Rose, which, allowed perfect freedom of growth, covered an immense space of wall and had made its way into a greenhouse and over an outbuilding, cropping out, in fact, in so many places as to cause one to ask whether the plant confined itself to one county?

Nut trees and Apple trees are *par excellence* the produce at Calcot, and at the time of my visit were in the height of their bearing. Many of them had been raised from seed. The Mulberries were exceptionally fine and rich of hue, and as their roots were in close proximity to the pit in which the wine, &c., was buried, it seemed possible that alcohol might have as inspiriting an effect upon plants as upon human beings. The Fig trees were magnificent, bearing quantities of shining brown or green fruit behind their ample leaves. Luscious Peaches, Plums, and Apricots dotted the walls in no niggardly fashion, and must have proved a source of considerable profit to the proprietor, when we consider the extent of wall upon which they grow—for it is not often possible to find 13 acres, or something thereabout, of fruit garden enclosed within a fine high brick wall, such as environ the Calcot grounds. Spring flowers were a *specialité* with Mr. Webb, and although I never saw them when in bloom I could imagine their profusion from the vast number of the then flowerless plants at my feet.

Vegetable existence at Calcot was exuberant on all sides, and animal life scarcely less so, the whole grounds being guarded from the depredations of birds by some sixty or so cats; from the depredations of man by half-a-dozen magnificent mastiffs, whose very appearance, or whose sonorous bark was sufficient to appal any ordinary thief.

I cannot quit the subject without a reference to the hospitable and characteristic manner in which my host treated me and all his visitors. A table loaded with delicious fruits and cake for all comers, expected or unexpected, was always spread in one of the rooms of the cottage in the grounds, the staunch teetotaller prefacing his invitation to the hermit-like repast with a request that you would go with him and have the finest glass—of water—in England. *T. S. J.*

MEEHAN'S NURSERY, GERMANTOWN, PENNSYLVANIA, U.S.A.

GERMANTOWN was once a suburb of Philadelphia, but it is now within the city limits. A few days ago I did myself the pleasure of visiting this nursery of about 50 acres, held in fee simple by the proprietor, and stocked with nearly every tree and shrub of this and other countries. Fruit trees are grown by the tens of thousands, and deciduous and evergreen trees in great quantities, of all sizes for ornamental work, lawn, and street planting. The micaceous soil appears to be admirably adapted to the growth of both deciduous trees and evergreens. I have no intention of entailing upon your readers an elaborate detail of such, but beg to give you a few notes on some rarer species and varieties of plants, premising that there is nothing for those to admire who can only see beauties in Butterfly plants and Codiæums.

EVERGREENS.

A very fine sample of Pinus contorta, 2 feet high, dark contour and rigid; Pinus aristata or Balfourii, of equal size, deep in colour, very fine growth; Pinus flexilis, 2 feet high, showing its intention to be silvery in aspect, approaching Pinus monticola, but having no relationship to that species.

Abies Engelmanni.—Distinct from all its congeners, having fine, soft, feathery, close-set foliage. This has been propagated by grafts from the original trees on Gray's Peak, Colorado, 14,000 feet above tide-water. There is also a most beautiful plant, nearly 5 feet high,

of a variety of Abies Menziesii from Colorado, which in its present state of rich glaucous colour, neat and compact in habit, is certainly the most attractive of all the hardy Pine tribe.

Pinus edulis.—Very handsome specimens of this rather rare Pine.

Pachystema Canbyi.—A very neat, dwarf evergreen, similar to a Myrtle, and reputed to be greener in winter than in summer, and covered with scarlet berries.

Berberis trifoliata.—From Texas, very distinct in foliage, and as hardy as an Oak.

DECIDUOUS TREES AND SHRUBS.

Maclura aurantia aurea (golden-leaved Osage Orange).—The bright green and rich golden foliage form a distinct contrast compared with the sickly golden affairs that we so frequently notice.

Ulmus fulva pendula.—A first-rate form of the weeping Elm.

Cornus florida pendula.—This form of weeping tree has an idea of its own, by being capable of a leading shoot, with all the branches pendulous—a capital formation of a fountain tree. The foliage is large, changing to crimson in autumn, and covered with scarlet fruit or seeds. This is really a Meehan tree, and forms a distinct object on the lawn or landscape.

Liriodendron tulipifera integrifolia.—I have heard of such a plant before, but here it is with very large entire foliage of unequalled shining green, and no mistake.

Quercus undulata, from the Rocky Mountains.—Allow me to call this the Bamboo Oak, from its erect, rapid-growing shoots.

Quercus Engelmanni.—A very rare species, with foliage of every shape and form. Another very remarkable form of the Oak is

Quercus Catesbæi, with its large vertical foliage; an old name, but certainly a new form.

Halesia, new sp. (shall I call it Meehani?), with corrugated foliage, flowers white and cup-shaped, and in form distinct.

Alnus maritima var., with large cones, and the catkins on the end of the young shoot.

Albuca pubescens.—Very large foliage, and brilliant crimson fruit at the end of the season.

Œnothera serrulata, from Colorado.—A half-shrubby plant, with yellow flowers, and a companion to Potentilla fructicosa.

Salix candida, the true Silver Willow.—The under-surface of the foliage is as white as Centaurea candida; the upper surface is whitish; the waving character of the plant makes it a charming object.

HERBACEOUS PLANTS.

Cirsium Pitcherii.—A silvery foliaged plant, excellent for a vase, with its dependent flexile shoots.

Diplopappus linearifolius.—Related to the Aster family, with numerous rosy coloured flowers and Heath-like foliage.

Chilopsis linearis.—Closely related to Catalpa, with blue flowers of a Gloxinia shape.

Ampelopsis incisa.—A new American Ivy for covering walls and outbuildings, of rapid growth; dark green, trifoliate, thick, waxy foliage: very distinct in all its parts.

Helianthus argyrophyllus.—With large silvery foliage and strong growth.

Clematis ligustifolia.—With clusters of small, white, fragrant flowers, blooming profusely, free in growth; a companion to Clematis Flammula.

The vast stock of seedlings of evergreens, Magnolias, Halesias, Oaks, and many others, all for the nursery trade, with thousands of Liatris pycnostachya, all in full bloom, the floral portion fully 12 inches long, was a rare sight. Allow me here to thank Mr. T. Meehan for his intelligent company. A few items from memory of the very energetic proprietor may be acceptable to your readers. Mr. Thomas Meehan is a very fruitful scion from your Kew Gardens, and was there with the late Dr. Seemann and others. He came to this country about twenty-nine years ago. His capital was a clear head, a fine, firm *physique*, and an eye like a diamond; he had neither pride nor fear for an honest life. He was fortunate in entering duty upon a very prominent place, where he was engaged in planting some of the then rare evergreen trees that he can now see 30 to 40 feet high, such as Abies nobilis, crowned with cones; Abies Menziesii, Picea pectinata and Pinsapo, &c. From there he went to clear up the Bartram botanic gardens for its new owner, and after two years he went to Springbrook to build new houses and cultivate the Victoria regia, at that period a wonder to the floral world. A few years more, and his accumulations being considerable, having always preferred water to wine, he determined to be a nurseryman. You have a part of the sequel, but that is not all—he is the famed editor of the *Gardeners' Monthly*, the agricultural editor of Forney's *Philadelphia Press*. The Governor of Pennsylvania has lately appointed him botanist to the State Agricultural Society. He is now engaged upon a very large work for a Boston house on American native plants, all to be illustrated in chromo. His library is a treat. I saw a very old work by Salmon, dedicated to Queen Anne, in folio, with 1200 pages of illustrated plants. His parents are now enjoying a ripe old age at St. Clair, Isle of Wight. *R. B.*

ENGLISH NAMES OF WILD FLOWERS AND PLANTS.*

(*Concluded from p.* 363.)

THE medical beliefs revealed by many names are not less curious than their legendary associations. It was the opinion of the old herbalists or simplers that God had not only provided special plants as a cure for every disease, but had made their curative power evident by stamping them with some resemblance to the malady they were meant to heal; and this faith, known to students of our older botany as the "Doctrine of Signatures," lurks or reveals itself in many an English name. The Lung-wort, spotted with tubercular scars, was a heal for consumption; the Liver-wort, liver-shaped in its green fructification, was a specific for bilious maladies; the scaly pappus of the Scabious for cutaneous eruptions; the throat-like corolla of the Throat-wort, or Canterbury Bell, caused it to be administered for bronchitis; the Saxifrage, cleaving the hard stones with its penetrating fibres, was efficient against calculus; the Scorpion-grass, now known as the Forget-me-Not, whose flower-spike dimly resembles a scorpion's tail, was an antidote to the sting of that or other venomous creatures; the Moon-daisy averted lunacy; the Birth-wort, Kidney-Vetch, Nipple-wort, Spleen-wort, were all appropriated, as their names suggest, according to resemblances, real or fancied. The pretty Toad-flax of our walls and hedges owes its name to a strange mistake. Believed to be the cure for a complaint called buboes, it received the Latin name *bubonium*. A confusion between *bubo* and *bufo*, which is Latin for a toad, gave birth to its present name; and stories were not long wanting that sick or wounded toads had been seen to eat of it and to recover health.

Similar distortions occur in non-medical names, and it is most curious to notice how soon a story springs up or a belief asserts itself in confirmation of the mistaken identity. The common Fumitory, which we have already noticed, received its name of *fume-terre*, "earth smoke," from its causing the eyes to smart and water when applied to them, as smoke does. The meaning was lost as time went on, and was supplied by the belief that it was produced without seed by smoke or vapour rising from the earth. Buttercup was said to give colour and flavour to butter, as being eaten by cows, when in blossom, the facts being that it is a corruption of *bouton cop*, button-head, and that cows eat the grass all round it, but always, if possible, avoid it. Meadow-sweet is a corruption of Mead-wort, honey-wine plant, a beverage being still extracted from it by cottagers. Bullrush is Pool-rush, as growing in pools, not in mud; Snap-dragon is Snout-dragon, from its shape; Marigold is Marsh-gold; Sweet-William is *œillet*, a little eye; Pink is the lower German *Pinksten*, Pentecost, from its flowering at Whitsuntide, the name being transferred first to the colour of the flower, then to a method of working flowers on muslin, called pinking; and so to the sword-stab in a duel, piercing or pinking an adversary as the needle pierced the cambric. Nightshade is *night-scada*, soother, or anodyne; Samphire is St. Pierre, from its love of rocks; Sanicle is St. Nicholas, the restorer of the three murdered children, from its healing powers; Poplar comes from the Indian Pepul, whose leaves when varnished and painted closely resemble those of the large Spanish Poplar; Primrose was anciently the Daisy; and is called by Chaucer Primerole, from the old French *Primeverole*, the first spring flower; Primerole was changed to Primrolles, then to Primrose, the first Rose of spring; and it was not till the sixteenth century that it attached itself to the familiar flower which now bears its name. Cowslip is more strange still. It was originally "hose-flap," and belonged to the Mullein, whose great flannelly leaf might well be likened to the flap or skirt of a woollen under-garment. Later on it was transferred to the wild Primula of our meadows, and the mistake was stereotyped by the unlucky botanist, who, in ignorance of its origin, gave the name of Oxlip to its pretty congener, the Primula elatior. The Jerusalem Artichoke is a Sun-flower, not an Artichoke; but the tubers resemble the Artichoke in flavour. From its Italian name *girasole*, turn to the sun, came Jerusalem; and by a further quibble the soup made of it is called Palestine soup. The Forget-me-Not was originally the "Germander Speedwell," whose blossoms, falling of and flying away as soon as it is plucked, gave emblamatic force to the name. It was known in the days of chivalry as the "flower of souvenance," and was embroidered into the collars of the knights, a fact still recalled by its German name, *Ehrenpreis*, Prize of Honour. About 200 years ago we find the name given to the Ground Pine, Ajuga Chamæpitys, whose nauseous taste once realised can never be forgotten. Finally it was seized upon by the river-side Myosotis, and forthwith sprung up a charming legend, created obviously to suit its latest identification—how that while two lovers loitered by a lake, the maiden saw and longed for the bright blue flowers, the knight plunged in to get them, but, unable to regain the shore, had yet agility enough to fling them into his lady's lap, and then, with a last devoted look and the words "forget me not," sank below the waves for ever.

Many names of plants contain the geography of their origin. The Canterbury Bell is obvious, so is the Guelder Rose. The Alexanders, a rare plant round Taunton, but growing in great quantities at Blue Anchor, comes from Alexandria; the Candytuft from Candia; the Elecampane, from Campania; the Medick from Media; the Carraway from Caria; the Walnut or Welsh Nut from the north of Italy, called *Wälsh* by the Germans. Peach is *Persicus*; Shalot, *Ascalonicus*; Spinach, *Hispanicus*; the Damson, rightly spelt as Damascene, tells its own tale, which is less clear in the case of the Dame's or Damascene Violet, a corruption extended and perpetuated, as often happens, by its Latin equivalent, *matronalis*.

All first attempts at classification, etymological or other, leave a large margin of miscellaneous items refusing to be ticketed or systematised; and there remain a few names falling under none of the categories which I have cited, yet too interesting to be omitted. Such is Apple, retaining its form in the Teutonic, Celtic, Sclavonic, and Lettish languages, and springing apparently from the Sanskrit *ap*, water, which reappears inverted in the Latin *pa* of *Padus*, *po* of *Poto* and *Pomum*, meaning therefore the water fruit or juice fruit. Such again is Daffodil, the Daffadowndilly of Spenser and other poets. It is a combination of *sapharoun*, or Saffron Lily, with *asphodelus*, the old English Affodilly. With the taste for alliteration often shown in popular names the Sapharoun Lily blending with the Affodilly became by a mutual compromise Dafladowndilly, whence Daffodilly and Daflodil. Foxglove is the Fox's-glew, or tintinnabulum, a ring of bells hung on an arched support. Bedstraw was a plant much used for couches before mattresses were invented, and a species which when dry yields a pleasant scent is still called Lady's Bedstraw. Carnation is coronation, its flowers being used as crowns or chaplets, just as Campion is champion, gathered to crown the champions in a tournament. Cress is possibly from cross, its petals being cruciate; possibly from *crescere*, to grow, in token of its rapid increase. It was used in Chaucer's time, under the form of *kers*, to express any insignificant quantity.

"Of paramours ne raught he not a kers,"

from which comes, perhaps, the vulgar phrase, "I do not care a curse," though a yet ruder parallelism has since been manufactured to confuse its spelling and its etymology. Nettle is from *ne*, to spin, indicating that its coarse fibres were used for thread in early times—an idea borne out by Hans Andersen's beautiful tale of the wild swans, in which you remember that the princess was permitted to redeem her brothers from their transformation by weaving them shirts of Nettles. Shamrock is from an Erse word signifying the little Trefoil. The story of its theological use by St. Patrick is of modern date, and it has been taken by various writers to represent the Watercress, the Wood Sorrel, the Dutch Clover, and the Black Medick. Irishmen are divided in the present day between the two last, which are sold on

* Lecture by Rev. W. Tuckwell before the Somersetshire Archæological and Natural History Society.

St. Patrick's Day both in London and Dublin. The Snowdrop is so-called from its resemblance to the large eardrops worn by ladies in the sixteenth century, and represented often by painters of that period. The Tobacco was the Indian name for the pipe in which the weed was smoked, not of the weed itself; and Potato belonged at first to a tropical Convolvulus, and was transferred by mistake to the well-known esculent. The Gooseberry was the cross-berry, from its triple spine, which frequently takes the form of a cross. The Hollyhock is the cauli-hock, hock being an old name for the Mallow, to whose order it belongs, and cauli, meaning Cabbage, either from its lofty Cabbage-like stalk, or, as in Cabbage Rose, with reference to its rich double bloom. The Laburnum closes its petals at nightfall like a tired labourer, and the Ozier is named from the oozy beds, which suit its growth.

I bring my list to an end, not because it is exhausted, but for fear my hearers should become so. I have picked only the most suggestive and curious of our many floral names, leaving an abundant gathering to many gleaners. One branch of the subject I have barely touched, the superstitious practices attaching to many of our wild plants, though not surviving in their names. I have left alone the interesting question of Bible plants, of the Hyssop, the Juniper, the Mustard-seed, the Lilies of the field, the burning bush, the Shittah, the Almug, the Gopher, the curiously mistranslated cab of dove's dung, with the light thrown on their identity by the names given to them in the commentaries in our older translations. Nor can I do more than hint at the rich store of literary allusion to our wild flowers which abounds in all English poets, and the beautiful thoughts suggested to many of them by some particular plant. I should have liked to read you Chaucer's lines upon the Daisy, Herrick's on the Daffodil, Burns' on the Dog Rose, Shelley's on the Sensitive-plant, Southey's on the Holly, Wordsworth's on the lesser Celandine, Longfellow's on the Compass-plant. I should like to open volume after volume of Elizabethan and of later days—to enumerate and discuss the flowers with which Ben Jonson bids us "Strew, strew the smiling ground;" the "pretty pounce and chevisaunce," of Spenser; the "quaint enamelled eyes" that decked the laureate hearse of Lycidas; "the silver globes of Guilder Rose" which won the heart of Cowper; the "Hawthorn bush beneath the shade" of Goldsmith's lovers; the "slight Hairbell" which raised its head, uncrushed by the airy tread of Ellen Douglas. I should like to remind you of the lessons in natural theology which Paley drew from the "little spiral body" of the Dodder seed; of the star-shaped shadow of the Daisy which Archer Butler showed to Wordsworth, or how Linnæus, when he first saw the wild Broom in flower—

> "Knelt before it on the sod,
> For its beauty thanking God."

Above all I should love to turn with you the page of Shakespeare, to read of the grey discrowned head of Lear wreathed with "rank fumiters and furrow weeds;" of Perdita at the shearing feast, disparaging the streaked Gilliflowers as Nature's bastards; of poor distraught Ophelia distributing her Rosemary and Herb-of-grace; of Puck telling how Love-in-idleness was purpled with love's wound; of Titania gently entwining the "female Ivy and sweet Honeysuckle" round the sleek smooth ass's head of Bottom; of Helena and Hermia, "a double Cherry seeming parted, two lovely berries moulded on one stem." For I should lay on you a spell mightier than I can forge myself—I should invoke allies before whom we all bow as the source of our intellectual happiness and growth; I should remind you how the most creative minds have drawn nutriment from these tenants of our hedgerows and hill-sides, and how the knowledge of their lore helps us in its turn to interpret the sweet thoughts and apt illustrations of the poets they inspired and delighted: how, if the aspirations of my Cambridge botanist were fulfilled—if the Daisy could become the *bellis*, the Strawberry the *fragaria*, the Honeysuckle the *caprifolium*, the Heather the *calluna*, the parting genius of romance and myth and association and folk-lore would be sent sighing from the domain of botany, and the richest and most attractive of the natural sciences would become the dullest and the most neutral.

In conclusion, let me disclaim all merit of originality in the ideas which have been put before you to-night. I have but attempted to bring together, with the interest attaching to cumulative illustration, conjectures which have been started and discoveries which have been worked out by others. Scattered through the old-fashioned tomes of Cole, Lyte, Parkinson—through the pleasant pages of Loudon, Pratt, Johns; above all in the most valuable work on popular botany which we owe to our Somersetshire naturalist, Dr. Prior, you will find all or nearly all that I have advanced. The flowers were plucked by other hands; mine has been only the *pia dextera* to sort and wreathe them. *Nature.*

WHEAT, INDIAN CORN, AND POTATOS.

We take the following interesting remarks on these three main necessaries of life from an able address on "Economy and Trade," delivered by Mr. James Caird, C.B., F.R.S., at the Social Science Congress at Aberdeen:—

Wheat.

Wheat is the common food, which possesses all the elements necessary to sustain life and strength, the most generally palatable, and, notwithstanding the vast increase in its consumption, the cheapest article of food we possess. The hard-working poor are far more dependent on it and much larger individual consumers of it than the rich. If its price, like that of most other commodities, had risen with the increasing demand, our trade advantages over other countries would have been counterbalanced, and to a large extent lost. But the Wheat region has been designed, apparently, to be co-extensive with the progress of civilised man, and the more regular and extensive the demand upon it, the more ready and continuous becomes the supply, even without the stimulus of an excessive price. The average price of the quarter of Wheat for twenty years preceding Free Trade was 59*s.* 8*d.*, and that of the last twenty years 51*s.* 4*d.*, being a fall of 11 per cent. For the corresponding periods Barley shows a rise of 11 per cent., and Oats 9 per cent.; and yet, notwithstanding the fall of price, the supply of foreign Wheat has risen enormously, and continues to increase. Previous to 1860 the foreign imports of Wheat had not exceeded an annual average of 4,500,000 qr.; during the last five years they have reached an annual average of 12,400,000 qr. This is a fact of great importance when we consider the increasing population of the country, and the limited means we possess within it of increasing our supply of food. Not only do the consumers increase, but as their circumstances improve they individually use more food.

The common estimate of economists thirty years ago, that each person in the community consumed annually 8 bushels of Wheat, was a delusion. It was questioned by me in 1850, my estimates then showing that it could not much exceed 5 bushels. Mr. Lawes, to whose elaborate and judicious experiments the agriculturists of this country are so deeply indebted, carefully investigated this subject a few years ago, and showed conclusively that, at the time of which I spoke, my figures were the more correct. But he has also found that in a period of sixteen years before 1868 the average rate of consumption increased, each person having during the first eight years used 311 lb. of Wheat, and during the last eight 335 lb., or in the first period 5 bushels and a tenth annually, and in the last 5 bushels and three-tenths. In the first of those periods, 1852 to 1860, 232 lb. of this was home-grown Wheat, and 79 lb. foreign. These proportions have during the last five years undergone a great change and some increase. The home-grown Wheat annually consumed by each person is now 158 lb., and the foreign 183 lb. But three of these five years have yielded indifferent crops, otherwise the supply of home and foreign would have been nearly equal. These figures show two very important results for the consideration of those who are concerned with the provision of the country. First, that the individual consumption of bread has increased; and, second, that we at present depend wholly on foreign countries for that increase, and for all further addition required by the annual increase of the population. For that addition an annual increase of Wheat equal to all the Wheat at present grown in Scotland would barely suffice.

The natural tendency of the gradually falling price of Wheat in this country since 1848, and the rise in that of Barley, Oats, and animal food, has been to diminish the breadth of our own Wheat. It is now one-fifth less that it was twenty years ago. And the force of that tendency, in spite of the great increase of gold, shows the steadiness of its operation. There has been a yearly increase of consumers, with a larger individual power of consumption of bread, and at the same time an increase in the volume of gold—the representative of its value—and yet the price has declined.

But though we are already in so great a measure supplied with our bread by the foreigner, we run no greater risk of pressure than other countries on that account, probably less than most. For instead of being dependent on the sometimes fickle climate of our own land, we make all lands our tributaries, exchanging with them the manufactured produce of our mines and looms for the crude produce of their agriculture, on terms mutually advantageous. Either in the East or West there are every year abundant harvests, and we profit by them. Since 1873 the United States and Canada have given us half our supply of foreign Wheat. In 1872, with a bad harvest, their export fell one-half; but it made little difference to us, as the abundance of France and Russia filled up the vacuum at no greater cost. In 1871, France, which in 1866 had given us nearly one-third of all we required, could spare us nothing; but the plenty of Russia and the United States made good the difference.

During the last two years India has been sending us considerable quantities, which in the present year have mounted up to more than a tenth of our whole supply. The famine in Southern India may for a time interfere with this, but otherwise there is every reason to believe that the numerous cultivators of her fertile plains, having found a satisfactory market, even during a year of low prices here, will continue in still larger measure a trade so auspiciously begun. The foreign corn trade of this country involves the movement of 6,000,000 tons, worth more than £50,000,000 sterling, of immense value to all those countries which find ours the best and most constant market for their produce, but most enriching us into whose lap this wealth of natural abundance is poured. And even if from war some of the main sources of our supply should for a time be cut off, we have the means within our own boundaries of at once meeting such a contingency. We grow at present nearly 1,000,000 acres less Wheat than we did twenty years ago. We have only to revert to the acreage of 1856 to meet such a deficiency as would be caused by all Europe being shut against us. And, beyond that, we possess in our immense breadth of pasture land a never failing resource of stored-up agricultural power which could be at once applied to the production of corn, if from any circumstance that course became at the same time necessary and profitable.

Indian Corn.

Next to Wheat, in value and quantity, are our imports of Indian Corn, nearly three-fourths of which come from the United States and Canada. Last year there was a sudden increase upon all preceding imports of this substance from America, the supply jumping from 600,000 to more than 1,300,000 tons. Vast though this quantity appears, it is less than a twentieth part of the American crop. Previous to the Potato famine of 1846-7 Indian Corn may be said to have been quite unknown in this country. In 1847 500,000 tons of it were introduced into Ireland to feed the people, but it was not found palatable, and the imports quickly diminished, till in 1857 they barely exceeded 125,000 tons. It was not much more in 1867, but doubled in 1868-9, after the bad harvest in this country of 1867. It rose still further in 1875, after the bad harvest of that year; and in 1876, with another deficient harvest here, it doubled at once the highest previous importation. It is the cheapest article of food in the market, being at present little more than half the price of Wheat per pound, and its introduction in such large quantity greatly modifies the pressure which would otherwise be felt after deficient harvests in this country. It is next to Wheat in the extent of zone of production, and therefore capable of great increase should circumstances require it.

Potatos.

The Potato crop is becoming more and more precarious. It is costly to grow, expensive in seed and manure, exhaustive of the land, and very liable to disease, and now possibly to the attacks of the Colorado beetle. The extent planted has declined nearly

one-fifth since 1871, while the imports of foreign Potatos in the same time have risen from 43,000 to 300,000 tons. Germany is the great Potato-growing country, whence we can always draw by a moderate increase of price whatever quantity we require. The annual crop in that country is twice as great, both in quantity and per head of population, as that of either France or the United Kingdom, but it is not exported till the price rises above the rate which it yields when made into spirits. In these, the three main necessaries of life—Wheat, Indian Corn, and Potatos—the field of growth and supply is so extensive that it has hitherto been found capable of meeting all the demands of a great increase of population without a permanent rise of price. It is very different with meat and other kinds of animal food, the increased consumption of which has led to a great rise of price.

BRITISH GARDENERS.

CHARLES ELWORTHY.

MR. C. ELWORTHY, whose portrait we publish today, was born at Bridgewater, Somerset, on April 29, in the year 1805. He commenced his career in the horticultural profession at the early age of twelve years, when he entered the gardens of — Sims, Esq., at Cannington, in the county of Somerset, and was placed under the tutelage of Mr. Rowe, the gardener. In this place he remained two years. At the age of fifteen he went to the gardens of R. Codrington, Esq., Bridgewater, under Mr. Eastlake, gardener. Mr. Codrington was the first gentleman who built a greenhouse and plant and Pine-stoves, also succession Pine and Melon pits, in that neighbourhood, heated in the old style—by flues, hot-water pipes having at that time not been thought of. He was very fond of his gardens and plants, of which he had a good assortment, of stove plants in particular, such as Strelitzia reginæ, a rare plant in those days, which was well flowered; also Renealmia nutans [Alpinia nutans], which was flowered there, and at the time was said to be the first ever flowered in England. The gardens were at this time entirely under Mr. Elworthy's charge. Some Orchids, such as Cymbidium aloifolium, Limodorum Tankervillæ [Bletia grandifolia], and some few others, were grown, but Orchids were scarce in those days. Many other rare plants were cultivated, amongst them such as Cinnamon, Allspice, Ginger, Coffee. The plants were all well managed, as were also the Pines, which produced excellent fruit.

At the age of twenty Mr. Elworthy went into Mr. H. Lake's nurseries at Bridgewater for two years, to gain a knowledge of training and cutting wall fruit and other trees, and to be sent out to remodel old gardens, and lay out new ones. He was then recommended by his old master, Mr. Codrington, as gardener to Jeffry Ellen, Esq., Recorder of Bridgewater, with whom he remained five years; after which he was recommended by Miss H. Trevelyan, eldest daughter of the late Archdeacon Trevelyan, and by Mr. Ellen, to the late Sir John Trevelyan, Bart., into whose service he entered at the end of March, 1832. At that time the greater part of the ground now occupied by the gardens at Nettlecombe was pasture land, but through the kind assistance rendered by the late Sir John, and the encouragement he has received from the present Baronet, Sir W. C. Trevelyan, the gardens have been brought to their present state, "which," he adds, "must be seen to be appreciated, as it would take up too much space in your valuable paper to enumerate the fine things that are growing here." Mr. Elworthy's name has long been associated with British Ferns, on which subject he remarks:—"It is well known, through Mr. T. Moore's *Nature-printed Ferns*, and Mr. E. J. Lowe's work on our *Native Ferns*, that I have added considerably to the many forms of British Ferns by the discovery of them in their natural state, and by raising new forms from spores."

Mr. Elworthy has been especially successful in raising new varieties of Athyrium, and of Scolopendrium, and very beautiful forms of both these genera bear his name.

TUBEROUS BEGONIAS.

Now that these charming autumnal flowers, in consequence of their enormous increase as garden hybrids, are becoming better known and more extensively cultivated, with every prospect of attaining universal popularity, many of your readers will be glad of information (if experienced contributors will kindly give it) respecting the successful management of species which are still expected to be, one of these days, the parents of useful new varieties. Of B. boliviensis we already know all that we require to know; it is of original character, easy to grow and to multiply, and continues well worthy of being retained in our gardens, although it has given rise to offspring still more thrifty and showy than itself. But what are the merits of B. octopetala, and by what mode of treatment are they best called forth? Can any one speak well of its performances, either indoors or outdoors? Great things were said of it at its introduction, and while still sold at novelty prices; but it does not seem easily persuaded to bloom, and two years ago, at Ghent, they did not appear to expect much from it. Authentic news of the doings of B. Frœbelli would also be welcome to many inquirers.

Amateur gardeners, especially those who reside at a distance from any great horticultural centre, are now beginning to realise the truth of the lamented Van Houtte's appreciation, which, when first published, appeared to many to be an enthusiastic prediction rather than a sober judgment. "It is the Begonia's turn," he wrote, "to enter the arena! And here they come triumphant, all sails set, to demand a foremost place in our parterres! They do not indeed repudiate their chilly sisters, who display their charms only within a cage of glass; they readily yield to them the palm of foliage, so varied and so luxuriant; but they present themselves to astonish the world by their large flowers sparkling with every (?) hue, which, from the month of June to winter, by their constant, never-tiring succession, rival every other genus of exotic plants with which our gardens have hitherto been enriched.

"What does the gardener strive to do when he wishes honourable mention to be attached to his name? He tries to charm unceasingly the eyes of the master by the good taste of his decorations, and—which crowns the work—to give him the certainty when he returns to town, not only of leaving at his country seat a faithful guardian of his treasures, but an innovator who will assuredly present him next season with fresh ornaments, novel treasures, which will not cost him his eyes out of his head, and which will give give a tenfold return for the money spent on them.

"If the master hesitates, if he refuses to risk more than a trifling outlay, at least let him allow his gardener the opportunity of proving how luxuriantly he might adorn his parterres by the acquisition of a few choice varieties of our tuberous Begonias; let him permit him at least to show the effect that would be produced by several dozens of mixed varieties, whose tubercules, taken up in autumn, can be stored away dry out of the reach of frost, like Marvel of Peru, Guernsey Lilies, Erythrinas, Dahlias, and many others, which decorate the open ground all summer long, and take their rest in winter, sheltered from its severity in an outhouse or on a greenhouse shelf, for which there is no other use, unless the master obstinately persists in making his gardener a keeper of antique rubbish—of old Geraniums, for instance, which have served for the hundredth time, and which would be more advantageously employed in making leaf-mould for the growth of worthier successors."

Since then, the propagation of tuberous Begonias has gone on in geometrical progression. Beautiful, and temporarily expensive, novelties have been obtained, but old, good, and cheap varieties are still sufficiently plentiful for the amateur to see whether he likes them, without their costing, as Van Houtte says, "his eyes out of his head." Seedling tuberous Begonias, hybridised or not, are now raised by thousands. The raisers naturally pick out the cream of the seedlings, give them names, and ticket them with respectable prices, selling the remaining commonalty as hybrid Begonias *en mélange*, mixed varieties, at modest rates. Taking your chance of a small lot of these, a few really good ones will sometimes appear amongst them, because certain seedlings will not develope their full merits until after the raiser has decided against them as first-rate. He has not time to wait their convenience year after year. And here be it noted that the tubercules even of established favourites improve with age, blooming more freely, as well as making robuster growth. But those who must have A 1 varieties only, do better to invest their money in a few undoubted excellencies than to run the risks of the lottery involved in hybrid mixtures, which nevertheless is interesting, and anything but ruinous.

In the *Gardeners' Chronicle* for September 8, p. 302, you mention, as brilliantly in flower at the cool end of the T range at Kew, Emperor, superior in habit to Vesuvius, and really one of the finest; Kallista, new, but with fewer branches (a great defect), though fine and distinct in colour; Dr. Masters, an earlier production, but still essential, no other having appeared with equal colour and length of flowers; Orange Boven, distinct and desirable; Chelsoni, profuse in bloom, and rendered most effective by its numerous branches; Comet, Rosette, Vesuvius, and Prince of Wales, all highly effective. Starlight, one of Colonel T. Clarke's hybrids, is valuable from its quantity of white flowers. But the success of these varieties under glass at Kew still leaves us in ignorance both of their price and of their fitness for bedding. I may, therefore, state that Chelsoni is excellent both for the border and the pot. The same of weltoniensis (obtained, if I mistake not, by Colonel Clarke), already recommended in these pages for conservatory decoration, and which does not seem to need absolute rest in winter. It has been sold by some French gardeners as B. diversifolia; but the true B. diversifolia (sp. ?) is quite different, with lanky slender stems, especially indoors, and larger, less numerous pink flowers; outdoors, three or four tubercules can be planted to form a small group, supported by a stick to prevent breakage by winds. Chambersii superba may be highly recommended, both for foliage and flowers. Pearcei superba is a great improvement on the ordinary Pearcei; the yellow of the blooms is brighter and the velvety leaves have a striking effect, but the stature of the plant is too short to carry them out of the reach of splashings by rain, and therefore it is better retained under shelter in a pot. Some of these hybrid Begonias are apt to shed their male flowers, especially before they are opened. This bad habit may often be corrected by transferring the plant

from the pot to the open ground, which suggests that ample pot-room is favourable to indoor success. The record of B. Frœbelli flowering from seed sown this year, is interesting. The *Revue de l'Horticulture Belge* for February recommends that mode of propagating B. semperflorens, a good old sort, with vigorous shining foliage and abundant flowers, white in the shade and tinged with pink in sunshine. Plants so raised are said to be stronger and to flower earlier than roots which have rested during winter, and been made to sprout again in spring. *E. S. D.*

FIG. 79.—AGAVE CORDEROYI.

THE GENUS AGAVE.

(*Continued from p. 264.*)

49. *A.* (*Euagave*) *Ixtli*, Karwinski in Salm-Dyck Hort. 1834, p. 304; Kunth, Enum., vol. v. p. 835; Jacobi, Monogr. p. 95. *A. Karwinskii*, Zuccarini, Kunth, Enum., vol. v., p. 837; Jacobi, Monogr., p. 33; *A. ixtlioides*, Hook. in Bot. Mag., t. 5893; *A. rigida*, Engelm. Notes, p. 28.—Shortly caulescent. Leaves 30—40 in a rosette, oblanceolate-spathulate, 1½—2 feet long, 2—3 inches broad at the middle, narrowed to 1½ inch above the dilated base, where it is 1 inch thick, rigid in texture, decidedly glaucous, but less so than in lurida, the centre ⅛ inch thick, the pungent end-spine 1 inch long and decurrent a little down the margin, the rather distant chestnut-brown horny teeth ⅛ inch long. Scape 8—10 feet high, exclusive of the thyrsoid panicle, which is 3—4 feet long by half as broad, with the flowers in dense clusters; leaves of the scape distant, linear, adpressed; bracteoles minute, deltoid. Perianth greenish, 2—2½ inches long; ovary oblong-cylindrical, above 1 inch long; tube ½ inch long; segments ¾ inch long. Filaments twice as long as the segments, inserted below the top of the perianth-tube; anthers yellow, nearly 1 inch long. Style reaching to the top of the stamens.

A native of the provinces of Vera Cruz and Yucatan, and probably other parts of Mexico. A full account of the plant and its uses will be found in Dr. Engelmann's paper, as cited, and a recent description of it under the name of ixtlioides, with a coloured figure, taken from a specimen that flowered at Kew in January, 1871, in the *Botanical Magazine*. It yields the Sisal Hemp of Yucatan, and runs into many varieties, of which the following are the principal:—

1. *A. rigida*, Miller; Jacobi, Monogr., p. 94; *fourcroya rigida*, Haworth; Kunth, Enum., vol. v., p. 843.—A small form, with entire glaucous leaves.

2. *A. elongata*, Jacobi, Monogr., p. 108; *A. fourcroyoides*, Jacobi, Monogr., p. 107; *A. ixtlioides*, Lemaire; Jacobi, Monogr., p. 237; *A. rigida var. longifolia*, Engelm., Notes, p. 28.—Leaves glaucescent and toothed, as in the type, but running up to a length of 4—5 feet and a breadth of 3—4 inches.

3. *Var.* (?) *sisalana*, Engelm., Notes, p. 28.—Trunk short. Leaves pale green, not glaucous, 4—6 feet long, 4—6 inches broad, generally without teeth, but here and there bearing a few unequal, sometimes very stout and sharp teeth; terminal spine stout, often twisted, purplish black. Scape 20—25 feet high. Panicle 8 feet long by half as broad.

This last I know only from Dr. Engelmann's account of it, so I leave it where he has placed it as a probable variety of rigida. Doubtless using even the scale of species-limitation here adopted, and much more if we follow that of General Jacobi, it should stand as distinct. Of the species known in cultivation A. excelsa and A. Houlletiana should be compared with it. It was found in Yucatan by Dr. Perrine, and introduced by him into South Florida thirty or forty years ago, and is now naturalised plentifully at Key West and on the adjacent coast. Whether A. Ixtli be really specifically distinct from lurida in a broad sense I greatly doubt.

*** Leaves oblanceolate-spathulate, not glaucous when mature.

50. *A. excelsa*, Jacobi, Monogr., p. 238.—Shortly caulescent. Leaves about 30 in a rosette, oblanceolate, 1—1½ foot long, 21—24 lines above the middle, narrowed to 12—15 lines above the base, where it is ½ inch thick, rigid in texture, ⅛ inch thick in the centre, green when fully mature, slightly glaucous when young, the pungent brown end-spine about ½ inch long; the side-spines distant, deltoid, brown-tipped, reaching $\frac{1}{12}$ inch long, the face slightly channelled. Inflorescence unknown.

Of this I know but little. The above description is taken from a specimen in the Kew collection, received from Honduras. Its alliance is close with A. rigida. I have seen it in English collections under

the name of A. Kellockii, but it is totally different from the plant characterised under that name by Jacobi, which belongs to the Subintegrifoliæ.

51. *A. Corderoyi*, Hort. Peacock (fig. 264).—Acaulescent. Leaves 40—50 in a dense rosette, rigidly erecto-patent, ensiform, 1½ foot long, 1 inch broad two-thirds of the way up, narrowed to ¾ inch above the base, bright green, the face rather channelled, the base ½ inch, and the centre ¼ inch thick, the hard brown end-spine 1 inch long, the moderately close erecto-patent dark brown spines of the margin ⅙ inch long. Inflorescence unknown.

This is a very distinct plant, which I cannot find described, and have seen only in the Peacock collection. Perhaps some of your readers can enlighten us as to its history. From all its neighbours it may be recognised at a glance by its very rigid narrow bright green leaves and by the shape of its prickles.

52. *A. Regeliana*, Jacobi, Monogr., p. 236.—Acaulescent. Leaves oblanceolate-spathulate, 1½ foot long, 2¾ inches broad above the middle, narrowed to 1¾ inch above the base, a light pruinose green, the face slightly concave, the end-spine dull brown, hard and pungent, the marginal teeth very minute, crowded, colourless. Inflorescence unknown.

This I have not seen in the English collections. It was described by General Jacobi in 1865 from a plant exhibited by Messrs. Glym, of Utrecht, at the Amsterdam Exhibition. Its alliance with A. miradorensis is obviously close, and I cannot, from the description, make out any distinctive character for A. ananassoides, De Jonghe and Jacobi, *Nachtrage*, part i., p. 32. As before stated A. Regeliana is a name frequent in gardens for A. horrida. *J. G. Baker.*

(To be continued.)

ORCHIDS AT WHITCHURCH RECTORY.

AMONGST the many collections of Orchids that have of late years been formed in different parts of the country there are few equal to that which has been brought together at Whitchurch Rectory by the Rev. J. B. Norman, who is enthusiastic in the cultivation of these most fascinating plants. I had not seen them for about two years, and on going over early in June was really surprised at the extent of the collection, and still more at the number of scarce and beautiful varieties in flower, especially amongst the cool and medium temperature kinds. I found two houses almost exclusively filled with plants in bloom. The Odontoglossum-house is adjoining the dwelling-house, situated on the north side, and running parallel with it, and can be entered therefrom; and as the rest of the houses are connected with this the whole can be visited during all weathers without going out-of-doors, the convenience of which is at once apparent. This first house, in which were the principal lot of Odontoglossums and Masdevallias in flower, is 45 feet in length by about 12 in width. The back wall is covered with rockwork clothed with drooping Ferns and Lycopodiums, interspersed with Orchids in flower. On the front, as will be seen, is a stage about 3 feet wide. This is continued round the end and along the back, about half the length of the house. Here were most of the best Odontoglots, but the greater portion consisted of O. Alexandræ and O. Pescatorei: of these there were over eighty strong drooping spikes, clothed with their lovely flowers, embracing every variety from almost pure white to the highly tinted and profusely spotted forms of these most beautiful yet variable of Orchids. Most of them were exceptionally fine kinds, selected from amongst hundreds which Mr. Norman has purchased as imported, and as they have flowered only the best and most distinct have been retained. The house is kept about 50° in winter, and correspondingly cool in summer. Many of the plants of O. Alexandræ had two spikes to one bulb. I noticed one with a couple bearing twenty-nine grand flowers. The Masdevallias were in themselves a sight worth seeing; they covered some 20 feet run of the stage, and comprise most of the kinds in cultivation. There was M. Veitchii, with nearly a hundred expanded flowers; M. Lindenii, with 120; M. Harryana in every shade of colour which this most sportive of plants assumes, from M. sanguinea to the bull's-blood variety and deep magenta shade of M. purpurascens; an extraordinary plant of M. ignea, with 200 expanded flowers; the rare M. Benedicti, bearing eighteen blooms. Others noticeable in this select group were M. Trochilus, M. Peristeria, M. elephanticeps, &c. Interspersed over the house were a number of plants of Epidendrum vitellinum majus in bloom, the orange-scarlet of which associated with the Odontoglots and Masdevallias produced a charming effect.

Adjoining this is the show-house, 45 feet by 13 feet, completely filled with Orchids in bloom (fig. 80) brought here from the different houses in which they are grown to prolong their flowering—to effect which the atmosphere is kept comparatively dry. The Cattleyas and Lælias were exceptionally well done; the large pseudobulbs, thick leathery leaves, and strong flower-spikes bespoke an abundance of healthy roots—a condition these plants are not always seen in. One plant of Lælia purpurata was bearing nine stout spikes, another had bulbs, independent of the leaves, 18 inches in length by 5 inches in circumference, the flowers proportionately large. There was a charming variety of L. Brysiana in flower. A magnificent specimen of L. majalis had on it fifteen of its exquisitely-coloured blooms. Cattleya Mendelii was represented by many varieties, also C. Warneri, three plants of C. Dowiana, three of C. gigas, and the extremely rare and beautiful C. Reineckiana: the petals and sepals of this regal plant are of the purest white, the interior of the labellum rich magenta. C. Mossiæ was present in abundance in its numerous forms. There were in all over 300 flowers of Lælias and Cattleyas. One Odontoglossum vexillarium with seventeen flowers, and another with nineteen; O. Roezlii, with over forty blooms; Oncidium crispum, bearing eight spikes, some of which had seventy flowers each upon them; O. Rogersii, bearing its large golden-yellow flowers, 2¾ inches across; O. divaricatum majus, with five spikes, some of which were branched and 3 yards long; O. Weltoni, O. fuscatum, a fine form of O. prismatocarpum, O. leucochilum, Odontoglossum citrosmum roseum, O. nævium majus, O. Reichenheimii, with many long branching spikes; O. cirrhosum, Cattleya Aclandiæ, C. Schilleriana, Dendrobium crystallinum, with seven bulbs, 2 feet high, and full of bloom; D. amœnum, with its sweet violet-scented flowers. In this house likewise were numerous Vandas, Aerides, &c. Next is a house 60 feet long and 12 wide, divided by a partition in the middle. The first division contained large specimens of Cœlogyne cristata and other varieties, Oncidiums, Miltonias, Pleiones, &c.; the second division is devoted principally to growing Odontoglossums, of which there are 2000 of O. Alexandræ alone, doing beautifully.

In the adjoining house, 30 feet by 13, the Cattleyas are grown collectively in excellent condition.

Next is the Dendrobium-house, completely filled with these plants in pots on the stages, and baskets suspended from the roof; noticeable amongst them was D. Wardianum and a fine example of D. densiflorum, just out of flower, that had borne fifty-four spikes, and most of the other kinds worth growing. D. Ainsworthii was nicely in flower. It is apparently a good grower and a free bloomer.

We now come to a house mainly devoted to East Indian species: Vandas and Aerides, as well as the other occupants, looked well, and promised to flower abundantly.

In the next house were some fifty plants of Odontoglossum vexillarium, many of them good examples, pushing up two or three spikes each; a number of O. Roezlii, eight plants of Lælia anceps Dawsoni, several specimens of the true old Cattleya labiata, select varieties of Lælia elegans, Oncidium sarcodes, with bulbs 10 inches long and very stout. Some of these had produced racemes of 150 flowers each.

In the adjoining house I noticed 250 plants of Odontoglossum cirrhosum, and some twenty-five Oncidium macranthum, O. cucullatum, O. tigrinum, with very large bulbs; Pleione humilis, equally well done; and Cypripedium Schlimii, growing vigorously. A part of the roof of this house is covered with Maréchal Niel Rose, that flowers freely every spring. The above-mentioned plants are grown under it, the temperature frequently falling down to 40° in the night during winter.

After passing through the houses and noticing the general health of the plants, I inquired where the hospital for the sick and diseased subjects was, as I have rarely seen such a quantity of plants with so few out of condition amongst them; but no such place exists here, which, with the excellent health and annually increasing strength of the plants individually, speaks sufficiently as to the treatment they receive being in accordance with their requirements. *Zed.*

Natural History.

LANDRAIL PERCHING IN A TREE.—My pointer flushed a landrail yesterday in a rough, grassy pasture adjoining a wood. Something then happened which surprised me. After taking a direct course edging the covert the bird reached the end of the field, and alighted in an Oak just within the wood. I have known a fox in a tree, but this was the first time, after many years' experience as a sportsman, that I have seen a landrail in such a position. It did not seem to suit him quite, and he sat, oscillating and uneasy, on the small branch upon which he had alighted till I drew within shot and bagged him. He was a fine bird, in capital condition. Is the landrail becoming arboreal, or was this particular specimen shy of entering the large wood which lay before him? *Subscriber, Sept.* 18.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS. — Any hard-wooded greenhouse plants that remain out should at once be got into their winter quarters. Heaths ought to have the side lights of the house they occupy wide open during the day and night also, when the weather is calm and no signs of frost, with plenty of roof ventilation as well, as any approach to a close, warm atmosphere at once has a tendency to excite growth, which however little at the present season should be avoided. Tea Roses in pots have in most cases done well this summer since turned out, the more than usual humidity in the atmosphere having favoured growth, with less injury than ordinary from mildew or insects. Where the attention has been such as the plants require they are more than usually furnished with flower-buds. They should at once be got under cover, as exposure during frosty nights, or stagnation of the roots through excessive rainfall, will interfere with the flowers opening; ordinary greenhouse treatment will suffice to bring them into bloom, but nevertheless by the use of a little warmth the flowers will come finer, especially those of the more tender kinds. The unapproachable white-flowered Niphetos is generally seen in its best condition when subject to a little warmth; this with Isabella Sprunt, sulphur-yellow; Duchess of Edinburgh, bright crimson; Souvenir d'un Ami, salmon; Catherine Mermet, flesh colour; Madame Villermoz, white shaded with salmon; Safrano, apricot; Souvenir d'Elise Vardon, creamy white; Jean Ducher, lemon; Madame de St. Joseph, pinkish salmon; and the reddish crimson Hybrid Perpetual, Général Jacqueminot, are a dozen that may be relied on to give satisfaction for winter flowering. If there is any trace of insects or mildew upon them they should be thoroughly cleansed before taking indoors; give a good syringing with Gishurst at 3 oz. to 1 gallon by way of making sure, as if the eggs of aphides or spider exist they soon come to life when taken inside, and are much more difficult to deal with after the plants have commenced making growth, which is naturally a deal softer and more tender than that which has been produced in the open air.

SOFT-WOODED GREENHOUSE PLANTS. — Bulbs: Nothing tends to weaken bulbous plants of any description more than keeping them out of the soil after they evince signs of wanting to commence growth—Hyacinths are especially liable to suffer in this way. These bulbs this year are in a much less satisfactory condition than usual, owing to the ungenial weather that existed whilst their growth was being made, but, as in most cases of a similar character, some kinds have suffered more than others, and whatever partiality may be entertained for any particular kind or kinds, the roots of which are in an indifferent state, it will be well to substitute for them others that are stronger; and withal, so far as possible to make up for their weaker condition, it will be advisable to get them potted before they evince, by the pushing of their roots, a disposition to grow. The old practice of giving these and other deep-rooting bulbs large, deep pots was, no doubt, through an impression that by the greater extension thus allowed to the roots in their natural downward course corresponding advantage would be gained by the production of stronger flowers, yet such is by no means the case, and I have never found that the flowers were in the slightest degree either stronger or better for the

use of these ugly deep pots, or by employing large ones at all. If other essentials to their well-being are present, as satisfactory results may be obtained from bulbs grown in 6-inch pots as in those that are much larger, which, so far as both room and appearance goes, is an advantage. The same holds good with Narcissus, Tulips, and Crocuses, only that the latter, when their wants are well attended to after blooming until the leaves naturally die down, flower well in subsequent years turned out in the borders, and when very small pots are used the roots are apt to suffer from want of water; when the blooming is over, consequently, a little more pot-room proportionately may be given to these. I should advise all, even for the latest blooming, to be at once potted and placed under conditions most favourable to a free and full development of root-fibre previous to bringing them into bloom, without which, especially in the case of such as are forced, it is useless even from the strongest bulbs to expect good flowers. A bed of coal ashes with a few inches under the pots so as to exclude worms, and the material filled in and covering them to a depth of 4 or 5 inches, will suit them. A cold frame with the lights altogether off unless in excessively wet weather, or without the frame, merely using a few shutters to protect them should excessive rainfall ensue, will aoswer for them. It is seldom that bulbs receive too much moisture in this way, yet I have known the root-fibres injured during a very wet autumn, as these, like all other plants when in pots, cannot bear moisture in the soil to an extent that does little or no injury when planted out. Pelargoniums in pits and frames where they receive insufficient light should at once be got into a house and stood where they will get a full complement. The early shook-out plants placed for a time in pots of a less size will shortly be in a condition for moving into those they are to bloom in, and in the case of young plants will have made sufficient growth to require the shoots stopping. This should be done before they have advanced too far, especially where it is desirable to furnish them with an increased number of branches. Chrysanthemums this season, even where very little stopping has been resorted to, are unusually late in setting their flowers, and where late stopping is practised to the injurious extent that it is sometimes carried out, the plants will not flower at all satisfactorily. Directly the bloom-buds are large enough they should be fully thinned out, and some provision ought to be made for giving them shelter under temporary lights fixed overhead, or with a canvas covering that can be drawn over them when there is likelihood of frost; as if in their present backward condition they are for some time yet taken in, even to the most airy light houses, they will be almost certain to become a prey to mildew; the foliage in many cases is very soft, and if the parasite makes its appearance, they should at once be destroyed with sulphur. *T. Baines.*

FRUIT HOUSES.

THE CHERRY HOUSE.—The sashes which were taken off this structure, as indicated some time ago, need not be replaced for another month, except the demand for space for sheltering plants from the effects of frost be actually required. If this be the case, and the house is brought into requisition for this purpose, select such subjects for inmates as only require merely casual protection, so that the trees may still have the benefit arising from a full and free course of ventilation being continued. By this time the foliage on the trees will have become almost fully matured, and, therefore, the use of the syringe over it may be discontinued. Proceed in pruning the trees as soon as the leaves are off. This matter will not involve much time if the stopping as indicated throughout the growing period had due attention. As the red-spider is sometimes troublesome on these trees it will be prudent to employ every means at this season to extirpate such an enemy. If the mussel-scale, to attacks of which Cherry trees are very susceptible, be present on the trees, dress them over with a mixture consisting of sulphur with a little slacked lime to afford consistency, and enough glue to make it stick firmly, to which should be added a little strong tobacco-water or Gishurst Compound. If the trees in pots have not already had attention in the way of repotting, disrooting, and surface-dressing, these matters should be seen to as soon as the chief part of the leaves are off the trees, using for a compost for potting pure fresh loam with a little grit added, and rich material for top-dressing. If these trees have a covering of straw or long manure placed around the pots to protect them from the action of severe frost they may still be left outside and fully exposed. *G. T. Miles, Wycombe Abbey.*

VINES.—Muscats and other late-keeping Grapes which have reached perfection in colour and finish will now require a gradual reduction of temperature to insure their keeping fresh and plump. A mean night temperature of 56°, with a rise of 10° by day, will suffice. Keep the atmosphere dry. Remove all surplus growths and laterals, and ventilate freely in dry weather. Protect ripe Muscats from the direct action of the sun by laying sheets of tissue-paper over them, and examine occasionally for decaying berries. Midseason houses from which the fruit has been cut, also Vines that have not hitherto carried fruit, should now be divested of laterals up to the pruning bud. Carefully preserve the old leaves. Apply fire-heat in the daytime if necessary, and keep the house cool at night. When top-dressing, lifting, and relaying of roots or additions to existing borders are contemplated advantage should be taken of the present fine weather for the completion of the work. Use good turfy loam, bones, and burnt or charred garden refuse thoroughly mixed, and mulch with about 4 inches of fresh horse-dung. Let the borders have the full benefit of October rains, and protect with dry fern or shutters towards the end of the month. If not already done, Vines intended for starting in November should now be pruned, in order that the wounds may heal before the house is started. No rule can be laid down for pruning, but for early work it is always safe practice to cut back to a firm plump bud. Let the Vines be well cleaned and dressed with a composition of soft soap, sulphur, and tobacco-water in proportions of 1 lb. of the former to half-a-pound of soap and 1 pint of strong tobacco-water. If mealy-bug has to be contended with, add a tablespoonful of turpentine. Reduce to the consistency of thick paint, and apply with a painter's brush Thoroughly cleanse the glass and woodwork, white wash the walls, and replace old mulching and surfacings with the compost above recommended. If the addition of fresh varieties is contemplated, the bottle system of grafting, efficient and simple, may be adopted as soon as the wood is ripe. Judging from the form in which Golden Queen has been shown this season we may conclude that growers have not yet succeeded in doing it justice. Venu's Seedling has again set, swelled, and coloured well with me, the skin being thicker and the footstalks shorter and stouter than those of Muscat Hamburgh. It will in all probability prove a much better keeping Grape than that fine, but capricious variety. Black Alicante is becoming a general favourite, as it sets, swells, and colours well under thr most adverse treatment; but in quality it is inferior to Kempsey Alicante or Black Morocco. Madresfield Court, now acknowledged to be one of the best early and mid-season Grapes, is worthy of a place in every house except the latest. *W. Coleman.*

CUCUMBERS.—The glorious autumnal weather we are now enjoying is all that can be desired for winter Cucumbers, as it admits of a free circulation of air with a minimum of fire-heat. The earliest batch of plants, intended to give a supply of fruit up to Christmas, are now swelling off clean healthy fruit, much superior to that obtained from old plants in pits and frames; and as the latter will now be required for bedding plants, salading, &c., they may be cleared without delay. Where bottom-heat is obtained from hotwater-pipes and fermenting materials combined, the latter should be thoroughly worked, to get rid of noxious steam before it is taken into the pit. In placing the pots let them stand on sods of turf fairly over the bottom-heat pipes, and place the fermenting material firmly round them. For winter work the ball of the young plant should be kept up nearly level with the rim of the fruiting-pots, and the compost used may be somewhat lighter than that recommended for summer. After planting, the pit should be kept close and moist for a few days, when more air may be given, and treatment the reverse of coddling will be followed by the most satisfactory results. Maintain a minimum temperature of 68°, and dispense with fire-heat as much as possible by closing about 1 P.M. As days decrease in length and brightness overhead, syringing must be less frequent; but a genial growing temperature may be maintained by damping the paths, walls, and surface of the bed. If the stock is short, young plants may still be raised from seeds or cuttings for coming into bearing after the end of January. Keep them near the glass in a light pit, where they will make short-jointed sturdy growth, one of the most important points in the successful management of winter Cucumbers. Take advantage of this fine dry weather for getting under cover a good supply of turf and old lime rubble for winter use. *W. Coleman.*

KITCHEN GARDEN.

The Cauliflowers sown last month will now require attention, as they will be large enough to prick out, and they should not be left standing too thick in the seed-beds, as the great object is to obtain a short stocky growth, which will enable them to withstand better the vicissitudes of winter. For very early work the strongest plants should be selected, and potted in small pots, which should be plunged in a bed of leaves, under glass, and kept well ventilated. After they have made a start another batch should be pricked out in a frame, on a gentle bottom-heat of leaves and dung, keeping close for a day or two, and then removing the lights entirely every fine day, but drawing them on at night and in wet weather, taking care to ventilate freely both night and day for some time; the remainder may be left in the seed-beds until they are large enough to prick-out at the foot of south walls. As we may soon expect frosts, Tomatos should be frequently gone over and the ripe ones cut off; and if not required for use at once they will keep for some time, if stored on shelves in vineries, or other glass erections, with little or no artificial heat; and as soon as frost is certain, it is a good practice to cut the whole crop of any size, and store them away on shelves, secure from frost, to ripen. No time should now be lost in finishing off the whole of the plantations of Lettuces, intended to stand through the winter, of which the old black-seeded Bath Brown Cos is one of the hardiest and best for the purpose. Hicks' Hardy Green and Stanstead Winter Cabbage are also good sorts. The latter is also good for planting in frames, so that they can be protected through the winter; these will be found very useful for salads in early spring. This important crop is now so much in request all the year that no chance should be lost for want of a little seed; and a bed sown now in a warm sheltered corner will often fill up a gap in the spring after inclement winters. Finish off, likewise, the planting of the varieties of Batavian Endive; these are much hardier than the Moss Curled, and more to be depended upon for winter use. Take every opportunity of very dry weather to continue the tying-up of Lettuces and Endive for present use, and also be looking forward to the tying of the crop intended for storing away in pits for winter use. Continue the sowing of red and white Turnip Radishes on a warm border in light soil; also at the same time sow a two-light frame on a warm border without heat, which, with one sown later on upon a gentle hot-bed, will keep up a good succession for some time. The early-sown Carrots will now be fit to take up for storing, the later sown may remain in the ground for some time yet, in fact until they begin to show signs of maturity by the leaves turning yellow; the last sown will of course be left in the ground all the winter, but, as they are liable to be eaten by grubs, it is a good plan to move the surface 2 or 3 inches, and stir in some soot and lime amongst them. Salsify and Scorzonera will now have attained maturity, and should be lifted and stored away in sand in a cool and dry place, secure from frost. Where Bracken is very plentiful one of the very best of houses for the storing of these and all other roots, such as Carrots, Red Beet and Potatos, may be made by marking out the required space and building all round it walls of Brake 6 feet thick and 7 or 8 feet high, to allow for sinking; a number of poles should be laid across the opening, and on them some brushwood, like what is used for Peas, and then the Brake piled on in the form of a ridge and thatched; during the process of building every effort should be made to compress the Fern as closely as possible, and, when the erection has stood for a week or so to settle, cut a doorway through with a sharp hay knife; this may have temporary double doors, and in severe frost the space between filled with Brakes or straw. Dig a trench all the way round to carry off the water from the roof, and you have a cheap erection, than which nothing could be better adapted for the required purpose, being unaffected by the extremes of cold or heat, and having an equable temperature so much to be desired in both fruit and root house. I may mention that it is by some practical men preferred to build the stack solid, like a haystack, and then cut out the interior after it has been well settled down. The present has been a very favourable season for the germination and development of weeds, and every effort should be exerted at once to exterminate them, either with the hoe in dry weather, or, what is still better, turning them under with a steel fork, amongst crops of all sorts, wherever possible, which will give all the benefits of surface stirring, combined with that neat appearance so desirable in this department. *John Cox, Redleaf.*

GENTIANA ACAULIS.—This fine old plant was formerly much used in "old-fashioned" flower gardens. It was generally planted as an edging for beds of hardy perennials, and when grown in a suitable soil and situation was, during April and May, a beautiful object, from the brilliant azure of its flowers. I have grown it for some years in tufts on the front margins of beds and borders of hardy flowers. It is one of those plants that likes a pure air and a good loamy soil, moderately moist. It is easily increased by parting the roots; but, in order to flower it finely, it must not be too often parted or transplanted. The tufts produce an abundance of flowers after they have been two or three years undisturbed. With an annual top-dressing of decayed leaf-soil or manure they will continue to flower for some years undisturbed. It is a plant that merits a place in every garden. *M. Saul, in "Florist and Pomologist."*

THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 29, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Oct. 1	— Sale of Dutch Bulbs at Stevens' Rooms.
TUESDAY,	Oct. 2	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; General Meeting, at 3 P.M.
WEDNESDAY,	Oct. 3	International Potato Exhibition at the Royal Aquarium, Westminster (three days). Sale of Dutch Bulbs at Stevens' Rooms.
THURSDAY,	Oct. 4	Sale of English-grown Lilies at Stevens' Rooms.
SATURDAY,	Oct. 6	— Sale of Dutch Bulbs at Stevens' Rooms.

THE SEASON FOR PLANTING being close upon us, we shall be doing good service by calling the attention of those of our readers who may be about to plant or transplant to this fact, which the lingering life of the fleeting flowers is apt to make us forget, till a sharp autumnal frost comes upon us as a reminder that summer is departing, and winter rapidly approaching. Even when the fact does appear to be realised we are prone to play with the few remaining weeks, in which much of this work can be done to the greatest advantage, as if time would wait our leisure or convenience.

When work of this kind has to be performed there are always certain preliminary considerations to be thought out, and sundry arrangements to be planned, and this thinking and planning is in the case of inexperienced persons apt to be deferred till the time for active work has come, and then some of the best part of the season is lost in discussions and consultations, which would have been better cleared out of the way at an earlier period. It is to this that we would particularly call attention at the present moment, in order that the plans and changes to be adopted may at once be settled, and the fine weather of October be taken advantage of to prosecute the work.

Where trees and shrubs for ornamental purposes have to be planted, there can be no question that the earlier weeks of autumn offer the best time for carrying out the work, taking a general and common-sense view of the matter. There may be, and of course are, hardy free-growing subjects that may be planted at any time during the winter if the weather is open and favourable; and there are many cases in which, from unavoidable circumstances—especially where builders stop the way—the best part of the autumn cannot be taken due advantage of. Setting these aside, however, there is much planting delayed for weeks after this date, which would be better done at once; and in such cases we advise that all preliminary considerations should be decided on, the area to be occupied marked out and prepared, and the occupants selected, so that they may be bought in as soon as possible, and put into their places without any delay when they are procured.

Then, again, with fruit trees, the sooner in the autumn they occupy the positions they are intended to fill the better both for roots and tops. But especially does this rule apply to any established or partially established trees which may need the corrective of a slight check to the roots, such as autumn lifting and replanting supplies. The past summer has in many districts at least been favourable to wood development, and the light crop of fruit, which in too many cases is the sum of the year's results, will have been rather favourable than otherwise to this kind of development. Moreover, young trees which are about to be introduced from the nurseries cannot be had too soon in the autumn. There is then a better selection to be made, as they can be had on the principle of "first come first served;" and the trees have also a better opportunity of taking hold of the new ground, and laying the foundation of a more healthy and vigorous growth when the time for growth comes next spring.

The great advantage that may be looked for from early planting may no doubt be mainly traced to the warmth which has been stored up in the soil during the summer months, in consequence of which the roots begin active life at once, instead of lying dormant or dying, as they too often do when put into damp chilly soil in winter. Besides, the tops are not now drained by parching winds and a piercing atmosphere as they are when planting is done in spring. All plants like bottom-heat if it be not carried to excess; and the summer's sun just brings about that condition of the soil as to warmth which is congenial to the trees—both useful and ornamental—that thrive in our climate, the tenderer ones no doubt deriving the most decided advantage from it.

There is something too in the immunity from damage by frost, which autumn lifting, and consequently autumn planting, brings in its train. As evidence of this, we need only mention the fact that lifted and transplanted Roses often escape uninjured, while those which remain unmoved are either severely punished or destroyed.

Our object is not now, however, so much to point out what to plant as to impress upon our readers the desirableness of at once settling their plans and completing their arrangements for the planting season, so as not to waste precious time in these preliminary matters during the next few weeks, in which rather the spade should be kept actively employed. The same considerations apply to the planting of hardy flowers. The sooner any that have to be moved are put into their permanent places the better.

—— A CORRESPONDENT has been good enough to direct our attention to our statement at p. 369, that the "leaves and flowers of Casimiroa are like those of the Orange." We ought to have mentioned that we were referring to botanical kinship, not to superficial appearances. In truth the leaves of Casimiroa are compound and studded with transparent oil-cysts, as in the Orange. Superficially, there is not much resemblance to the leaves of the Orange.

—— The THIRD INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, on Wednesday, Thursday, and Friday next. We are informed that a very extensive display may be expected, for, notwithstanding the prevalence of disease, many of the careful cultivators of Potatos have lifted heavy crops. We are requested by the committee to beg the trading firms who take an interest in the show to abstain from overloading it with gigantic trade announcements, for it is not desirable that advertisements should be more conspicuous than Potatos.

—— Are the old SINGLE WHITE AND SINGLE LILAC AURICULAS in cultivation, or are they quite lost to gardens? We are led to ask this question because enquiries are being made for them, but they are not forthcoming. The double white variety which was announced in Continental catalogues two or three years ago has not yet been seen, in England at least, and applications for it have met with no response. The taste for these fine old border flowers is being surely revived, hence the enquiries that are being made. There are in English gardens some capital single yellow Auriculas that make excellent border flowers, and some of the Rev. F. D. HORNER's eccentric yellow seedlings are well deserving cultivation as border flowers.

—— A good deal of attention has of late been given to the MEDICINAL EFFECTS OF COCA (Erythroxylon Coca), and MATÉ OR PARAGUAY TEA (Ilex paraguayensis) has also received some consideration. The introduction of this as a beverage has, it appears, been recommended recently in Brazil, under the name of "Sterva Maté," a name which we do not remember having seen before. It is said that the cultivation and preparation is largely carried on in Brazil, and it is extensively imported from the province of Parana to the neighbouring countries of Uruguay, Paraguay, and the Argentine Confederation. It is referred to as a matter of regret that this beverage has not become an article of commerce for the European markets, seeing that those who have used it bear testimony to its being an excellent substitute for either tea or coffee. "In its nature" it is said "more fortifying and alimentary, and far more wholesome, it can be bought at a price so moderate that it would easily be within the means of the poorest inhabitants of Ireland or Scotland, and there can be no doubt that if it were once known it would be extensively used in place of the far more expensive and constantly adulterated beverages of tea and coffee." We are further told in the notice of the substance from whence we quote the above, that a small sum of money has been appropriated by the Minister of Agriculture in Brazil, for the purpose of making this useful plant more known in Europe.

—— A NEW ILLUMINATING OIL is promised to the world by a M. GUILLEMARE, who has brought to the notice of the French Academy of Sciences his discovery of the presence of three kinds of oil in the resin of Pinus Pinaster. These oils are said to be very rich in illuminating power, burning with a bright steady flame, and giving a brilliant light. So confident is M. GUILLEMARE of its power and brilliancy that he has proposed it for use in lighthouses and similar places where a powerful, steady light is required. No fear is entertained regarding the supply, as this Pine is very largely cultivated in many parts of Continental Europe, and in the extensive sandy and marshy plains along the Bay of Biscay, and reaching inland between the Garonne and Adour, it is especially abundant, being planted for the twofold purpose of affording shelter to the country and protecting it from the loose, driving sand. The resinous products of the trees are diligently collected by the people, and form their principal staple of industry, and it is from the resin so collected that M. GUILLEMARE proposes to prepare this new oil.

—— A correspondent of a contemporary, in reporting a local show, mentioned that certain ONIONS were of good form, each bulb measuring fully 16½ inches in *diameter*. A humble cottager to whom this statement was read, remarked, suggestively, "*Them wur Inins!*" with a stare of admiration that might well be excused, considering that each one is thus made to measure 4 feet 1½ inch in circumference.

—— From the Colonies we learn, on the authority of the *Indian Tea Gazette* of Calcutta, some facts concerning TEA CULTIVATION IN THE EAST. China-Assam Tea, it seems, is a new feature in the trade, and quite an unlooked-for competitor for Indian Tea planters. It shows that the Chinaman does not intend to leave the field of Tea cultivation to India without a fight for existence. Japan Tea has made as rapid and as wonderful progress as Indian Tea during the past ten years. The annual production has already increased from nothing to 25,000,000 lb. in a few years, with every prospect of increasing even more rapidly than Indian Tea. The cultivation of Tea is progressing most rapidly in all parts of the East, tea-gardens having been established in Ceylon, Madras, Burmah, Singapore, and Java, in all of which it is proved that the climate is well adapted for this branch of culture. At the Cape and in Natal Tea plantations have also been established, while in South America there is a talk of growing it on a large scale. Coffee-leaf Tea, we are told, is likewise a feature in the trade, which may develope into a troublesome opponent of Indian Tea, experiments having been made in Ceylon with not unsatisfactory results.

—— Messrs. LITTLE & BALLANTYNE, Carlisle, had the honour of supplying a plant of their new WELLINGTONIA GIGANTEA PENDULA NOVA, to be planted on the occasion of H.R.H. Princess LOUISE's visit to Isel Hall, Cockermouth, the residence of the Hon. P. S. WYNDHAM, M.P.

—— Many of the finest AUTUMN-FLOWERING HERBACEOUS PLANTS may now be noted AT KEW. Linaria dalmatica has long produced a profusion of bright yellow flowers, which it will continue to do for some time. Galatella dracunculoides may evidently be selected as the best of its genus. G. cana and others are also in flower. Helianthus orgyalis will this year be very floriferous, though it cannot be more

handsome than at present, every stem being clothed from near the ground to apex with graceful recurving leaves. Some of the best Asters are in bloom, though others equally fine have yet to expand. Those of the present are A. sericeus, A. ericoides, A. patulus, A. lævis, A. turbinellus, A. spectabilis, A. Shortii, A. Amellus, and its variety bessarabicus. Anemone japonica is in great beauty, so also is Pyrethrum uliginosum, one of the finest of tall herbaceous plants of this season.

—— A specimen of Harrison's New Musk recently seen at the nurseries of Messrs. John Perkins & Sons, Northampton, was remarkable for its size and the rich head of flower it carried. The plant was some 2 feet in height, by as many through. It was of symmetrical form, and remarkably well bloomed. It promises to make such an effective exhibition plant, and to be so far in advance of the old Musk as a specimen, that window gardeners should take it in hand, and cottagers be encouraged to cultivate for show. It is already becoming a useful market plant.

—— Mr. Anderson has recently in the *Florist* started the somewhat novel idea that Orchids are Florists' Flowers. Notwithstanding, he says, the grotesqueness of form and feature of the general run of Orchidaceous species, they are being fast elevated, as the florist would say—degraded, as the botanist might say—to the rank of florists' flowers. However startling this assumption may at first sight appear to many, it can nevertheless be supported by irrefragable evidence. Take any popular species, and what do we find? Why, this, that the variety that will best stand the severe scrutiny of a florist's eye is by far the most valuable. The same law that enacts that form, substance, colour, and general symmetry shall take precedence over the general ruck of florists' flowers, holds good among all popular Orchids. Any one can find this out by going to market to purchase the rarities, not the rarities of species only, but the rarities among varieties of species. The fact is, so innumerable are the importations of recent years, and so very numerous the varieties of species, that two-thirds of the poor varieties—poor from a florist's point of view—are all but unsaleable; at least, if people buy them, it is only to get rid of them as soon as possible after they have proved themselves. When he began cultivating Orchids, he was most anxious to secure anything in the way of a species, no matter what. Now-a-days collectors find it to be both their interest and satisfaction in every way to secure first-rate varieties, many times at whatever cost. Take Odontoglossums, for instance, no matter whether it be Alexandræ, Pescatorei, triumphans, grande, citrosmum, cirrhosum, or any down the line of species in any catalogue, and some sorts will bring as many pounds at a sale, if they be known to be super-excellent, as others will bring shillings. And so it is with Cattleyas, with Vandas, with Aerides, with Saccolabiums, and with every popular Orchid. It may be form, or substance, or colour, or exquisite symmetry, or all combined, but the individual that possesses all these in greatest degree will be run upon by the *savans* in the matter of flower-value. I have, therefore, he adds, "to congratulate the "general assembly" of florists for the good work they have done, are doing, and doubtless will continue to do, in bringing together the above races of plants, from the commonest border flower to the most aristocratic Orchid, so as to subject them all to severe eye-criticism. It is only in this way that the best can be taken and placed, and the worst left and uncertificated. There is doubtless much truth in this view of the question, notwithstanding the sneers with which "florists' flowers" are sometimes visited.

—— The Zonal Pelargonium Vesuvius seems to be of a remarkably sportive character, more so than most sorts, besides being, as it no doubt is, one of the very best of the scarlets for bedding purposes. From it sported Wonderful, a semi-double of the same colour, and having both the good properties of dwarf growth and abundant blossoming of its parent,

Fig. 80.—Mr. Norman's Show-house for Orchids (see p. 398.)

with the doubleness of the flowers superadded. Then came New Life, Mr. CANNELL's, white striped scarlet, which is very constant to its markings, and when well established is really a striking flower. Now we hear of a salmon-lake sport, from the same stock—Vesuvius—in every way identical with it except in colour.

—— Mr. CANNELL tells us that he has just obtained a further advance towards a YELLOW PELARGONIUM in the form of two brilliant flame-scarlet varieties, both of which are marked with distinct rays of yellow. Jealousy, which has hitherto been the most auburn of our pale orange-scarlets, is said to have a dull and ineffective appearance by the side of these novelties.

—— Like its prototype the common Elder, the GOLDEN ELDER proves to be a good plant for town gardens. During the summer season its leaves present a gay array of deep golden tints, which are exceedingly effective when judiciously placed for contrast with dark-leaved subjects. Just at this season, perhaps, the colouring may be somewhat suggestive of the early fall of the leaf, but the bright and brilliant tints of its summer clothing amply compensate for this minor drawback. It has been during the present season one of the gayest of the shrubs planted in the gardens on the new embankment at Cheyne Walk, Chelsea.

Florists' Flowers.

BEDDING AND BOUQUET DAHLIAS.—While tender plants are taking on a sombre and washed-out appearance, owing to the cold and rain, some late summer flowers are wonderfully bright and effective, especially the bedding and pompon Dahlias and the Marigolds. The Dahlias are particularly effective; the plants are not only laden with blossoms, but they shine out brightly against the leaden skies as if defying the advancing shades to do their worst. At the Royal Nursery, Slough, Mr. Turner has planted out lines of bedding and bouquet Dahlias as edgings next the walks to plantations of show Dahlias, &c., and when seen in this way one comes to realise something of their great value for decorative purposes.

I was astonished with the large number of blossoms produced by some of the bouquet Dahlias. There is first a remarkably fine branching habit, and from this come hundreds of flowering shoots laden with flowers. Mr. Turner said he has been cutting heavily from some of the plants, but the act of cutting the flowers only served to bring out the wonderful freedom of bloom in a remarkable degree. The bedding Dadlias have also been so much improved that they, too, are very floriferous and continuously so.

We have long looked to the Hollyhock to supply an appropriate background to the broad borders which front lines of shrubbery in many large gardens; but the terrible disease, which has been very destructive in many places, notwithstanding the summer has been cool and moist, has worked such havoc that gardeners are using the Dahlia in preference for this purpose. A few of the free-flowering taller growing Dahlias might be used as a background, and between and in front of these the bedding and bouquet Dahlias would come in admirably; they might also be dotted about in the borders as single specimens, and also be used to fill up the centre of large beds.

Of the bedding Dahlias proper, the most effective were Crimson Gem, rich crimson, with an excellent upright growth; Drap d'Or, pure yellow, very good indeed; Faust, shaded dark maroon, very effective; Flora Macdonald, primrose-yellow, very pretty; Hilda, blush rose, a very pleasing variety; Leah, a good show flower, and an excellent bedding kind; it has a capital erect habit, and shows off its fine yellow flowers to the best advantage; Mont Blanc, pure white, one of the very best of this colour; Prince Frederick William, crimson, very free and effective; The Pet, a capital fancy variety, very dark maroon, with a distinct white tip; Yellow Pet, pure yellow, very fine, and of a dwarf compact habit; the Old Zelinda, crimson-purple, upright, and very free; and Rising Sun, intense scarlet, dwarf and free. The foregoing twelve varieties represent the very best bedding forms in cultivation.

Of the bouquet Dahlias, all of which have small, compact, and very interesting flowers, the following can be highly recommended:—Amelie Barberre, flesh, tipped with rose, very pretty indeed; Baby Waite, pale lilac, very free; Bird of Paradise, deep scarlet, very good; Burning Coal, yellow, with scarlet tip, very bright and effective; Butterfly, orange, heavily tipped with claret, very pretty; Coronet, blush white, tinted lilac, very good; Dove, white, tipped with delicate rosy lilac, a charming variety; Dr. Schwebes, rich scarlet, very good; German Favourite, crimson-lake, very pretty indeed; John Sandy, orange, shaded yellow, remarkably good; Little Arthur, orange-scarlet; Little Beauty, crimson-red, occasionally tipped white, very pretty; Louis Rodani, deep shaded lilac, exceedingly pleasing; Mdlle. Valentine Faconet, white and red striped, really a fancy bouquet Dahlia, charming and effective; North Light, bright scarlet, very good; Prince of Lilliputians, maroon, fine and free; Startler, a pretty light flower; Triumph, bright scarlet, very free, and one of the best of this colour; Vesta, an excellent white; and White Aster, with curious quilled florets, very pretty, free and good. *R. D.*

Apiary.

PRESENT WORK.—We would strongly advise all our friends to make a complete survey of all their stocks during this month. It may appear superfluous to examine all the stands carefully, but we have found a few minutes spent upon this labour each autumn amply repaid. In many apiaries which have been in existences say ten or fifteen years, the supports underneath the hives have gradually, though unobserved, been decaying; especially is this the case just above the ground line, but most bee-keepers never seem to think it needful to look over the stands. How easily when partially decayed the wintry winds blow them over, thus occasioning sad loss; most frequently the entire stock is lost, or rendered useless. Thus our advice, if followed, will in this respect not be regretted.

Most people, when making alterations in the garden, often change the situation of the apiary. If this be done, and the old stand be an old-fashioned bee-bench, holding several hives, let this be discarded at once and for ever, and instead thereof let every stock be placed on a separate stand. This may cause a little more expense in the change, but it will be repaid in the working of the apiary, for it will certainly prevent all loss from robbing, and probably the loss of queens, this meaning also loss or destruction of the entire colony.

No time should be lost in transferring condemned stocks to stronger hives; it is well to take all the second swarms, and mix the driven bees the same evening with stocks which have a sufficient supply of food to last over the coming winter. Our French bee-keepers call this "marrying hives." It is not a new-fangled system, as we have been frequently told by old cottage bee-keepers; it has been adopted in this country for at least a century, though we are willing to confess it never seems to have become well known, and evidently it has been only partially successful. We have made most of our best paying stocks from condemned stocks alone; these were placed about the month of August into empty skeps, and, liberally fed. They quickly make the best of a bad job, for we find bees never sit down to repine when things seem bad with them—they rapidly set to work to repair all their losses, building new comb; it is then filled with syrup and sealed over for winter consumption, just the same as honeycomb. These stocks also come forth the following spring, healthy and vigorous; as a rule, much stronger than the old colonies. *R.*

ENMITY OF QUEEN BEES.—The rivalry of the queens is considered the primary cause of bees swarming, yet "W. K." announced at p. 204 that he found "five reigning queens at once in the same colony," and invites information on the subject. Need I say it is a common thing to find several young queens in a colony after the exit of the first swarm, but shortly one only is supreme. However, for the sake of those unacquainted with the *rationale* of swarming, I cannot do better than give an extract from the Rev. Dr. Dunbar's reply to a letter of mine in the *Gardeners' Magazine* on the calling of the queen bee, and add some observations on the subject. He said, "When the first laid of these eggs is hatched, and the larvæ or worm then produced is about to be transformed into a nymph, and before the royal cell so inhabited is finally closed—a period occupying about eight days—the old queen leaves the hive with the first swarm. Those left behind are then without a head, and it is not till the fifth, sixth, or seventh day, according to circumstances, that the senior of the young queens leaves her cell; instantly on her emerging she flies to the cradles of the remaining royal brood and eagerly attempts to tear open the cells, and destroy their inmates. But the working bees interpose most effectually, guarding the cells with the most determined firmness, and repulsing the violence of the queen without any ceremony; for I have seen on such occasions half a dozen bees hanging close on her skirts, one hauling each leg or wing, and forcing her away from the spot; at every repulse the discomfited queen stands sulky hard by, moving her wings across her back without extending them, and utters the well known 'peep, peep,' sounds expressive of her anger and irritation at her deadly attempt being frustrated; after a minute or two have elapsed she repeats her wrath in the same cry. And this scene of violence continues almost without intermission for three days, sometimes longer, when the queen, irritated at last beyond endurances, traverses the hive in a state of great agitation, communicates that excitement to the workers, and finally leaves the hive with a great mass of the population. This forms the second swarm. The same process goes on with the next in seniority of the royal brood, provided the population be abundant, but at shorter intervals of time, corresponding with the interval between the laying of the royal eggs." I observe, however, that such is not always the case. Often after swarms come from weak hives it depends more on the time when the queens are bred, or the state of the weather; but such puny swarms not only weaken the colonies, but are worthless, except they are united to other stocks. In fact, the propensity of bees to increase their kind by swarming accords with their instinct to be the same as when adapted to the warmth of their original climate. *J. Wighton.*

Notices of Books.

Lehrbuch der Gartenkunst, oder Lehre von der Anlage Ausschmückung und künstlerischen Unterhaltung der Gärten und freien Anlagen. Von H. Jäger. (Text Book of Garden Art, or Theory of the Laying-out, Embellishment, and Artistic Maintenance of Gardens and Public Pleasure Grounds.) 8vo, pp. 687. Berlin and Leipzig: Voigt. 1877.

When a man spends thirty years in the preparation of a work, and his whole occupation during that period is of a nature to enable him to improve and refine his earliest ideas and thoughts, it is not unreasonable to expect that he has produced something worthy of the serious attention of those to whom it is addressed, because there is no surer way of gaining knowledge than by attempting to teach others. This is practically, as the author informs us, the history of the present book, and, as he very modestly puts it, the character of it has not suffered therefrom. Mr. Jäger is, however, not before the public as an author for the first time, having long been favourably known to the students of German garden literature; and most of his previous writings are upon different branches of the same subject. Moreover, his reputation as a landscape gardener does not rest upon what he has written, but rather upon what he has carried into practice. It is clear that in a short notice like this it is impossible to attempt a critical examination of the entire work, and, therefore, it will be limited to allusions to certain parts. Before entering upon this a passage from the author's introduction will give an idea of the way in which he has treated the subject:—

"Respecting the contents of this book," he says, "I have few observations to make. In the first and larger part the foundation of the entire theory is fully laid down, so that in the succeeding practical parts theoretical discussions and reasons are avoided; references to the proper sections being all that is required. Consequently special weight must be attached to this part; for he who would pass it over will remain an empiricist, and, in fact, has no need of my book. There is also the critical history of garden art (second division of the first part), which contains much instructive matter deserving of notice, to which I direct the particular attention of

the reader. Whoever is ignorant of the phases an art has passed through in its development will never thoroughly comprehend it; but whoever has mastered the theoretical and historical portions may confidently go his own way, as every artist must; for, with the exception of the universal principles and laws of the beautiful, there are no fixed rules to be followed in works of art. Talent must reveal itself in its own way, and in the art of gardening, which is bound up with so many obstacles and conditions in the way of utility, means, situation, the true artist will design an original plan for every new work. In our art copies are objectionable, and, indeed, usually impossible."

Even after this statement one is scarcely prepared for the total absence of plans and illustrations. Such is the case, however, and it is doubtful whether the author has exercised a wise discretion in this matter. The text is admirably arranged for ready reference, being in three parts, each part subdivided into sections and paragraphs with special headings, which are all enumerated in the excellent paged table of contents. The first part or division is devoted to the definition, historical retrospect, and present state of garden art. Discussing what garden art is, it is briefly defined as the art to mould any piece of ground or buildings destined for pleasure, according to the laws of beauty, and embellish it with plants, and so maintain it. But this is regarded as very inadequate, and the author proceeds to a more detailed conception, preceded by some observations on what in gardening is not art. Garden art, as treated in this book, "can be no other than a plastic art," and landscape gardening is regarded as one of the fine arts. But the general term "landscape gardening," was rejected as a title of the book because there are many other artistically designed gardens which cannot be called landscape gardens. Nevertheless, Mr. Jäger would employ the title "landscape gardener" in preference to any other, because the labours of those who practise the profession are chiefly connected with essentially landscape gardening. This paragraph is followed by others on the relations of the art to other arts, the definition of a garden from an artistic standpoint, and auxiliary aids to garden art. Then comes the historical portion, which is very fairly written, and commendably free from bias and prejudice. Blame and praise are meted out with impartiality, and it is not difficult to perceive that the writer possesses a most refined and artistic taste, which he earnestly endeavours to inculcate or awaken in others. The history of the gardens of the pre-Roman era, of the Romans, of the Middle Ages, of the Renaissance, of the Baroque period, of the period of the French style, is briefly sketched, winding up with the modifications the latter underwent in different countries. The Dutch get the credit of having banished the last trace of Nature from gardens previous to the fall of the regular style of gardening and the origin of the landscape or natural style. The blemishes of Le Nôtre's creations, as well as their redeeming points, are pretty fully discussed. Speaking of the French style, he says:—"One general consequence of this was the building of pleasure castles and villas in the plains. The taste for natural beauty was lost to most people. The castles on the heights, where there were glorious views, were deserted in favour of the plains, where there was space for canals, ponds, and large gardens. Frequently they built in the midst of a Pine forest, so that they might be more completely shut in."

Naturally the part relating to the origin and development of real landscape gardening would interest an English reader, and we shall be pardoned for dwelling a little more fully on this, especially as a large share of honour is due to our countrymen on this score. Indeed, the name of "English style" is very generally used for it on the Continent. Our author fully recognises the praiseworthy position taken by the English people in initiating this reform, and we are obliged to agree with him in what he says (p. 83) respecting the more recent gardens at home. It runs thus:—"We have already enlarged upon the state of the gardens of Great Britain. So high a degree of excellence admits of few changes, and is not favourable to the development of talent. Where nearly everything is perfect, genius slumbers. England can, therefore, with the exception of Sir Joseph Paxton, the creator of the new Chatsworth and the architect of the Crystal Palace, produce no great name, although there were, and are still, many distinguished garden artists." Everybody will admit the justice of these remarks, and if the writer has erred, it is certainly on the side of leniency. A concise sketch is given of the development of the art in England, with mention of the principal actors, from Lord Bacon to Pope, Kent, Brown, and Chambers, &c. The English style has taken a firm root in Germany, and one of the most gigantic undertakings in the way of landscape gardening of recent times was commenced by Prince Pückler, at Muskau, in 1816. He spent some years in England, and made himself thoroughly acquainted with all of the most celebrated examples of landscape gardening; and after his return home he devoted nearly the whole of his life to beautifying his estates. Unfortunately his enthusiasm carried him too far, and in 1845 he was obliged to sell the now celebrated estate at Muskau in Lausitz. Some few years later he retired to his seat at Branitz, where he also made extensive alterations in the formation of lakes and hills. One ridge is 60 feet and another 70 feet high, but taken as a whole the park at Branitz exhibits many defects.

The comparatively recently laid out gardens of Paris are critically examined, and their merits and faults, according to the author's views, enumerated. The defects noted are—mighty changes of the ground where there was no necessity for them, executed for the purpose of producing something novel, but unsuited to the character of the place; grand ideas often run into insignificant details, because large areas have been handled as small gardens; attempts at exceptional conditions in Nature which are difficult or impossible to carry out; disregard of true (so-called picturesque) natural beauties, negligence of details in the plantations, misconception of the real beauties of flowering and foliage plants, &c. But although this appears rather a lengthy list of defects, much more is said in praise of the work recently executed by the French. On the other hand there is a great deal of truth in the remark that indiscriminate and servile imitations of these grand undertakings have resulted in many miserable failures. Jäger specially deprecates what Barrillet-Deschamps has executed in "England, the home of good taste in landscape gardening," and also in the Prater at Vienna. A paragraph on deviations in the style of gardens rendered necessary by climatal conditions and the mode of living of the inhabitants is, though brief, full of sound advice to the inexperienced gardener. It insists on fundamental rules being observed under all circumstances, and at the same time points out certain inevitable modifications in different temperate regions. Thus in most parts of the Continent it is impossible to have large expanses of green turf as in England or Scotland, and, on the other hand, there is a greater need of shade. The section headed "Considerations on the general attributes of a garden, and fundamental rules of their application," is divided into twelve paragraphs, entitled—1, size and its influence (apparent size); 2, situation (geographical and local); 3, unity, harmony, variety, novelty, contrast, relation, or comparison; 4, animation; 5, form and colour; 6, light and shade; 7, perspective or appearance; 8, reality, suitability, utility; 9, utilisation of the material at hand and the surroundings; 10, boundaries; 11, character and tenor; 12, the beautiful and picturesque. Under the section on the school and sphere of operations of the gardener as artist, practical designing and modelling is strongly recommended for winter evening work, and directions given how it may be profitably carried out. Travel, of course, is considered indispensable to complete the education. The second division is devoted to the consideration of the employment and form of the constructive materials of a garden, and it contains numerous passages that we should like to reproduce. Not but what most of it has been said and written and repeated over and over again, but from what we see every day offensive to good taste, these things cannot be too often brought forward in a journal devoted to the instruction of gardeners. There is one thing to be said, however: gardeners are by no means answerable for all the monstrosities and anomalies existing in the gardens under their care. To parody a celebrated character, some people have got lots of money and no taste. What Mr. Jäger has to say under the head of "fountains and waterfalls" might be studied with advantage by the authorities who have made the "finest site in Europe" ridiculous with their puny squirts. Fountains in public places should always be grand and monumental, says Jäger, and in all cases where they are introduced they should be in harmony, in size, character, &c., with their surroundings. Everybody will accept this maxim. But we do not agree with him respecting the introduction of mythological figures and water animals with water spouting or trickling from their mouths; and we would prefer the former to the latter, and these very sparingly used. Imitations of real animals vomiting water are not pretty to look at.

The second part, of about 200 pages, is on the carrying out and maintenance of gardens; and the third part, gardens and embellishments for particular purposes—as large public gardens, parks in cities, public squares and promenades, cemeteries, fruit parks, zoological and botanical gardens, school gardens, churchyards, hotel gardens, railway station gardens, &c. Already the limits of an ordinary notice have been exceeded, and yet there are many features of this book deserving of mention. The idea of an orchard planted for effect, or, as the author terms it, with some qualifications, a fruit park, though not new, has nowhere been fully carried out. Doubtless, with all the material at our disposal, an orchard might be made very attractive as well as useful. Chestnuts, Walnuts, Fig, Mulberry, and other trees associated with the commoner orchard trees, and Grape Vine, Berberry, &c., would afford as great a variety as could be wished. But, as our author says, such a park is neither an orchard nor a park, and is unsatisfactory, and only to be indulged in under exceptional conditions. *W. B. Hemsley.*

The Villa Garden.

Creepers and other Plants on Walls of Houses.—How rarely these are planted with anything like judgment. On a wall of spare dimensions against which some good, useful, but rather slow-growing creeper should be placed, such as the Escallonia, Pyracantha, Cistus, &c., or some that might be pruned back pretty hard at the end of the summer, such as Clematis, Rose, &c., one sees Wistaria sinensis, the common Virginian Creeper, Lonicera brachypoda, and other fast-growing subjects that require a world of attention to keep them snug and orderly in appearance. The Wistaria and Virginian Creeper are rare things for covering high and wide walls; but they are altogether too rampant and wild to be of service where only a small space of wall has to be hidden. Besides they are often put into shallow soils, in which they simply exist, and are never else than shabby.

It often happens that an entirely new house is taken, but with the garden altogether bare. A neighbouring jobbing gardener is called in to advise, and his intelligence rarely gets beyond Wistaria, Honeysuckle, Virginia Creeper, and Gloire de Dijon Rose. He plants these anywhere and everywhere, they are his stock plants, suitable for all positions, soils, and sizes of walls; and if they are not constantly kept nailed securely, they are blown to pieces by the wind. Only a few days ago we saw a house-front covered with a Virginian Creeper of many years' standing that had made a dense growth, but a violent gust of wind took it, and tore several yards of it from the wall, disfiguring the plant and leaving ugly gaps in the leafy garniture of the walls. The plant was so torn by the violence of the wind that no nailing up would make good the breaches, and it was found best to pull it down altogether. The common Virginian Creeper should not be planted against ordinary sized dwellings. True, it is an old favourite, and it is one of the most rapid agents in converting bare brick walls into masses of verdure, but it is unsuitable for our purpose for the reasons above set forth. And how much better it is to plant Ampelopsis Veitchii, or A. Roylii, if there is any real difference between them. Here we get an elegant dark and somewhat cut foliage, which clings to the wall by the aid of very powerful vegetable fangs or suckers put forth by the branches as they find their way about the walls. It is certainly not so luxuriant in growth as the common American species, but when established it soon covers a good space of wall, and gains in strength as its energies are multiplied. We saw this on the north side of a country residence a few days ago, and being well established in suitable soil it was making headway, and gradually covering the whole side of the house. Of other good things to go on a restricted space of wall we may mention Berberidopsis corallina, a member of the Berberry family—a climbing shrub with pretty crimson flowers, but rather tender; and, as it requires some protection during winter, should be on a sunny south wall.

Berberis Darwinii is a vigorous grower, bearing an abundance of dark apricot-coloured blossoms, but it can be cut back as desired, and but little nailing is required. The bright coloured flowers are succeeded by an abundance of plum-coloured berries, and the evergreen foliage is quite elegant in appearance. Berberis dulcis, with its very pretty nodding yellow flowers, may be used in the same way. The Clematises are so well known that little description is necessary, but for flowering in early spring C. Standishii and Miss Bateman should be planted, and for summer blooming Jackmanni, rubella, Madame Grangé, and lanuginosa nivea.

On one Villa residence in a good suburban road near London, lined on either side with a good class of residences, one house has growing on its north-east corner a good plant of Ceanothus dentatus, and, though many of the houses are covered more or less with flowering plants, the one with the Ceanothus tops the whole of them in real effectiveness when the plant is in full bloom. At all times it has a pleasant evergreen foliage, but when the branches are radiant with the pretty lilac flowers the sight is one of special attractiveness. C. rigidus is perhaps one of the best for the purpose, and C. Gloire de Versailles is a remarkably fine subject; there is a charm of novelty about them, and it is a little monotonous to observe a row of Villa residences having nearly the self-same climbing plants placed against the walls. The common Gum Cistus makes a capital plant to go against the walls of a house; it is of slow growth and always evergreen, and the large white flowers with the handsome purple blotches in the centre are very handsome indeed; true, they do not last long, but they are freely produced. The common Gum Cistus does well in a cold and exposed spot, and is not over fastidious in the matter of soil. We saw the other day a piece of low wall against which was a good plant of the common Gum Cistus, and a well established plant of Fuchsia Riccartoni; and at one end a plant of Clematis Jackmanni, and at the other one of C. rubella. The wall not being more than 5 feet in height, the Clematises are cut down close to the ground every year, and when they commence to grow in spring the leading shoots are pinched back about twice. A great profusion of bloom results. There are spaces between the plants which are filled up during summer with plants of yellow and scarlet Tropæolum Lobbianum, and there is thus obtained a succession of flowers during a good portion of the summer. This combination may serve to suggest others. There are also other things besides those named suitable for planting against walls.

And it too often happens that these subjects are imperfectly planted, and they fail in consequence. Instead of remembering that these plants have to perform a service extending over several years, and providing the necessary sustenance in the way of good soil, a hole is dug out and the plants placed in the soil without much regard to its fitness. This is a great mistake. Then the plants often get almost dried up for want of water in hot weather. It is often forgotten that plants against walls require more water than those planted in the open ground, and when it is not forthcoming the plants take on a wo'ul appearance. The great danger is want of moisture at the roots during the time the plants are establishing themselves. When they become thoroughly set in the soil, and the roots have found their way beyond the bounds of the hole in which they were placed, their safety from harm through drought is more certainly assured.

CURRANT AND SULTANA CULTURE AT PATRAS AND SMYRNA.

THE following notes on the culture and history of Currants and Sultanas were collected during a recent tour in the Levant. I am indebted for most of the statistical facts to Mr. Wood, Her Majesty's Consul at Patras, and to my friend, Mr. R. Barker, of Smyrna. Respecting the origin of these two forms of seedless Grapes, or the existence of sub-varieties, I could obtain little information. The Patras Currant was, however, grown as far back as the reign of Queen Elizabeth, when Sir Walter Raleigh is said to have had a sort of monopoly of its importation to this country. Neither the Patras Currant nor the Sultana Raisin appear to be intrinsically very distinct from numberless other varieties of small Grapes; their special seedless character, which is corelative with the diminished size of the berry, may have originally been due to local circumstances of soil and climate, producing partially abortive blossoms and the absence of seed. The pollen of the Patras Currant is, however, fertile. I am informed by Mr. Barron, that in experiments at Chiswick made in crossing Black Hamburghs with the pollen of the Patras Currant and other seedless Grapes, hybrids were readily produced, partaking to some extent of the seedless and other characters of the male parent, but crosses could not be obtained in the other direction. The seedless character is by no means stable, as the Currant vine of Patras (Σταφίδα of the modern Greeks) frequently produces here and there a seed-bearing berry or small Grape in the bunches of seedless Currants; indeed, in some localities, the tendency to reversion to the Grape is very marked, and I am informed that an attempt to introduce the culture of Currants into the neighbourhood of Leghorn failed from the tendency of the plant in three or four years to produce a seed-bearing Grape.

The geographical range of the successful culture of the Currant vine is very limited. Patras is its metropolis, and of the 86,500 tons exported from Greece in 1876, 71,000 tons were the produce of the Morea, including a few grown in the neighbourhood of Mesolonghi on the north side of the Gulf of Patras, and the balance of 15,500 tons was exported from the Southern Ionian Isles, including Zante and Cephalonia, a few being also grown in Santa Maura; whilst Corfu, which is within sight, produces none at all, though the Grape is successfully cultivated there for wine.

Again, the quality and value of the Currants grown along the north coast of the Morea varies to some extent. Those produced in the district including Patras, Vostizza, and Corinth, command the highest price, and the quality falls off south-west from Patras towards Kalamata. The general production of Currants is increasing, the exports of 1876 having been greater than in any previous year. The crop was, however, exceptionally fine, as well as that of almost all other agricultural produce in Greece.

The produce of the several Currant-producing districts fluctuates; the export from the Ionian Islands is said to be declining, Olive culture gradually replacing that of the Currant vine, but the decrease is more than made up by the enlarged production in the Morea. The falling off in Zante is supposed to be partly due to increased cost of culture incidental to the Vine disease, but this would also apply to the Morea, where the crop is increasing; and the diminished exports from the Ionian Islands may perhaps be due to the excessive export dues, as the *ad valorem* duty of 19½ per cent. formerly in force under the British protectorate is still kept up, whilst on the mainland the fiscal imposition amounts to but 16*s.* a ton as "dimes" or Government tithe plus an export duty of 1*s.* 6*d.* a ton. The cultivation of the Olive and Currant vine in the same district also clash, as the labour demands of the two crops occur simultaneously, and any slight local advantage to the one over the other would tend to a gradual replacement.

The produce, gradually increasing on an average of years, fluctuates much with the season; in 1853—one of the years of the most severe attack of the oidium—the exports fell off to 2700 tons, the reduced supply coming mainly from Corinth. Since 1853 the oidium has been gradually mastered, and the production has progressively increased to over 86,000 tons per annum.

The Currant-producing district consists of a narrow belt of country bordering the coast, the vineyards for the most part are within 100 or 150 feet of the sea level, and the general limit of cultivation is lower than that of the Grape, rarely exceeding 400 feet in altitude.

CULTURE.

In travelling through the Vine districts of Europe the great variety in the methods of culture and training cannot but arrest the notice of the tourist, and many of the variations must be more a matter of habit or fashion than necessitated by local circumstances. The cultivation of the Patras Currant-vine includes several specialities that I have not observed elsewhere, and presents in the best cared-for vineyards unusual finish and detail.

Propagation is effected by long cuttings buried nearly a yard where the soil is sufficiently deep, or in shallow soil they are laid in horizontally for about 2 feet and then turned up. The cuttings are supposed to root at every joint, and the depth to which they are inserted is for the purpose of reaching the moist subsoil in times of drought. Propagation is also carried on by grafting on other varieties of the vine.

The vines are planted in rows about 6 feet apart, a single shoot being trained vertically to a temporary stake about 3 feet high; this ultimately forms the permanent stock, and in a few years becomes sufficiently strong to be self-supporting. From its summit the young wood, consisting of six or seven shoots radiates, and each of these is headed in between December and February to four or five eyes, so that the stock has about thirty fruit-bearing points, producing collectively from fifty to ninety bunches.

The new growth radiates umbrella-fashion from the summit of the stock to the ground, and the only training required by this method of culture is the insertion of an occasional prop or support under the heavier fruit-bearing shoots.

Young plants commence to fruit about the third or fourth year, and produce a full crop about the seventh year. The ultimate cost of this system of training after the permanent stocks have become self-supporting must be much less than that of the staking of the annual shoots of the Vine from a low stool pursued in most of the French vineyards. In the best cultivated Currant vineyards at Patras extreme neatness of detail and high culture prevail. After the ripening of the year's wood in the late autumn or early winter the roots of the vine are partially bared, the soil being heaped up between the rows, and after a thorough dressing with goat's manure it is levelled down early in April. One of the special points in the culture pursued at Patras is the "ringing" or incision of the bark, which is done once a year by a small sickle-like knife specially made for the purpose. The process of dividing the bark was introduced in the year 1851, and is said to much increase the weight of the fruit, theoretically from the downward flow of sap being arrested and thrown into the berries. In the culture of Smyrna Sultanas this process was unpractised up to the time of my visit, but will, I believe, be tried as an experiment.

I was surprised at the gross growth of the Currant vine produced by the liberal culture pursued at Patras. The long shoots are nipped back at the end of June, and the redundant foliage reduced by the removal of part of the leaves two or three times during the period of growth.

The harvest commences about July 25, followed by successive gatherings extending over three or four weeks, the fruit on the secondary shoots maturing somewhat later than the main crop. The drying occupies from ten to twelve days, and the berries commence separating from the bunches in six or seven days. The former process was to spread them out on a bare plot of ground, specially smoothed and flattened for the purpose. But a cleaner method is now taking its place, and in some of the vineyards the drying is effected in wooden trays 6 feet long by 3 feet wide, sufficiently deep for a single layer of bunches. Much economy of labour is thus effected in the handling. The fruit is kept clean and free from grit and stones, and in the event of wet weather during the harvest the trays of fruit can be readily gathered up in piles over which light wooden roofs are placed. The stalks are cleaned from the fruit by winnowing.

PRODUCE AND VALUE.

The weight of the crop varies considerably. In some vineyards it only reaches from 300 lb. to 400 lb. per *strema*, equivalent to from 900 lb. to 1200 lb. per acre, in others it reaches to from 900 lb. to 1400 lb. per *strema*, equivalent to from 32 cwt. to 37 cwt. per acre, of dried fruit. In 1876 12 acres in the neighbourhood of Patras produced 15 tons of Currants, or about 25 cwt. per acre, worth at Patras about £20 per ton.

The value also varies considerably both with the quality and the season, ranging from 15*s.* or 17*s.* 6*d.* to 25*s.* per cwt. free on board at Patras. In the years 1851, 1852, and 1853, when the crop was almost wholly destroyed by the oidium, the dried fruit realised as much as from 60*s.* to 70*s.* per cwt.

The value of the year's crop generally bears a large proportion to the actual cost of culture, and as in our Hop gardens, the result is speculative. As an example, from a holding of 12 acres at Patras in 1876, the crop of 15 tons realised about £300, on which the expenses of culture and harvesting were but £85; but this was an exceptionally good year, and against the balance of £215 gross profit, interest on capital and a share of the preliminary expenses of establishing the vineyard and the loss on the first four

or five unproductive years would have to be deducted. The wages of both men and women during the harvest range from 1*s.* 10*d.* to 2*s.* 2*d.* a day, and at other times the women receive about 8*d.* a day.

Diseases of the Currant Vine.

The oidium, which scourged the vineyards of Madeira and parts of Europe five-and-twenty years ago, fell with extreme severity on the Currant vines of Patras and the Ionian Islands. It reduced the crops in the years 1851, 1852, and 1853 to less than a tithe of the original produce, the results in 1851 and 1853 being exceptionally disastrous. In 1853 the exports diminished to 2700 tons, most of which came from Corinth, and the total crop was absolutely destroyed with the exception of the fruit on a few of the lowest branches which happened to come in contact with the ground. The process of sulphuring has gradually stamped out the disease, and the exports since 1853 have gone on progressively increasing up to the present time, last year's exports of 86,500 tons never having been previously exceeded. The process of sulphuring is systematically conducted. The first application is made on the young shoots, sulphur is again applied to the young fruit, and for a third time before ripening when the fruit is nearly full grown.

The vines also suffer from the occasional attack of a small caterpillar, and in the Island of Zante especially they are liable to injury by a small beetle known under the local name of "scathari" which attacks the buds. They reach the vine from the ground, and their approach is arrested by tying a bunch of hay round the stem.

"Sultanas" or "Smyrnas."

The small yellow aromatic Grape, called Zekirzic-zidico by the Turks, appears to have been known in the neighbourhood of Smyrna between 200 and 300 years. Apart from the fact of its being seedless it possesses no marked character to distinguish it from several other varieties of small yellow Grapes, and I could not ascertain that any sub-varieties of it are known.

The general character of the cultivation is similar to that of the Greek Currant, though the Smyrna vineyards are scarcely so neat in detail as the Currant vineyards of Patras. The Vines are planted in rows 6 or 7 feet apart at intervals of 3 or 4 feet, but the stocks are lower than those of the Patras Currant, and instead of being trained to a single leader they form an irregular branching stump from 1 foot to 2½ feet in height, the young wood being headed in to two or three eyes. The Vines commence bearing the third year from cuttings, and come into full bearing between the fourth and sixth years. No training is needed except the placing of an occasional prop under the heavier fruit-bearing branches.

The vine is grown almost exclusively on the hippurite limestone about Smyrna, up to a height of about 400 feet above the sea. This consists of a white "brashy" rock, intermixed on the weathered surface with stiff, ochre-coloured loam. The ground is prepared by trenching from 2 to 3 feet deep; the larger rocks are either carried away or used for boundary walls, the smaller "brash" placed in the bottom, and the loam intermixed with small stones got to the surface. The vine shoots, after developing the bunches of fruit, are pinched-in in May, which produces a secondary growth and a rather later crop of smaller fruit. The small, useless shoots are pruned out during the summer, but there is no other pruning till the ripe wood is headed in to two or three eyes in the winter. The soil is bared from the roots, and heaped up in the late autumn, and a dressing of goat or horse manure applied every other year. The soil is levelled down again in January.

The harvest commences about the middle of July, and occupies about a month, the fruit from the laterals succeeding that on the main shoots. The bunches, on being gathered, are dipped in a solution of wood-ashes to which a little oil has been added. This is said to assist and expedite the drying, which is done on the ground, and occupies from three to six or seven days, after which the fruit is shaken off and packed in drums.

The Sultana does not seem to have suffered so severely from the oidium (= *balyk*, Turkish) as the Patras Currant, and it is also said to be less liable to attack than the Muscatel vine. The disease seems to be dying out, its virulence is said to be arrested by severe winters, but it has been noticed that a long succession of southerly winds develope the attack. An application of sulphur as a preventive is made when the lateral shoots are about an inch long, and again when the fruit is forming.

Most of the vineyards are in the hands of small proprietors; some are absolute freeholds, and others are held under various forms of tenure. They are not found remunerative as an investment when carried on with paid labour, and for the most part they merely serve as a sort of small savings bank for the spare labour of the working people.

As a crop Sultanas are eminently speculative, the produce fluctuating with the season and the price also with the crop, and after two or three productive years the value falls below a remunerative rate. They are more costly to cultivate than Currants, and cannot compete with them at equivalent values for general consumption. The demand is therefore limited at remunerative rates. A few years ago an excessive production so lowered the price as to lead to the rooting up of a great extent of the vineyards. This was carried to excess, and was followed by a reactionary rise in price, which has induced replanting.

The present production of the Smyrna district is about 10,000 tons per annum, and a few are also grown in the neighbourhood of Patras, but the present local price of from 25*s.* to 35*s.* per cwt. is not looked upon as remunerative. An acre contains about 2000 vines, and the produce of dry Sultanas varies from 7 cwt. up to 30 cwt. per acre, in some cases rather more. In common with the other agricultural crops of Turkey the Sultana is subject to a local tithe of from 10 to 12 per cent. on the value of the crop as it stands, and the only other fiscal charge is an *ad valorem* duty of 1 per cent. on export. *George Maw, F.L.S., Benthall Hall, Broseley.*

MR. CANNELL'S NURSERY.

Mr. Cannell's nursery at Swanley, in Kent, promises to be one of the most important manufactories of soft-wooded plants in the country. It is

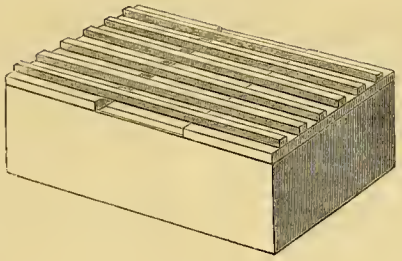


Fig. 81.—Packet-post plant case.

most conveniently situated close to the Swanley Junction of the London, Chatham, and Dover Railway, and a siding runs into the nursery. The ground, which is about 17 acres in extent, forms two slopes facing respectively north-west and south-east, abutting against the high railway embankment, which forms a most welcome shelter and shade on the south-west.

In the valley between the slopes Mr. Cannell has commenced building his glass-houses, of which some half a dozen, with steep span-roofs, and each 100 feet long, are built so close together that an asphalted pathway, level with the wall-plate, has been made between each house; these are found to afford much facility for painting, repairs, shading, &c., and also forms gutters to conduct the roof-water into capacious tanks which extend beneath the party walls from the pathway inside one house to that within the next adjoining. The houses are of plain and simple construction, but well suited for growing small stock, in which Mr. Cannell principally works, and plants do extremely well in them in consequence of the great amount of light to which they are exposed. In houses of this description it is very common to see the wall-plates and lower parts of the sashes speedily rotting away, while the upper parts remain quite sound. Mr. Cannell prevents this by painting this lower portion of the woodwork with pitch, which must act very efficiently as a preservative, and does no harm whatever to the plants which cannot be obviated by a subsequent coating of whitewash. Adjoining these houses are eight 100-feet lengths of heated pits, each warmed by a circuit of pipes placed up close to the glass, "to keep the frost from getting in," as Mr. Cannell puts it, and intended also to keep the atmosphere dry and comfortable during winter. In these pits the stock of greenhouse plants of all kinds, as Cyclamens, Cinerarias, Pelargoniums, Chinese Primroses, and hosts of other popular flowers are housed; while in some, by the aid of this heat, the plants are kept growing on and blossoming all through the winter, furnishing useful supplies of cut flowers. Pelargoniums, Fuchsias, and Petunias are prominent amongst the contents of the glass-houses, and we also saw some neatly grown well bloomed Achimenes and Lantanas, A. longiflora major amongst the former, being particularly telling.

The intention is to build a similar set of houses on the opposite side of a central pathway, and to connect these by an enclosed and heated covered way, adapted also for the growth of larger plants, and leading from a seed-shop at the roadside, so that all the glass-houses can be reached and traversed without exposure to the weather. Mr. Cannell is a man of energy, and we have no doubt that, if favoured by fortune, this expansive idea will be carried out. The heating is, of course, done by the Victoria Circulator, which is said to be found very efficient.

The whole of the ground is not yet brought into nursery cultivation, and some of that which is broken up is not filled with flowers, but as fast as it can be done—and forming a nursery of choice flowers out of an open cornfield is no easy work—quarter after quarter is filled, and in the height of the season this display must remind one somewhat of the blaze of blossoms seen in Messrs. Carter & Co.'s annual grounds, or in Mr. Waterer's acres of Rhododendrons and Azaleas. Pelargoniums were in grand flower in the open beds at the time of our visit, so were Phloxes, Lobelias, Calceolarias, Dahlias, Gladioli, Pansies, and other popular subjects, the display of the former being then the most attractive. A bed of the Bluebell Viola was also a perfect sheet of rich bluish-purple; this variety had stood through the hot dry weather of June, and was still gorgeous, more than a match for the Purple King Verbena, now that Verbenas have become so fickle of habit.

A fine collection of Chrysanthemums is cultivated at Swanley, and a sloping bank of considerable extent is devoted to a collection of permanent plants of some 400 sorts, which are grown in order that purchasers may, if the season permits, see them in flower. Some varieties of the dwarf early-blooming race we found in full bloom, and these would be very useful in many gardens, if grown for mid-season plants, to plunge in the place of any subjects which might be going off. Of these we particularly noted Madame Domage, which grows about 1 foot high and produces a dense mass of flower-heads, which are of medium size, and a bright pale yellow colour; Scarlet Gem, of similar habit, has flower heads of a bronzy red colour; Madame Picool is a purplish-rose; and Perpetual-flowered White is a pleasing blush variety. These are all desirable plants from the point of view just indicated.

Among the Pelargoniums which were particularly fine the following may be mentioned:—Arago, with bright green zonate leaves, and very large close trusses of finely shaped large pale cerise-scarlet flowers, in the way of Cannell's Dwarf, but superior to it; Didon, with bright green zonate leaves, and finely formed large orange-scarlet flowers in bold trusses; John Gibbons, plain green leaves, and very large brilliant glowing scarlet flowers, of large size and fine form; Rev. A. Atkinson, with zonate leaves of a dull darkish green, and very large, finely-shaped flowers of a rich glowing crimson-scarlet. Vanessa, a fine salmon, with a flush of rose, was very beautiful, the trusses being fine and abundant, and the colour distinct and striking; the leaf is dull green and zonate: singularly enough this variety met with no acceptance in the Chiswick trials. White Clipper was one of the best whites, and Snowdon was also flowering well. Master Christine was decidedly the most floriferous and effective of the pinks. Nemesis, a very strong grower with zonate leaves, had immense trusses of large bright scarlet very richly coloured flowers; the trusses have some of them measured as much as 8 inches across, and no doubt it is one of the finest of the large-growing varieties. Mrs. Turner produces splendid trusses of the brightest pink. Amongst the doubles Madame Thibaut, one of the rosy pinks, is a remarkably free bloomer, both indoors and out, and may be con-

sidered as one of the very best. Eugène Bandouin was another meritorious pink, but having a flash of deeper red than Madame Thibaut.

A few other outdoor subjects which particularly struck us as worthy of notice were Calceolaria Little Beauty, a variety of herbaceous habit, with arachnoid leaves and a corymbose inflorescence of very rich dark velvety maroon flowers, almost black; a very rich looking variety. Lobelia Brighton was the best of all the bedding sorts, bright blue, compact, and dwarf in habit; none of the others approached this for effectiveness. Defiance is a variety of a reddish purple hue, too deep to call a lilac, very compact in growth and free, and the best by far of this rosy tint which has come under our notice. Another good subject for hardy bedding arrangements is the Cineraria ceratophylla, a plant in the way of the old Dusty Miller, Cineraria maritima, but more compact in habit, and much more elegant in appearance from the leaves being more finely divided.

In the houses a great blaze was still made with Zonal Pelargoniums, although these were past their best. Mr. Cannell is, however, determined to have a supply of flowers through the winter, and for this purpose a set of plants are under training. The fine varieties here grown are far too numerous to mention. We may, however, refer to M. Sisley's fine novelty, named Dr. Denny, one of the most lovely varieties yet raised, in which the lower petals are of a rich glowing magenta, and the two upper ones have each a distinct blotch of scarlet on the lower half, producing a wondrously rich effect. A salmon-coloured variety, Lady Eva Campbell, is far in advance in its colour, and a most lovely pot-plant; unfortunately few of the varieties of this colour do well in the open beds, at least about London, though both these and the scarlets appear to flower better in the calcareous loam and pure air of Swanley. New Life was flowering very freely, and proving quite constant to its striped colouration; in growth and free-flowering properties it is the exact counterpart of Vesuvius, from which, like Wonderful, it is a sport.

Fuchsias were rather past their best, but enough remained to show that Bland's Striped, with a much expanded purple and rose corolla, was a very showy sort; that Father Ignatius and Model amongst the sorts with purple corollas; Black Prince, with a rosy corolla; and Cannell's Gem and Covent Garden White, amongst those with white tubes and sepals, were some of the best and most useful decorative sorts. Aurora superba, salmon coloured, with orange-red corolla, the flower showing a decided flush of yellow, is also a very striking variety.

We noticed a charming variety of Lantana named Pluie d'Or among the novelties of the season. This will be sure to be a favourite with cultivators, as it is of the fine habit of L. crocea, with deep orange-yellow flowers of a pure clear unchanging colour, very rich looking in tint and tone. Ageratum Lady Jane, also new, is the best of its group, being of a better colour with fuller flowers than its rivals. Coleus multicolor is a plant to be looked after; it has small deeply-cut leaves, which are blotched in a varying manner with pink and bronze.

The millions of seedling plants of such subjects as Chinese Primulas, Calceolarias, Cyclamens, &c., raised here are quite bewildering, but Mr. Cannell does an extensive business amongst these small subjects through the post-office, the demand not being limited to this country, but extending to the Continent, to America, and to India. Those for India are sent out in very simple but very efficient plant cases, of which the annexed sketch (fig. 81, p. 405) is a representation. It consists of a deal box 2 feet by 1 foot, one-third of the lid being of rough plate glass, fastened down with india-rubber, and the whole protected with wooden bars, so that the box can be tossed about without it or its contents sustaining any damage.

Home Correspondence.

Lilium cordifolium.—Mr. Fitch describes the Kew plant as having "leaves commencing a few inches from the ground, gradually decreasing in size upwards till they pass into bracts." The dried remains of its stem are now before me, and in my judgment they quite confirm Mr. Max Leichtlin's statements. The entire height of the stem is 26 inches. The first fully developed leaf-scar is exactly 12 inches from the base of the stem, and is about half an inch broad. Six inches below this is a small round scar about ½ inch broad, which may have given origin to a very small leaf, which must soon have withered. In the 4 inches above the second well-developed scar are crowded the insertion of no less than six leaves. This exactly agrees with Mr. Max Leichtlin's statement that "the stalk is not leafy, but rises bare to the height of 1 to 2 feet, and then six to eight leaves appear in a sort of rosette. The following are exact measurements of the Kew specimen:—1st leaf (?), 6 in.; 2d leaf, 12 in.; 3d leaf, 14 in.; 4th leaf, 15 in.; 5th leaf, 15¾ in.; 6th, 16½ in.; 7th leaf, 17½ in.; 8th leaf, 18 in.; 9th leaf, 19 in.; 1st flower, 20 in. *W. T. Thiselton Dyer.*

Roses in Autumn.—

"There grows a bonnie Brier bush
In oor kaleyard."

Towering through a hole in my greenhouse is a Maréchal Niel Rose crowded with flowers, and the arches of the kaleyard are radiant with Rose blossoms. *P. Barr.*

Names of English Plants.—The reference to the origin and spelling of the name of the Woodruffe, alluded to in Mr. Tuckwell's pleasant article in the *Gardeners' Chronicle*, September 22, p. 363, has recalled to my mind a jingling rhyme in which the ancient spelling of the name is given, and which your contemporary, *Nature*, of last week, has given in an incorrect form. It is as follows:—

"Double *u*, double *o*, double *d*, *e*,
R, *o*, double *u*, double *f*, *e*;

i.e., Woodderouffe. Does not this orthography militate against the derivation from *roue*, which has been suggested? *I. O. Westwood, Oxford, Sept.* 23.

The International Potato Show.—I beg permission to say that a truly "international" character will be given to the third annual Potato exhibition, to be held next week, inasmuch as that enterprising firm, the Messrs. Bliss, of New York, are sending a large number of dishes of tubers for competition in several classes. This will be the first opportunity offered to home growers to compare American exhibition samples with those of their own production. I am authorised to say that in consequence of strong representations having been made to the committee by their trade supporters generally, the obnoxious practice of fixing numbers of large cards to various dishes of Potatos in all parts of the show, stating that these were grown from seed supplied by such a firm will be rigorously put down; a resolution having been passed empowering the officials to at once remove any such placards. The promoters are desirous that the exhibition should be made the medium solely of promoting the cultivation of and popularising the Potato, and not that it should degenerate into a mere advertising medium. In spite of the great prevalence of the Potato disease it is very satisfactory to hear from many directions that a fine representative collection of tubers is expected, and there is no present indication of any falling off either in quality or quantity. *One of the Committee.*

Strawberries. — On reading my friend Mr. Harrison Weir's remarks (p. 373) on his short crop from Vicomtesse Héricart de Thury it struck me that our experience was the reverse of his, so I asked the gardener which Strawberry bore best this year; his answer was "The Vicomtesse—it usually does." The name puzzles some gardeners; a neighbour lately told me that his gardener thought highly of "Count Harcourt"—not a very bad shot. *George F. Wilson, Heatherbank, Weybridge.*

Pumpkin Preserve.—The partial failure of the Apple crop, and the great scarcity of Plums and other fruit suitable for making preserves to use during the winter, is a source of concern to many, and they will therefore be glad to learn that they may fill their jam-pots with an excellent substitute made from the Mammoth Gourd or any ripe Vegetable Marrows. The former, however, is greatly to be preferred on account of being more fruity and the flesh of a much better colour, equalling in the latter respect that of the Apricot, with which it is said to be used largely for the purpose of adulteration. For the past three years, Pumpkin preserve has been one of the principal sweets used in my house, and is greatly relished by us all, so much so that I would rather have it to any made from common garden fruit. As an adjunct to boiled rice, or plain puddings made from that grain, it is simply delicious, as it is likewise for tartlets, or indeed any of the many uses to which preserves are put. To make good flavoured jam that will keep, the Pumpkin should be full grown and perfectly mature, a condition they are generally in by the end of September. When quite ripe the skin of the Mammoth Gourd assumes a warm reddish yellow hue, and the flesh when cut into is almost as solid as a Swede Turnip, to the colour and texture of which it bears a close resemblance. In preparing the fruit for preserving, it should be cut up into thick slices for the purpose of being peeled, and after that is done and any soft spongy part in which the seed is embedded taken away, the solid portion remaining should then be cut in square pieces about the size of dice and weighed. To every pound of the Pumpkin add three-quarters of a pound of lump sugar, and for flavouring divide either an Orange or a Lemon and boil together for from one hour to an hour and a half to evaporate the watery matter and get the jam to stiffen properly, keeping well stirred to prevent it sticking to the bottom and becoming burnt, which from the time it has to boil it is liable to do. One Orange or a Lemon is sufficient for 5 or 6 lb. of fruit; but more or less may be used according to taste, or a few drops of essence of ginger or any other flavouring matter that happens to suit the palates of those likely to consume it. In using either Oranges or Lemons, they should simply be cut in halves, that they may readily be taken out before putting the preserve in jars; otherwise, if mixed up in it, the rind is too strong to be pleasant. Considering the great ease with which Pumpkins may be grown in positions that are quite useless for other purposes, and their exceeding value when, in seasons like the present, other fruits are not to be had, the wonder is that their merits have been so long overlooked; for, except in cottage gardens, it is very rare they are seen, and even there, those cultivated are of little value compared with the Mammoth Gourd, which is not only large and handsome, but is very superior to any of the others. There are few places that have not offensive-looking rubbish-heaps or unsightly objects of some kind or other to hide, and this cannot be done in a more profitable way than by covering it with the fast-growing bine and handsome foliage of this noble-looking Pumpkin, the fruit of which, from its rich colour and enormous size, is very striking and sure to attract notice. The largest I ever saw was grown on a heap of garden refuse containing a quantity of decomposing stumps of Broccoli, the mowings of grass from the lawn, weeds, and other gatherings that, from the large bulk they formed, generated a gentle and lasting heat which just suited the plants, as they grew with great rapidity and set fruit early; and as there was never any lack of moisture in this mass of vegetable matter they were not checked in their swelling, the rate of which was astonishing and could be noted from day to day. It is not long since that Rhubarb was little cared for and could scarcely be sold at any price, but now it is looked on as indispensable and one of the most wholesome and profitable garden products grown. If the public once find out the value of Pumpkins as an article of diet during the winter, either for using in soups, pies, or as a preserve, the demand is sure to be great, and it may therefore be worth while for those who have waste places, such as the roofs of sheds or piggeries, to grow plants over them, which will serve as shade and add handsomely to the market returns, in which, unfortunately for fruit growers, there has this year been a sad falling off. *S. W.*

The Golden Queen Grape at the Crystal Palace Show.—In the *Gardeners' Chronicle* for the week ending September 1 of the current year, the following announcement appeared, namely:—"The prizes of £5, £2 and £1, offered by J. R. Pearson, of Chilwell, for the best single bunch of his new Grape, Golden Queen, will be competed for at the Crystal Palace Show, September 21 and 22. The awards will be made by the Crystal Palace judges." This notification induced me, "amongst others," to send to the above-named show the best and ripest bunch of this kind of Grape which I possessed. To my surprise, on the return of my representative from the show he handed me a card on which was written, "Prizes withheld: not in sufficiently good condition." As I understand the advertisement, no special conditions are stipulated; and, therefore, I hold that it was an act of injustice to withold such prizes, unless the donor of them had made some reservation, which has not been published. I should like to know if this be so through the medium of this publication, because others, like myself, are interested. *G. T. Miles, Wycombe Abbey.*

Fungus Attacking Wellingtonias.—At a place that I am arranging in Sussex we took for a portion of the pleasure-ground a site which had previously been covered with large timber trees. These, however, had been cut down for some years—*i.e.*, sawn off at the surface of the ground, but the stumps had not been grubbed up. This was, however, done in the preparation of the ground, and all the large roots extracted. Beech was the principal timber tree previously grown upon the land. The soil is a very light sandy loam, of a dark colour, and with a goodly smattering of ironstone in it. On a flat portion of this ground we planted an avenue of trees, consisting of Wellingtonia gigantea and Abies Nordmanniana, placed alternately. Previous to planting the ground

was well trenched to a diameter of 12 feet and 2 feet 6 inches deep for every tree, and every vestige of the old roots was carefully removed, a good quantity of fresh soil being mixed with the old. The trees were then planted, and have grown vigorously for two successive seasons, some of them being now from 8 feet to 10 feet high, and exhibiting the rudest health. But alas! this state of things was not long to continue; three or four of the Wellingtonias began to show a sickly appearance, and on my attention being drawn to it, I examined them, and on removing a portion of the earth I found the stem close to the ground covered with the mycelium of some fungus. I had one of the worst affected dug up, and found that all the old roots were more or less affected in the same manner as the stem, although I did not observe any trace of it in the soil, and the young roots appeared quite healthy. The stem was affected all round, and to about 6 inches in height. Knowing that such cases had occurred before after planting young trees on the site of old plantations I was doubly careful in removing the old roots and preparing for the new trees. The Abies Nordmanniana is not at all affected, and all kinds of trees and shrubs usual in a pleasure-ground have been planted on the site, about 7 acres in extent, and are in a thriving state, not a single plant having been found to be affected with the fungus excepting the Wellingtonias. We have many fine Wellingtonias not yet affected, or at least showing no signs of it, although they are all undergoing a careful examination. I shall be glad if you will print this, in the hope that some of your many readers may have had similar experience, and found out an effectual remedy. *George Eyles.*

Tritonia Macowani.—Herr Max Leichtlin's statement (recorded by Mr. Barr in the *Gardeners' Chronicle*, p. 374) respecting the hardiness of this plant is indisputable. We have it now blooming freely, with vigorous growth, having been planted out in a rather flat bed more than twelve months. The height of the scape is from 1½ to 2 feet. It is a most desirable species. *Wm. Rollisson & Sons, The Nurseries, Tooting.*

—— Mr. Barr's note respecting the decorative value of this comparatively new hardy plant is timely, as those who may wish to possess it can now see it in flower. A recent figure of the flower gives a very poor idea of the size of the spike, and its form and beauty, as in the plate the flower is represented almost as an inverted cone, whereas it is really the reverse, and differs but slightly from the spikes of that well-known kind, Tritonia Uvaria. Here T. Macowani is doing well in the open ground; small bulbs, having thrown up flowers in the summer, have now fine heads of bloom, and a third is just coming up. I think it will prove as hardy as Uvaria, and when clumps are well established not much less robust. It will make a charming border plant, and the hue of colour of the flowers, if less striking than is that of T. Uvaria, is softer and far more pleasing. *A. Dean, Bedfont.*

—— I am glad that Mr. Barr has called attention (p. 374) to this beautiful plant, one of the early specimens, introduced by Mr. Green, has been in our rockwork for more than two years. It is now in bloom and much admired. The delicacy of its colour and its size and shape adapt it for situations unsuited for the grand old red-hot poker. *George F. Wilson, Heatherbank, Weybridge.*

Pinning Dahlias. — Referring to your remarks upon the Dahlia Baron Taunton at the Alexandra Palace, permit me to correct two errors. First, you infer it was in the class for forty-eight, open; on the contrary, it was in my 1st prize stand of twenty-four, amateur. Second, you say "a pin was put through the eye to lengthen the stem." I now send you a counterpart of the wire used for the stem, and beg to say the pin story is without foundation. I need hardly add it is the common practice to mount blooms that break off on wooden pegs, and I have simply adopted wire through the natural stem instead. The judges only required momentarily to examine the flower after their attention had been drawn to it by (I believe) a less fortunate exhibitor, and their "anxiety" was of the shortest duration. *S. Dobrée, The Priory, Wellington, Somerset.* [By the term "pin" our reporter meant the piece of wire used to mount the bloom broken from the stem, and as on examination it proved to be longer than the severed stem of the flower, the remark was correct in point of fact. The difference in the phraseology is of but small moment. The head of the wire in the centre of the flower had the appearance of that of a pin, and it was distinctly visible to the eye, and the attention of the judges was properly called to its presence. Eds.]

Colchicums.—At the present time, as Colchicums are—"all a-growing and a-blowing"—it may interest your readers to know something of this charming autumn flower, which is at present far less frequently met with than formerly in flower-gardens. The fresh, rich, bright colours of the Colchicum may be seen nestling in herbaceous borders, in semi-wild situations, or from amidst grass, at a season of the year when "coming events cast their shadows before" in the shape of heavy dews and frosty nights, disfiguring the Pelargonium, and making all in the summer flower garden look unhappy—these, with the early-flowering Crocus, the Zephyranthes, Tritomas, Sternbergias, &c., under the same influences, are uninjured, and form a truly charming autumn flower garden. The noblest of the Colchicum family is speciosum, of which there are two varieties—the lesser with a rose-pink flower, and the greater of a rose-magenta colour and conspicuous white centre. This latter is simply grand. The next, lower in the scale, but still noble, and characterised by its great floriferousness, is C. byzantinum and its variety longipetalum, with bright rose-coloured flowers, forming a perfect carpet of colour. The variegated foliaged variety of C. byzantinum produces small white flowers. The third grade down is C. autumnale, a species found growing abundantly in the meadows in various parts of this country; the roots are sent to London, and are largely used in medicine. The type which is found in the meadows has a rose-purple blossom. The varieties which are less common are the white, the rose, the striped, and the very pale variety. Besides these single forms, there are three doubles—a purple, a purple striped white, and a pure white. Variegatum ranks fourth, the flowers are beautifully tessellated, rose-purple and white. Of this there is a beautiful pale variety, while Parkinsoni is a near ally. The foregoing embrace the more decorative species and varieties. C. lætum has small pale rose flowers; montanum rich rose-lilac blossoms. Besides these these are a few others, but we fear the names only are known in this country, the plants not being in cultivation. *P. Barr.*

Gladioli Reverting Back.—I am curious to know whether any other readers of the *Gardeners' Chronicle* can confirm my experience with respect to Gladioli. In the light sandy soil of Weybridge Heath I find that both G. brenchleyensis and the choicer varieties revert to gandavensis. For a long time I could not believe this, but supposed that repeated mistakes had been made in replanting them; I am now, however, convinced of the fact. *E. H.*

Protecting Trees from Rabbits.—I notice an inquiry and a recommendation or two about protecting trees from rabbits. I believe the very best of ways is to tie a small bundle of dead branches round the part to be protected, and trees in hedgerows or where they would be cropped by cattle and horses, can be protected in the same way—any cuttings from hedges, &c., will answer. To prevent deer and stock from barking exposed young trees, the same remedy is applicable. *W. A. Wooler, Sadberge Hall, Darlington.*

Stramonium, otherwise Thorn-Apple (Datura Stramonium).—I was acquainted with the medicinal qualities of this remarkable herb early in life, for some fifty years ago my uncle smoked Stramonium and swallowed the smoke, which enabled him to cough, and thus cleared his throat, after which he could go about his work without suffering any inconvenience. This was no quackery, but an effectual remedy for a deadly complaint, since it is just as easy to kill a man by want of breath as it is by want of food. We find this plant frequenting rubbish heaps and waste ground, and in old gardens somehow or other it crops up just as Goldsmith has it—

"Near yonder copse, where once a garden smiled,
And still where many a garden flower grows wild."

Not only do we find this plant of little repute in our gardens, but most people treat it as a weed. When we go into its history we find it in very doubtful company, for it belongs to the natural order Solanaceæ, and herded with Henbane, Tobacco, deadly Nightshade, and Mandrake. When we turn to the opinion formed by our forefathers regarding the Thorn-Apple characterised by the superlative spinosissima, if it have only half the evil properties ascribed to it in ancient Herbals, it should be cast forth bag and baggage. The whole of the plant is said to be powerfully narcotic, but especially so in its fruit and seeds; and according to Tournefort, the King of France's botanist, 1718, a decoction of them drives people mad, and may be used as a poisonous drug by thieves to stupify those they intend to rob. Now we find many confirmed tobacco smokers declare that some high medical authority advised them to try a gentle whiff of "the weed" just to clear their throats; but as I have been more than once snubbed for speaking disrespectfully of the smoke traffic I shall not wilfully add to my former failings, although it is not easy to keep one's temper when you see a man starving for food and clothes, and yet buying smoke at a high figure with the money given him to get the real necessaries of life. I fear the Thorn-Apple is not alone in its powers of depriving people of their senses, for the family connections above named are strangely mixed—some stinking, vile, and deadly, others good for food, and many of them exceedingly beautiful. At all events the Stramonium has one virtue which I have named, and I am not indebted to any authorities for what I have stated. I do not see the smoke theory stated in books on medicinal herbs, and what I know of this sturdy herb is practical information—I learnt it when a child. *Alex. Forsyth.*

Mushrooms for Market.—Mushrooms are largely grown by the Fulham market gardeners, finding a ready market at very remunerative prices. They begin to collect the droppings about the end of July, and continue until nearly Christmas. As the manure comes home all the litter is well shaken out of it, the droppings thrown up in long ridges and kept regularly turned, so as to prevent over-heating, and the straw is stacked till it is required to cover up the beds. They begin to make the beds about the first week in September and continue until January. Some growers have several acres covered with beds. The ground is marked off into 2½ feet beds, with spaces 5 feet wide between them; there is 3 inches of soil thrown out of the 2½ feet spaces. The droppings are then wheeled in and built into a ridge 2½ feet high, beating them as firmly as possible as the building progresses. After standing a few days, until they get to a heat of about 60°, they are spawned and again well beaten all over, and covered with 2 inches of soil, which is firmly beaten down and covered with a few inches of straw. As the weather gets colder this is added to and mats thrown over it; if the weather gets very severe more straw is thrown over the mats. The Mushrooms are ready to gather in five or six weeks from the time of spawning. A ridge 20 yards long will produce about 10 bushels per week, and they last for about two months. The spawn is used in much larger pieces than I was prepared to expect. Their cakes are about 12 inches square, and they are broken into four pieces, sometimes into six, but the four are preferred. These are placed in the beds on the flat side at 1 foot apart. They attribute much of their success to the large size of the pieces of spawn. I would call the attention of growers with Mushroom-houses to be careful not to use over-dry soil; it is generally dry loam that is used in private establishments for covering the beds, and kept in that state of dryness that the Mushrooms are in a semi-dried leathery state, without flavour or freshness. The market gardener uses the surrounding soil, and there are only a few inches of straw, which helps to retain the moisture, and they gather bushels of fine-flavoured, plump Mushrooms at a gathering off a comparatively small space. Amateurs with an empty outbuilding or shed of any description, from the above remarks may not be afraid to try their success at producing this, the most esteemed of esculents. If they don't want the litter for covering, it is not quite requisite to over-shake the very shortest out of the droppings, only the beds will have to be made a little deeper; and as for maiden loam, it does not appear to be an essential. When these matters are attended to, and the spawn is good, Mushroom-growing is a very simple affair, and nothing can be more simple than the above mode of growing them, and the results are most satisfactory. *E. W.*

Planting Crocuses.—At what depth can I safely plant Crocuses without preventing their vegetating and blooming? My wish is to preserve them from mice. In your journal for 1867, p. 1099, Mr. William Backhouse, Walsingham, by Darlington, writes: "I prefer setting them nearly 6 inches deep, and they are thus in less danger of being eaten by mice." Again, in 1860, p. 1064, the writer of the Calender of Operations writes: "The bulbs should be covered from 2 to 3 inches with fine mould, and not more than 2 inches apart." Again, in 1857, p. 807, Mr. Robert Shackell writes: "If people were to plant their Crocuses deeper than they do in general, they need not be taken up for many years. The bedding plants in summer could be planted on them; 9 or 10 inches are not too deep. They will bloom beautifully planted much deeper than this." To what depth may I safely follow Mr. Shackell's advice? What is the proper time for planting C. Sieberi and other winter flowering species? And what for planting C. nudiflorus, and the other autumn flowering species? *Diss.* [Plant while the bulbs are dormant. Perhaps some of our correspondents will record their experience of deep planting. Eds.]

Engrafting upon Unsuitable Stocks.—The accompanying specimen is a longitudinal section of wood sawn out of the base of the stem of Libocedrus decurrens, *alias* Thuja gigantea, and is sent to show the unsuitable nature of the stock for the species engrafted upon it, as well as the impropriety of nurserymen attempting to engraft new coniferous trees or shrubs for sale without the knowledge of their proving an ultimate success. Out of six plants of the above-named genus, purchased about nine or ten years ago,

one after the other has died off until they are now all gone. They kept healthy and looked well for some years after planting, but never seemed to get away; the largest never attained a height exceeding 6 feet. There are no doubt many others besides myself who have lost their plants from a similar cause, and may have been attributing the failure to something else. I would advise those who are about to purchase a kindred lot, to examine the plants close to the surface before making a selection, and try and save themselves the annoyance of getting disappointed when the plants are getting established and becoming interesting. Thuja gigantea planted at the same time as the Libocedrus, under the name of Thuja Lobbii, is now close on 30 feet in height; it is quite hardy, and I think will soon take its place as a forest tree. *J. Webster, Gordon Castle.* [The specimen has not reached us, but we print our correspondent's letter all the same, the subject being one of importance to nurserymen and planters. EDS.]

The Roseless Autumn.—The Roseless autumn, as described in your columns, has been the same here, in the neighbourhood of Crowthorne, Berks. None of the autumn Roses bloomed to any perfection in comparison to what they have done in former years, and those few that did bloom had to struggle for a precarious existence, the trees and leaves being black or yellow, looking all the same as if they were struck by lightning. The blooms that did come were of a dingy colour. The summer Roses did not do well either; all my trees suffered severely from the cold winds last spring and the late frosts. The only kinds that did any good were Céline Forestier, Noisette; Gloire de Dijon, Madame Margottin, Teas; Charles Lefebvre, Marquis de Castellane, John Hopper, Eugéne Appert, Hybrid Perpetuals. In conclusion, I may state that the soil is sandy and dry, and soon gets dried up. *A. H. H.*

Gladioli at the Langport Nurseries.—When I visited these nurseries on September 17, I found a glorious display of these noble autumn flowers far surpassing anything I had ever seen before. You may judge what a display of flowers there is when I say there are 4 acres of flowering bulbs, besides 2 acres more of seedling and stock roots. The whole collection is cultivated in a superior manner, and if any of your readers can find it convenient to go there at once I can promise them a rich treat, even thus late in the year, but of course the last week in August is the proper time to go there to see them at their best. I saw many splendid new flowers which are to be sent out next spring, and those that have been sent out during the last few years are to be seen in the best possible condition. There are no fewer than 270 sorts cultivated there. The exhibition roots grown for the present year number at least 4000, and Mr. Kelway reckons that after the whole available bulbs for this year's sale are taken out, he shall have seeding and other named stock roots to plant 20 acres of ground 6 inches by 3 apart. Spikes of Gladioli for decoration are sent to all parts of the country from this nursery. On the day of my visit 500 spikes were cut to send away, and when I looked over the beds again you could not miss them. After September 1 the average number of spikes cut and sent to different parts of the country for decorations is 2000 per week. In the seed-beds there are not less than 20,000 seedlings, besides the named kinds increased from spawn. Besides the grounds, there are the store-rooms, packing-room, all neatly fitted up, and heated with hot water, all worthy of inspecting, and a spacious drying shed at one end of the nursery is about to be heated as well. *J. Clarke.*

The Prickly Pear.—Is the Prickly Pear, mentioned in the *Gardeners' Chronicle* of the 22d as having become a pest in the Indian forests, the same plant as the Indian Fig, the Cactus Opuntia? [Yes.] If so, the fruit is very agreeable, and sugar has been made from it in Sicily. The Mexicans prepare a cooling drink, called *colindre*, from it, and the French in various parts of America make very pretty ornamental vases and flower-trays out of the network found in its stems. I have often eaten the fruit in America, and an American gentleman, a good botanist, told me that he had seen the plant growing in lava at the foot of Mount Etna when he visited Europe. The Indians of Florida used to live upon its fruit for three months in the year, and settlers in California think it is invaluable as a fence. They plant three rows of it close together, and defy any mortal animal to break through it. *Helen E. Watney, Liss.*

Potash for Vines.—Acting upon the suggestions offered at p. 338 with regard to the use of potash for Vines, I determined to put the same into practice, and therefore obtained from the druggists a small quantity of the said article, and selected two Vines growing in pots, but not fully ripened (being eyes of this season's growth), the one variety being Mrs. Pince, the other Black Hamburgh. I then, with the use of a pocket-knife, placed about equal proportions upon the surface of the soil, leaving the same to be absorbed by the earth, and so mingled with the roots of the Vines. The operation being completed, I directed that no one should be permitted to meddle with them. I visited them myself daily, but on the third day after the application of the potash, to my great surprise I found the leaves of both varieties drooping and dying, the stems having turned quite black. I would, therefore, recommend all intending experimenters to take a warning from my sad experience, and not to try the use of potash with Vines, unless they wish to meet with similar losses. *Vitis.*

Colchicum speciosum rubrum. — Now that Colchicums are in bloom, I thought it would interest you to see my Colchicum speciosum rubrum, the species figured in the *Botanical Magazine* some years since from my plant. The ordinary speciosum is smaller, and as pale in colour as C. byzantinum. *P. Barr.*

WEEDS.

IT is very nice to live in the country, and have a garden, and be able to grow one's own flowers, if not one's own fruit and vegetables, but there are some serious drawbacks to this delightful state of things, for there is at times a good deal of light work—ay, and very often a good deal of heavy work—to be done in a garden. The ground will not be idle. If we do not crop it in season, it will assuredly crop itself, and that in such a way that we may have to remove a heavy swathe of weeds before we can till the soil for a crop. The lawn grass, despite its being gone over once a-week with the mowing-machine, will be thronged with the bright-eyed Daisy flowers and the golden Dandelion, whose handsome yellow heads it seems a pity to cut off. The Poa annua is a contemptible little grass, but I have known it rise from seed, and in the course of a month or six weeks grow flower and ripen seed, and make a length of gravel walks and roads quite green after a few wet days. These, however, are only the small fry, the weak weeds that, like the gnats, make up by their numbers for what they lack in power. We have occasionally to deal with weeds well armed, such as Thistles of sorts, and Nettles among herbaceous plants, and such as Gorse and Brambles among ligneous ones.

Sir Joseph Banks, I think, defined a weed to be merely a plant out of its proper place, and as there is so much of this there is nothing for it but weeding. Cheap labour must be had—boys or women must be employed—but this class as a rule think little and care less how the work is done; and therefore, without close supervision, serious loss may ensue, for one has perhaps pulled up all the shabby-looking seed-leaves of your Mignonette, leaving some sturdy weed in its place; and another, seeing nothing worth notice in the Parsley-bed, has made fallow ground of that, for this potherb has had the reputation of visiting Lucifer before it appears above-ground. Therefore, as the doctrine of knowing weeds is nowhere taught in our best Board Schools, the country amateur has to run the risk of boys and girls blundering.

The Thistle is a princely weed. We see the Scotch Thistle a yard across and 2 yards high, but the common Thistle lords it over smaller herbs, literally conveying its seed "where winds can carry and where waves can roll." In many situations in Australia the Thistle is a formidable opponent to all progress, and when you have cleared your own holding it may be seeded anew from fields a mile off, for the Thistle seed is attached to a beautiful car so light that the smallest gust of wind will be sufficient to waft it through the air.

Docks have to be pulled up, for they must not be either cut off or allowed to go to seed. Crowfoot usually gets into flower before its companions in the grassfield can shoot ahead; this is the "sit sicker" of the North (sit secure), and it is worthy of its name, for it can hardly be weeded out. The wild Mustard is never wanting, for whatever earth you take Mustard seeds seem to be always in it. Little is known of its mode of life; it may, for aught we know, hibernate like our badgers, or sleep for an odd hundred or even a thousand years at a stretch, or it may rise a new creation, or be evolved from something sharper than itself. We see hundreds of acres of corn-land clad in golden array with this trumpery weed, just as if it were the main crop, and the humble cereal was only there on sufferance.

But my present business is not to enumerate or describe the weeds of either the garden or the farm, but to state some of the preventives against their making headway. A certain lawyer, if I remember rightly, had been, like many others, annoyed with seedling weeds among his field Carrots, and the weeds grew rank and strong, whilst the seed-leaves of the Carrot were small and weakly; so he made it his business to change this state of things, and did everything necessary for the Carrot ridges except sowing the seed, and when the weeds had sprung up as usual he horse-hoed the drills, and thus destroyed every seedling weed at little cost, and then sowed his Carrots.

Mr. Fleming, late gardener at Trentham, was tormented with weeds on his gravel walks, and he invented a machine for poisoning them by watering the walks with scalding brine. Most gardeners have used dry salt to kill weeds, but when used in the form of brine its action is more immediate, and when to this we add the scalding process death is certain, and there is a great saving of labour. A gardener of my acquaintance—always short-handed, as most gardeners are—had to weed the walks and carriage drive on wet days, when the men could not do other outdoor labour, and they had to protect their heads and shoulders with some kind of waterproof covering, but I think it is high time that this class of weeders should be discontinued.

When the late Bishop of Exeter made his new residence at Bishopstowe, near Torquay, he was anxious to have a nice lawn, and did everything to foster the grass, and after a time he succeeded admirably, but his lordship had to face the evils arising from new groundwork where weeds of long standing had got a firm hold of the soil; and in this case it was the common Coltsfoot that had got so mixed with the soil and so broken into small pieces that it seemed to pervade all the made ground. Now the late Dr. Lindley laid it down as a rule that if we could prevent any plant from forming leaves it must necessarily die out. Acting upon this good advice the Bishop weeded out his first crop of Coltsfoot, but only to be succeeded by a second; so he employed a woman "on the lawn" to cut out the crown of every plant of Coltsfoot as soon as it showed a leaf, and for three summers this woman might be seen on her knees like some witch of the olden time, but she effectually cleared the lawn of this conspicuous weed. When Tobacco was scarce and dear during the war with America confirmed smokers used the leaves of Coltsfoot as a substitute for Tobacco. This famine of snuff and smoke was duly bewailed in measured rhyme, of which I can only remember a snatch:—

"For puffing Meg has broke her pipe,
And Wat has tint his spleuchan;
Poor Kate shot in her sneeshan mull
Last nicht to boil our brochan,
Since Yankees turned our foes man."

A kitchen garden in good order for cropping may be taken as an example of the doubtful happiness and enjoyment of the garden amateur this wet season. The weeds begin to rise rapidly after rain, and are promptly cut off by the hoe, but the Groundsel is nothing the worse for all this, and its fleshy stalks will root afresh, and it will flower and seed as if nothing had happened. I have found it best in such cases not to hoe but dig, and so the weeds get buried deep enough to rise no more. One may see now (end of August) acres of pasture fields, in Cheshire and elsewhere, of the common Ragwort with its gaudy yellow heads of bloom "unprofitably gay," and it is very remarkable that this coarse weed is almost always in good condition, as if it could extract more from the soil than the grasses, for the pasture is often poor while the Ragwort is rich. Surely such an intruder would pay for the plucking up, for it offends the eye, and is worthy of no consideration; and it has a long leg, tempting the owner to pull it up by. I had to reclaim some land that was beset with Thistles, and knowing from long experience that few plants will rise to the surface if buried 12 inches deep—Horse-radish and some others excepted—I laid one-half of the soil on the top of the other half, and by this means laid bare an alley of some width between each bed, just as if I had had corduroy for my pattern. The Thistles never got through the top soil, but shot up blanched stems and curled in circles, and we found them baffled when we came to examine the ground in autumn, and in the alleys the supply was so beggared by having the soil removed that the Thistles never rallied, and were easily kept under by the hoe; indeed, there is scarcely any class of weeds, however rank and deeply-rooted,

that will stand this bastard trenching, and it has, besides, a healthy action on the crop, since the amount of rain falling on these beds is lessened, and the soil is laid up to meet the sun's rays at the best angle that it is capable of forming—say, at an angle of 45°, or as it is called in railway terms, a slope of 2 to 1. It will easily be seen that this arrangement alters the relative proportions of sun and rain by increasing the effect of the sun and decreasing the amount of rain that is lodged on the beds.

This bedding system was detailed by me some years ago in a pamphlet on the Potato. Every one who has watched our seasons will agree with me that we have, as a rule, too little sunshine and too much rain, but it is possible by this open-drain system to shut the wet and hold up the earth to the sun; and every little is a gain with these most unmanageable elements, while all the summer long the weeds are easily come at, so that by the second year the land will be a clean fallow.

The system of sowing or planting everything in drills lessens the labour of weeding. We see in the Hop plantations that the plants are set out in lines both ways, so that the horse-hoe can be used from east to west, as well as from north to south, thereby leaving only a small square to be hoed or hand-weeded. Seedling weeds should be destroyed whilst in their seed-leaves, and there is no instance of their ever rising again when hoed thus early. The late Mr. James Barnes, of Bicton, used small goose-necked hoes, some not more than 1 inch broad, and he attacked small weeds with these in flower-pots and in beds, and thus thinned crops as well as weeded them most expeditiously. In the Onion country, Bedfordshire, the seed is sown broadcast, and women weeding the young Onions maul them in a way that would alarm gardeners, but they recover and grow and seed to perfection. There the Onion is at home, and the soil rich with manure and brought to a fine tilth.

The sandy land of Bedfordshire evidently has just what the Onion wants, for we find the Alliums growing wild on the banks of the Thames. It is so with certain classes of weeds; they abound over a substratum of rock, clay, or sand, and are well worth studying, for there is no better criterion by which to judge of the quality of a farm or garden than the appearance of the weeds that have held possession for some time. I once took a field where the principal crop was wild Carrots, about as thick as a stocking needle, and the top a strong smelling poisonous umbel that cattle refused to eat, but when this field had been fattened, cleaned, and brought to a fine tilth, it grew Carrots to perfection in beds such as I have described. *Alex. Forsyth.*

Reports of Societies.

Crystal Palace: *Sept.* 21 and 22.—The annual autumn show of fruits, flowers, and vegetables was held here on Friday and Saturday last, and we are glad to say that it proved a remarkably good show. Of the choice kinds of fruit the display was good, and fairly extensive, while of hardy fruits, Apples and Figs especially, we have not seen a finer lot brought together here for some considerable time, or even in seasons which have been more propitious, and these in particular have been more plentiful than, unfortunately, is the case this year. Dahlias were in unusually strong force for this late season, and exceedingly fine, especially with the veteran Mr. Keynes. Gladioli and Asters were also well shown, particularly the former, which included a wonderfully good collection of English raised seedlings exhibited by Messrs. Kelway & Son, of Langport. The vegetables shown would have made an exceedingly good exhibition by themselves, they were staged in such abundance and in unexceptionable form. We never before saw the staging at the Crystal Palace so full of good things, but before proceeding to details we should add a word of praise for the admirable arrangements made by Mr. Thomson, upon whom the management of these exhibitions has, we believe, now devolved.

There were only three competitors in the class for twelve dishes of fruit, and the 1st prize was taken by Mr. Coleman, gr. to Earl Somers, Eastnor Castle, who, as at the rival establishment on Maswell Hill, came well to the front in all the classes in which he competed. His collection included, of Grapes, Muscat of Alexandria and Black Hamburgh, in grand form as to evenness of size and finish; Black Jamaica, and very good Smooth Cayenne Pines; two fine Melons, Barrington Peaches, Figs, Green Gages, Pitmaston Orange Nectarines, and Morello Cherries. The 2d prize collection, which came from Mr. Webb, gr. to J. H. Manners-Sutton, Esq., Kelham Hall, Newark-on-Trent, included two exceedingly handsome Queen Pines, weighing respectively 5 lb. 12 oz. and 5 lb. 4 oz. Mr. Upjohn, gr. to the Earl of Ellesmere, Worsley Hall, was a good 3d. In a class for six dishes, exclusive of Pines, which one would have thought would have brought about a strong competition, there were only two exhibitors, and nothing was shown by them above ordinary quality. Mr. J. Neighbour, gr. to G. Wythes, Esq., Bickley, Kent, took the 1st prize.

In the next class, which was for two bunches each of ten kinds of Grapes, a large display could not be expected, and, as a matter of fact, only Messrs. H. Lane & Son, Berkhampstead, and Mr. Wildsmith, gr. to Lord Eversley, Heckfield Place, entered the lists, and the prizes went in the order named. Fine examples of Black Prince, Black Hamburgh, Muscat of Alexandria, Alicante, Trebbiano, Muscat Hamburgh, Gros Colmao, and Bowood Muscat were the distinguishing features in the Messrs. Lane's collection; while Mr. Wildsmith staged Gros Colman and Foster's Seedling, in fine form; Mrs. Pince's Black Muscat, somewhat small in berry but better coloured than is usually seen this season; White Tokay, Black Hamburgh, fine in size but deficient in bloom; Barbarossa, Alicante, Muscat of Alexandria, and Venn's Black Muscat, the sample of the latter having longer berries than the Muscat Hamburgh shown by Messrs. Lane, and quite distinct from that variety as shown. The next class, for half the number shown in the former, brought Mr. Woodbridge, gr. to the Duke of Northumberland, Syon House, to the front in the prize list with Madresfield Court, good in bunch and berry and fairly well coloured; Golden Champion, small in bunch but the berries of fine size; Lady Downe's, and Muscat of Alexandria, not large in bunch but of fine quality, and good Alicantes. Mr. J. Peed, Roupell Park Nurseries, Norwood, came in a good 2d, and Mr. James Bolton, gr. to W. Spottiswoode, Esq., Combe Bank, Sevenoaks, 3d. The best of nine single dishes of Black Hamburgh came from Mr. R. Adams, gr. to the Rev. R. Hudson, Frogmore Hall, near Hertford, good full bunches of fine sized berries, very clean, but wanting in bloom to fully finish them off. Mr. Wildsmith was again a good 2d; and Mr. Coleman 3d, with a smaller sample, but they were jet black, and, as usual with Mr. Coleman's Hamburghs, they carried a splendid bloom. However, Mr. Coleman was not to be denied with his single dish of Muscats, which took precedence in that class over examples, and good ones too, from Messrs. H. Lane & Son, and Mr. John Day, Norton Hall, Daventry, Notts, who secured the 2d and 3d awards respectively. Out of four capital samples of Madresfield Court, the best came from Mr. W. Earp, gr. to J. S. Sellon, Esq., Hume Towers, Bournemouth; and in the Foster's Seedling class the 1st prize went to Mr. J. Stephenson, gr. to F. Peek, Esq., Roby House, Sydenham, and the 2d to Mr. Miles, Wycombe Abbey. In a very good class of Lady Downe's the best came from Mr. C. Tyler, gr. to R. Gosling, Esq., Hassobury, Bishop's Stortford; Mr. Coleman and Mr. Neighbour, in the order named. There were ten competitors. With Buckland Sweetwater, Mr. C. J. Bungay, gr. to W. Smith, Esq., Herne Hill, was 1st; and in a class for any other kind not previously specified in the schedule, Messrs. H. Lane & Son had a capital dish of Alicante; Mr. Perks, gr. to C. W. Dusseldorff, Esq., Dorchester House, Sydenham, a fine sample of Barbarossa, bloom very rich; and Mr. J. Peed, a dish of Alicantes, rather small in berry, but finely coloured, and carrying a fine bloom. Sixteen competed in this class, which included also Mrs. Pince's Black Muscat, Trebbiano, and Chaptal. The heaviest bunch was a good and compact one of Syrian, weighing 10 lb. 10 oz., and shown by Mr. Dickson, gr. to J. Jardine, Esq., Arkleton, Langholm. Mr. J. Peed was 2d with Barbarossa, 5 lb. 8 oz., and Mr. C. Tyler, 3d, with the same variety, weighing 5 lb. 4 oz. Mr. J. R. Pearson's special prizes for the new Grape Golden Queen were not awarded, on the ground that the samples were "not in sufficiently good condition," but as no stipulations of any kind as to condition has so far as we know been published, we think the judges erred in withholding the prizes. No doubt they have a more satisfactory reason, but it ought to be stated.

The best of a dozen Queen Pines, a remarkably handsome fruit, weighing 6 lb. 4 oz., came from Mr. A. Webb, gr. to J. H. Manners Sutton, Esq.; Mr. R. Day, Hillside, Newark-on-Trent, was 2d, with one weighing 5 lb. 2 oz., a good fruit, but having rather too large a crown; and Mr. G. T. Miles, was 3d, the weight of his specimen being 4 lb. 12 oz. Seven fruits were staged in the "any other variety" class, and Mr. C. Ross, gr. to C. Eyre, Esq., Welford Park, Newbury, came in 1st, with a Smooth Cayenne, weighing between 5 lb. and 6 lb., and the individual pips of which were uncommonly well swelled out; Mr. Pragnell, gr. to G. D. W. Digby, Esq., Sherborne Castle, Dorset, was 2d; and Mr. Sandford, gr. to Earl Bective, Kirkby Lonsdale, 3d, with fine specimens of the same variety.

Peaches and Nectarines were exhibited in good numbers; and, as a whole, were of excellent quality. Out of eighteen dishes of the first-named, a very beautiful one of Lord Palmerston, shown by Mr. Gibson, gr. to F. B. Aikins, Esq., Halstead Place, Sevenoaks, was selected for the highest award; an exceedingly good sample of Barrington, from Mr. Thomas Frost, Bower and Ling Nurseries, Maidstone, coming in 2d; and Princess of Wales, a fine, pale-coloured variety, contributed by Mr. Fry, gr. to L. G. Baker, Esq., Haydon Hall, Eastcott, Pinner, was placed 3d. The last-named variety was also well shown by others, as also Reine des Belges, and Noblesse. In the Nectarine class Mr. A. Jamieson, gr. to the Earl of Crawford, Haigh Hall, Wigan, had the best of fifteen samples; a beautiful dish of Prince of Wales, Hunt's Tawny, very good, from Mr. Bolton, gr. to W. Tipping, Esq., Brasted Park, Sevenoaks, coming next. Of red-fleshed Melons there were twenty fruits for the judges to taste, and as a result of their examination a nice fruit of Scarlet Gem, shown by Mr. O. Goldsmith, Polesden Lacey, Dorking, was adjudged 1st; Read's Scarlet, from Mr. Coleman, 2d; and the old Hero of Bath, from Mr. Knellor, Malshanger Park, Basingstoke, 3d. Green-fleshed varieties were represented by twenty-nine fruits, and the best of these were a finely-netted variety, unnamed, from Mr. R. Adams; Eastnor Castle, from Mr. Coleman; and Victory of Bath, from Mr. John Day. The Fig class was the best we have everseen at an autumn show, and two extra 3d prizes were awarded by the judges. The finest of twenty-three samples was a grand dish of White Marseilles, from Mr. Burnett, gr. to Mrs. Hope, The Deepdene; and splendid specimens of Brunswick from Mr. Diver, gr. to W. Moore, Esq., Wierton, near Maidstone, and Mr. W. Chisholm, of Boughton Place, near the same Kentish town. Brown Turkey and Brown Genoa were also well shown, but the prevailing sort was the old but excellent Brunswick. The Cherry class was also an exceedingly good one of Morellos, and the highest award went to Mr. Thomas Jones, Elvetham Park, Winchfield. Of Green Gages, the display was poor in the extreme, only two dishes competing. For a single dish of any variety except the last-named there were some fifteen competitors, and the winners were Mr. Staples, gr. to H. Oppenheim, Esq., Chipstead Place, Sevenoaks, with Coe's Golden Drop; Mr. Walker, Thame, Oxon, with Pond's Seedling; and Mr. James Bolton, with the same variety. Out of eight groups of three dishes each Mr. James Bolton, with Golden Drop, Pond's Seedling, and Magnum Bonum, was placed 1st; the other awards going to Mr. Staples and Mr. James Fry, who staged excellent samples.

The classes for dessert and culinary Apples were unusually good, both in quality and extent, most of the many samples staged being of fine size and very clean growth. In the dessert class the highest award went to Mr. Haycock, Barham Court, Maidstone, who had the Melon Apple, Cox's Orange Pippin, and Ribston Pippin, the latter especially being exceedingly fine. The second award went to Mr. Rutland, gr. to the Duke of Richmond and Gordon, Goodwood, who had grand fruits of King of the Pippins, Webb's Seedling, a flattish, angular-shaped, and highly coloured variety; and Ribston Pippin. Mr. C. Ross came in 3d, with Cox's Orange Pippin, Cornish Aromatic, and Blenheim Orange; and an extra prize went to Mr. Bolton. In the succeeding class, an uncommonly good one, for culinary kinds, Mr. Bowles, gr. to W. Skinner, Esq., Beresford House, Boughton, Maidstone, came in 1st with very large and clean examples of Lord Suffield, Stone Pippin, and Warner's King, an extraordinary fine lot; 2d, Mr. Rutland, with the last-named, Blenheim Orange, and Lord Suffield; and 3d, Mr. T. Bailey, gr., Shardiloes, Amersham, with Grenadier, a very large, green, angular-shaped Apple; Hambledon Deux Ans, and Blenheim Orange. The class was so good that three extra 3d prizes were awarded. The dessert Pears were also well shown, but not in such quantities as Apples. Mr. G. Goldsmith, gr. to P. C. Hardwick, Esq., Hollanden, Tonbridge, sent the finest three dishes—admirable examples of Duchesse d'Angoulême, Beurré d'Amanlis, and Williams' Bon Chrétien. Mr. Staples, who came in 2d, had the last-named, Marie Louise, and Beurré d'Aremberg. Mr. C. Haycock was a good 3d, and two extra prizes were also awarded. Souvenir du Congrès, Durandeau, and Beurré Hardy were beautifully shown by Mr. Haycock.

Unusually extensive and fine was the display of Dahlias, and again were the Salisbury flowers unapproachable for size, brightness, and freshness. Mr. Keynes' 1st prize collection of forty-eight show varieties included the cream of the list, and we therefore give their names:—Henry Glasscock, Matilda, Henry Walton, Perfection of Primroses, Masterpiece, Dauntless, John Macpherson, James Cocker, Queen of York, Dictator, Vice-President, A.

Cramond, Herbert Turner, Thos. Goodwin, Ethel Newcombe, Criterion, Rev. J. B. M. Camm, Edward Purchase, J. N. Keynes, Queen of Beauties, Mrs. Boston, Charles Leicester, John Bennett. Ovid, Hon. S. Herbert, John Standish, Picotee, Queen's Messenger, Mr. Harris, Eccentric, Flag of Truce, Cremorne, Royal Queen, James Service, Henry Bond, J. W. Lord, Princess of Prussia, Luisa Neate, Burgundy, Prince Arthur, Willie Eckford, Flora Wyatt, Mr. John Downie, and a few seedlings. Messrs. Rawlings Brothers were a good 2d, and Mr. Turner 3d. In the fancy class Mr. Keynes had grand blooms of J. B. M. Camm, Maid of Athens, Miss Lily Large, Tippy Bob, Herbert Purchase, Mrs. Saunders, Parrot, Letty Coles, R. Dean, Mons. Chauvere, Carnation, Flora Wyatt, Hercules, Octoroon, Fanny Sturt, Laura Haslam, Eccentric, Lucy Fawcett, Robert Burns, Henry Glasscock, Enchantress, Miss Bond, Sam Bartlett, and several seedlings. Mr. Searle, of Sevenoaks, Mr. Turner, and Mr. Painter, Smallwood, near Lawton, Cheshire, also exhibited in excellent form. The amateur classes were well filled, but call for no special comment, being a long way behind the nurserymen, except in the case of Mr. Glasscock, of Bishop's Stortford, who took the two 1st prizes.

The following new Dahlias were awarded First-class Certificates:—Rose Circle, a full, well-built, rich deep rosy claret coloured variety, shown by the executors of the late John Harrison, of Catterick Bridge; Charles Lidgard, buff-yellow, tipped with crimson, and very showy, from Mr. Turner; Robert Burns, a fine fancy flower, dark magenta, striped and blotched with dark maroon; Dictator, a very dark scarlet; Emulator, crimson-magenta, as near as we could make it; and Marion, a delicate shade of rosy pink, from Mr. Keynes; and James Willing, dark crimson- magenta, tippedwith rosy pink, from Messrs. Rawlings Brothers, Romford.

The GLADIOLUS classes were not particularly noteworthy, and we need only say that Mr. G. Wheeler, Warminster, sent the best thirty-six, and the Rev. H. H. Dombrain the best twenty-four. The Messrs. Kelway, of Langport, sent a magnificent stand of seedlings, and received First-class Certificates for Marcianus, orange-scarlet, flaked with crimson, a fine bold flower; Richard Dean, salmon-pink, feathered with crimson; John Laing, rose-lake, feathered deep crimson; and Venulus, a very rich scarlet, with a white throat, and white bar down the segments. The stand also included Duchess of Edinburgh, an immense rose-coloured flower with a white centre—the largest of all, a fine, broad, and excellent shaped flower.

The ASTERS were particularly good in quality and shown in considerable numbers. Mr. Betteridge, of Chipping Norton, sent the best two dozen quilled blooms; and Messrs. Saltmarsh, of Chelmsford, the best twenty-four tasselled. The first-named also had a First-class Certificate for a pretty seedling quilled variety, named Novelty.

The VEGETABLE DEPARTMENT was unusually complete and interesting, every vegetable in season being well and abundantly represented. In the open and cottagers' classes there were no less than ten competitors in each, and a very strong competition for the highest awards resulted in each case. In the open class Mr. Pragnell once more took the lead with an extraordinarily creditable lot, which consisted of Maltese Parsnips, Spanish Cardoons, Canada Wonder Beans, Salsify, James' Long Keeping Onion, Brussels Sprouts, Green Curled Savoy, Cretan Leeks, Early Horn Carrots, Vegetable Marrows, Veitch's New Autumn Protecting Broccoli, Scorzonera, Breadfruit Potatos, Ne Plus Ultra Peas, White Spanish Onions, Early Dwarf Ulm Savoys, Autumn Giant Cauliflowers, Veitch's Improved Beet, Red Globe Turnips, Hathaway's Excelsior Tomato, Red Cabbage, Early Snowball Turnips, Nuneham Park Onions, William the First Peas, Porter's Excelsior Potatos, Wheeler's Improved Cabbage, Henry's Prize Leeks, Student Parsnips, Incomparable White Celery, Eastwood's Beet, Early Nantes Carrots, and Scarlet Runner Beans. Mr. C. Chaff, gr. to G. H. Goschen, Esq., Ballards, Addington, was a very good 2d; and Mr. John Durrant, St. George's Terrace, Hurstpierpoint, 3d. In the cottagers' class for not less than six distinct kinds the last-named gentleman came in 1st, with clean and well grown examples of Cauliflowers, Turnips, Carrots, Onions, Potatos and Peas. The other awards were taken by Mr. Patchell and Mr. Brooks of Bandon Hill, Beddington. The Schoolmaster Potato, shown by Mr. Turner, was awarded a First-class Certificate

MISCELLANEOUS SUBJECTS were, as usual, a good feature of the show, and extra prizes were awarded to Mr. John Walker, nurseryman, Thame, Oxon, for a choice collection of Asters, and also for a fine sample of selected White Spanish Onions; to Messrs. Paul & Son, The Old Nurseries, Cheshunt, for collection of Apples, sixty sorts; to Mr. J. Peed, Roupell Park Nurseries, Norwood Road, for Grape Vines in pots; to Mr. L. A. Killick, Mount Pleasant, Langley, Maidstone, for a collection of Apples and Pears; to Mr. C. Ross, gr. to C. Eyre, Esq., Welford Park, Newbury, for a collection of Apples and Pears; to Mr. W. Mowbray, gr. to Earl of Leven, Fulmer, Slough, for Grapes, Golden Champion; to Messrs. William Paul & Son, Waltham Cross, for six boxes of cut Roses and for a collection of Apples; to Mr. Rutland, Goodwood, for a fine dish of Grosse Calabasse Pear; to Mr. Wildsmith, for collection of Apples; to Messrs. Kelway & Sons, Langport, for collection of Gladioli; to Mr. T. Jones, The Royal Gardens, Frogmore, for collections of Apples and Pears; to Mr. W. Corp, 84, High Street, Oxford, for ten boxes of cut Roses, splendid for the season; to Messrs. John Laing & Co., Stanstead Park, Forest Hill, for collection of plants; to Messrs. Cranston & Co., King's Acre Nurseries, Hereford, for ten boxes of cut Roses; and to Mr. C. Haycock, Barham Court, Maidstone, for collection of Peaches, Nectarines, and Oranges.

The exhibition also included a choice collection of Tomatos from the Royal Horticultural Society's gardens, Chiswick; a large Gourd, weighing 84 lb., from Messrs. John Laing & Co.; and a very fine fruit of Passiflora quadrangularis, from Mr. Jamieson, Haigh Hall, Wigan. Bouquet Dahlias and Carnations were also liberally shown by Mr. Turner.

Huntingdonshire Horticultural: *Sept.* 12.—The usual summer show of this Society was held on the above date in the grounds attached to Castle Hill House, Huntingdon. There was a marked improvement this year in both the size and quality of the plants exhibited in the principal classes for flowering and fine-leaved plants, as well as some other departments. In cut flowers the effects of the present exceptional season here, as in most places, was noticeable: Roses, as almost general, were much finer than usual, while Gladioli, generally one of the principal features of autumn exhibitions, were poor, and few in numbers. Dahlias were well shown, as also Asters. Hollyhocks, it would almost seem, are doomed to succumb to the disease of late years so prevalent, for they were the merest shadows of what they once were.

The competition for the silver cup offered by the Society for twelve stove or greenhouse plants was very close, but was awarded to Mr. Lewis, gr. to D. Herbert, Esq., Huntingdon. His collection included Franciscea calycina, Dipladenia amabilis, Rondeletia speciosa, Clerodendron Balfourianum and Crotons undulatuus and variegatuus, both well coloured. Mr. Smith, gr. to Miss Cheere, Papworth Hall, 2d; his best were Eucharis amazonica, Dipladenia amabilis, with unusually large flowers; a nicely grown variegated Pine, and Maranta lineata-rosea. In another class of twelve stove and greenhouse plants Mr. Lewis also took 1st, showing amongst others a pretty example of the pink-flowered Chironia.

In Ferns the exhibitors confined themselves to comparatively small growing kinds, which if they do not possess the commanding appearance of the large tree species are more elegant. For six, Mr. Tilbrook, gr. to A. Brown, Esq., took the lead; Mr. Bowie, gr. to the Earl of Sandwich, 2d. The best six Fuchsias came from Mr. Wixon, gr. to Mrs. Lawrence, Hemingford. In Zonal Pelargoniums Mr. Tilbrook was 1st, with plants well flowered and not too stiffly trained.

There were a number of competitors in the class for dinner-table plants, the majority here, as often elsewhere, staging close-habited subjects quite unfit for the purpose, and in many cases much too large, which made them still more unsuitable. Messrs. Wood & Ingram, Huntingdon, were 1st. For the Rev. H. Bree's special prize for the best arrangement of cut flowers for table decoration (confined to lady competitors), the judges had to decide betwixt examples made up of glaring, high-coloured flowers, too closely packed together, with insufficient green material to relieve them, and one—exhibited by Miss Ansley—who erred in the opposite direction by a simple and somewhat too meagre display; but as this is much less objectionable than overdone combinations, it was awarded the 1st prize.

The Mayor's silver cup for twenty-four Asters was well won by Mr. Petfield, gr. to A. J. Thornhill, Esq., Diddington. Messrs. Wood & Ingram showed the best twenty-four Dahlias. Twelve Roses.—Mr. Cooper, the Rev. E. Fellowes, and Messrs. Wood & Ingram took the prizes in the order named.

Fruit.—The best eight dishes were shown by Mr. Tillbrook, who had nice Black Hamburgh and Muscat of Alexandria Grapes, Peaches and Nectarines, Figs and Plums. For black Grapes Mr. Cooper was 1st, with nicely finished Black Hamburghs, two bunches growing on one shoot. In white Grapes Mr. Bowie was successful, showing even bunches of Muscat of Alexandria. Six Peaches.—1st, Mr. Strachan, gr. to the Rev. Canon Linton. Six Nectarines.—1st, Mr. Tillbrook. (*From a Correspondent.*)

Bradford Abbas, Dorset.—The cottage garden show held in this village on Wednesday last was one of the most successful of any previous year. It was established by Professor Buckman, to encourage the growth among cottagers of some other vegetables besides Potatos, as well as to encourage the cultivation of window and garden flowers; and it was pleasing to see that while all the best sorts of Potatos were this year well grown, Peas, Kidney Beans, Carrots, Parsnips, &c., were not neglected. The Onions were particularly fine, and with so many sorts it was difficult to award the prize.

The show of flowers at this time of year was somewhat limited, but there were some elegant and tasteful designs in the different bouquets of garden productions, whilst the devices in wild flowers, mostly done by the children of the district school, were so truly exquisite as to have got special commendations from Prof. Buckman, who, in his remarks upon the show, descanted upon the health-giving properties of a variety of vegetables, and the no less good effects to the moral health of a love of flowers, pointing out that the poor man, equally with the rich, might have good vegetables served on a table ornamented with flowers, than which few are more charming than are wild ones, especially when arranged with taste; and the educating this taste with regard to flowers was good in every way.

Thanks were accorded to the Messrs. Sutton, who had kindly contributed collections of seeds for the cottagers, and as these were always of the best, and of good sorts, it sufficiently accounted for the excellent vegetables shown.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, SEPT. 26, 1877.

Month and Day.	Barometer. Mean Reading reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degrees of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Sept.	In.	In.	°	°	°	°	°	°			In.
20	29.61	−0.21	53.8	47.0	6.8	49.8	− 6.0	48.1	94	WNW : NNW	0.15
21	29.64	−0.16	57.1	39.6	17.5	47.0	− 8.5	42.1	84	N. : NNW	0.01
22	29.76	−0.03	59.0	40.8	18.2	48.5	− 6.8	42.7	81	N.	0.00
23	29.76	−0.02	55.3	44.4	10.9	49.7	− 5.5	46.2	88	W.	0.01
24	29.91	+0.14	59.7	43.6	16.1	50.6	− 4.4	43.2	76	NNW	0.00
25	30.03	+0.28	54.8	35.0	19.8	44.1	−10.7	39.9	85	N. : N.W.	0.00
26	30.12	+0.37	61.8	44.2	17.6	51.3	− 3.4	48.3	90	N.W. : WNW : N.	0.04
Mean	29.83	+0.05	57.3	42.1	15.3	48.7	− 6.5	44.4	85	N.	sum 0.21

Sept. 20.—A dull, miserable, cold day. Overcast throughout. Rain fell till 5 P.M.
— 21.—A fine clear day. Cloudy, with a shower of rain at 2 P.M. Cold.
— 22.—A very fine bright day. Cold.
— 23.—Generally dull and cloudy. Little rain fell in the morning.
— 24.—A very fine day. Cloudy at times. Cold. Cloudless at night.
— 25.—A fine day, but cloudy and gloomy. Cold.
— 26.—A fine bright day. Cool. Cloudless at night.

LONDON: *Barometer.*—During the week ending Saturday, September 22, in the vicinity of London he reading of the barometer at the level of the sea increased from 30.18 inches at the beginning of the week to 30.33 inches by the morning of the 16th, decreased to 30.27 inches by the evening of the same day, increased to 30.34 inches by the evening of the 17th, decreased to 29.78 inches by the evening of the 20th, and increased to 29.97 inches by the end of the week. The mean reading for the week at sea level was 30.07 inches, being 0.12 inch above that of the preceding week, and 0.05 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 63½° on the 16th to 53¾° on the 20th; the mean value for the week was 59¼°. The lowest temperatures of the air ranged from 39½° on the 21st to 52¾° on the 19th; the mean for the week was 46¾°. The mean daily range of temperature in the week was 12½°, the greatest range in the day being 18¼°, on the 22d, and the least 6¾°, on the 20th.

The mean daily temperatures of the air were as follows:—16th, 53°.8; 17th, 53°.6; 18th, 53°.8; 19th, 55°.3; 20th, 49°.8; 21st, 47°; 22d, 48°.5; and the departures in defect of their respective

averages were 3°.1, 3°, 2°.8, 0°.8, 6°, 8°.5, 6°.8. The mean temperature of the air for the week was 51°.7, being 4°.4 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 114½° on the 18th, and 118¾° on the 22d; on the 20th the reading did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 31¼° on the 22d, 31¾° on the 21st, and 35½° on the 16th. The mean value for the week was 37°.

Wind.—The direction of the wind was N., and its strength gentle. The weather during the week was generally dull and cold, and the sky partially cloudy. Fog prevailed on the 16th.

Rain fell on two days during the week; the amount measured was 0.16 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 68¼° at Bristol, 67° at Truro, and 66½° at Nottingham and Eccles; the highest temperature of the air at Liverpool was 59¼°; the mean value from all stations was 64¼°. The lowest temperatures of the air observed by night were 33° at Truro, 36¾° at Wolverhampton, and 37° at Bristol; at Sunderland the lowest temperature was 43°; the general mean from all stations was 39½°. The range of temperature in the week was the greatest at Truro, 34°, and the least at Liverpool, 17¼°; the mean range from all stations was 24¾°.

The mean of the seven high day temperatures was the highest at Truro, 63½°, and Plymouth, 63°, and the lowest at Wolverhampton and Liverpool, both 57°; the mean from all stations was 59½°. The mean of the seven low night temperatures was the lowest at Truro, 42½°, and Wolverhampton, 43½°, and the highest at Norwich and Sunderland, both 47¾°; the mean value from all stations was 45¾°. The mean daily range of temperature in the week was the least at Liverpool, 9¾°, and the greatest at Truro, 21°; the mean daily range of temperature from all stations was 13½°.

The mean temperature of the air for the week from all stations was 51°, being 5½° lower than the value for the corresponding week in 1876. The highest was 54°, at Plymouth, and the lowest 49°, at Wolverhampton and Eccles.

Rain.—The amounts of rain measured during the week were small, and varied from four-tenths of an inch at Norwich and Sunderland to one-hundredth of an inch at Bristol: at Truro no rain fell, the average fall over the country was two-tenths of an inch nearly.

The weather during the week was generally dull and cold, and the sky cloudy.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 69° at Dundee to 61° at Aberdeen; the average value from all stations was 65¼°. The lowest temperatures of the air ranged from 35° at Paisley to 41½° at Aberdeen; the mean value from all stations was 39°. The mean range of temperature in the week from all stations was 26½°.

The mean temperature of the air for the week from all stations was 51½°, being 2¾° lower than the value for the corresponding week in 1876. The highest was 53°, at Greenock, and the lowest 49½°, at Paisley.

Rain.—The amounts of rain measured at Edinburgh, Aberdeen, and Leith were 0.05 inch, 0.41 inch, and 0.07 inch respectively. At Glasgow, Dundee, Greenock, and Paisley no rain was measured. The average fall over the country was one-tenth of an inch.

DUBLIN.—The highest temperature of the air was 61½°, the lowest 38¾°, the range 22¾°, the mean 51¼°, and the fall of rain 0.02 inch.

JAMES GLAISHER.

Variorum.

AN OLD FIR PLANK.—Through the kind interest which Sir Robert Christison, Bart., takes in all things arboricultural, the public have now an opportunity of seeing in the National Industrial Museum of Science and Art at Edinburgh a curious relic of the ancient Forest of Glenmore, and of judging of the quality and valuable properties of the native Scots Fir timber. At the request of Sir Robert, the Duke of Richmond and Gordon has sent for exhibition in the Museum a plank of Scots Fir, 5 feet 7 inches wide at the bottom, which was presented in 1806 to the then Duke, by the person who purchased and cut down the whole of Glenmore Forest. It bears its rather curious history on a brass plate affixed to its face, of which the following is a verbatim and literal copy:—

"In the year 1783, William Osbourne, Esq., merchant of Hull, purchased of the Duke of Gordon the Forest of Glenmore, the whole of which he cut down in the space of twenty-two years, and built during that time at the mouth of the River Spey, where never vessel was built before, forty-seven sail of ships of upwards of 19,000 tons burthen. The largest of them, of 1050 tons, and three others but little inferior in size, are now in the service of His Majesty, and the Honourable East India Company. This undertaking was completed at the expense (for labour only) of above £70,000.

"To His Grace the Duke of Gordon this plank is offered as a specimen of the growth of one of the trees in the above forest by His Grace's most obedient servant, "W. OSBOURNE.

"Hull, Sept. 26, 1806."

Sir Robert Christison has, with his usual accurate criticism, examined this plank, and reports to us as follows regarding the tree from which it had been taken:—

"The tree must have been 19 feet in girth at the bottom of the plank, and 16 at top, 6 feet 3 inches higher up. I can make out 243 layers on one radius; seven are wanting in the centre, and seven years at least must be added for the growth of the tree to the place of measurement. Hence the tree must have been about 260 years old. The out layers on this radius are so wide that it must have been growing at a goodly rate when it was cut down."

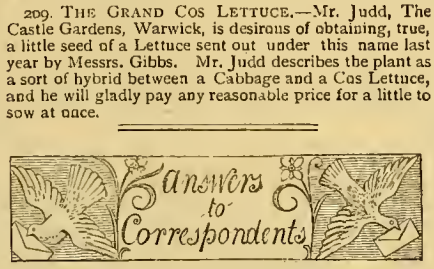
The plank is in the front corridor, immediately on the left hand as one enters the main hall of the museum, leaning against the wall which partitions off the corridor from the body of the hall. We call attention to this highly interesting historical arboricultural relic in order that many of our Northern subscribers, when in Edinburgh, may visit the Industrial Museum there, and inspect it for themselves, feeling sure that after seeing so noble a specimen plant of indigenous Scots Fir timber, they will share with us in the regret that not one specimen tree of this forest was spared by its ruthless destroyer, either to transmit to future ages the seeds of so noble and lofty a line, or to mark the spot where once stood so many monarchs of the forest. *The Journal of Forestry.*

Enquiries.

He that questioneth much shall learn much.—BACON.

208. THE COST OF BURNING CLAY LAND.—Can any of your readers inform me what the cost of burning heavy clay land would be per acre? I have some thoughts of taking a few acres near Derby for workmen's allotments, but the land is heavy; is there any better way of rendering it fit for gardens than burning? The surface has been cultivated as arable land, so that the second or third spit would be the part to burn, I should think. Slack is cheap, as are hedge clippings. Any practical hints as to the best mode of attaining my object, viz., converting stiff clay into garden ground, will much oblige. Town refuse and ashes could be had almost for the carting. *R. Binns, Derby.*

209. THE GRAND COS LETTUCE.—Mr. Judd, The Castle Gardens, Warwick, is desirous of obtaining, true, a little seed of a Lettuce sent out under this name last year by Messrs. Gibbs. Mr. Judd describes the plant as a sort of hybrid between a Cabbage and a Cos Lettuce, and he will gladly pay any reasonable price for a little to sow at once.



Answers to Correspondents.

CHERRIES FOR NORTH WALL: *J. A.* Plant May Duke. You might also try Frogmore Early, Knight's Early Black, and Early Rivers.

CLERODENDRON BALFOURIANUM: *G. W.* We will endeavour to meet your wishes shortly.

CONIFER: *A. W. Child.* It is not at all unusual for Conifers to produce sprays with two forms of foliage, as in the specimen you send us. If you look closely you will find that the Cupressinæ, to which group your specimen belongs, produce needle-shaped leaves in the young seedling state, and that later on, as growth progresses, the more mature scale-like leaves are formed, which give the branches quite a different appearance. Your plant has merely borne a shoot on which both these forms are developed, and this, as we have already said, is not at all an uncommon occurrence.

HEATING SMALL GREENHOUSES: *T. H.* We should much prefer a gas stove outside, with hot-water pipes inside, as the safest and most effectual plan. The gas burner can be fixed so as to heat a small boiler in an ordinary furnace provided with a door, and is then very little trouble to manage, while the plants are perfectly safe. Petroleum stoves may be safely used with care, but we prefer the other plan.

MONSTROUS PEAR: *R. Lowe.* We have seen many somewhat similar cases, and have published illustrations of some of them.

NAMES OF PLANTS: *W. E.* 1, Physostegia imbricata; 2, Muhlenbeckia adpressa; 3, Cratægus Azarolus?—*A. B.* Saponaria officinalis.—*J. S.* 1, Saccharum sp.; 2, Imperata cylindrica?; 3, Phlæum pratense?; 5, Plantago maritima; 6, Aira cæspitosa; 7, Kœleria cristata?—*D. D.* Monarda didyma.—*W. G. K.* Dendrobium aqueum.—*J. Murton.* Odontoglossum Lindleyanum.—*G. L.* 1, Sedum albescens; 2, Sedum spurium var.; 3, S. album var.; 4, Saxifraga cuneifolia; 5 and 6, too incomplete to name.—*A. G.* 1, Aster novæ-angliæ?; 2, A. lævis?; 3, A. simplex?. The scraps were too bad to name with any degree of certainty. 4, Linaria striata; 5, Aconitum Napellus.—*T. W. W.* Only two were numbered when they reached us. 1, is Juniperus thurifera; and 3, J. excelsa. The others are Juniperus communis, Cupressus sempervirens, and C. nutkaensis, which may probably be the same as the one alluded to as No. 5.—*W. R.* The common Ling, Calluna vulgaris.—*H. D.* Pinus Laricio calabrica.—*J. E.* Colchicum variegatum.

PENTSTEMONS: *Downie & Laird.* They are a very fine lot, but a little the worse for travelling when they reached us. Mrs. Fox Perret, a rich mulberry-purple with white centre; Charles Mitchell, a rich maroon crimson; Andrew Hunter, brighter crimson with white centre; William Kelway, one of the purples; Archibald Fowler and John F. Kinghorn, maroon crimsons, seem to be exceptionally good.

ROSE SPORT: *H. C.* The Rose which has sported, producing two colours in the flower, is new to us, and certainly worth propagating with a view to prove its constancy.

THE VINERIES AT ARDS.—Mr. Cross writes that he has no desire to impute blame or give pain to any one. The only object in writing was to show an easily applied remedy for exhausted Vines in outside borders.

VIOLA: *W. Paul.* The Viola has large, well-formed, clear sulphur-yellow flowers, with merely a few short lines radiating from the eye, so that it is practically self-coloured. If, as you say, the habit is dwarf and free blooming, it will be a useful variety of the pale yellow series. There is nothing to be desired in the individual flowers as sent to us.

ERRATUM.—At p. 368, for "Tritonia aurea" read "Urceolina aurea."

CATALOGUES RECEIVED:—W. Rumsey (Waltham Cross, N.), Select List of Roses, Trees and Shrubs, Fruit Trees, Bulbs, &c.—Messrs. E. G. Henderson & Son (Pine-apple Nursery, Maida Vale, London, W.), Catalogue of Dutch Bulbs and other Flower Roots.—G. Pollock (Post Office Buildings, Stirling), Catalogue of Dutch Flower Roots.—Messrs. Gibson & Reid (14, Lower Ormond Quay, Dublin), Descriptive Catalogue of Dutch Flower Roots, &c.

COMMUNICATIONS RECEIVED.—W. E. T.—J. M.—A.—H. H. C.—G. T. (thanks)—J. T.—W. E. G.—W. D. F.—J. S.—W. Swailes.—W. Hockin.—A. C.—A. F.—J. D.—T. W.

Markets.

COVENT GARDEN, September 27.

There is scarcely any alteration to quote. Business remains much the same. Heavy consignments of Pears are reaching us from the Continent, considerably reducing prices. Kent Cobs are making a good trade at slightly lower rates. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Oranges, per 100	12 0–20 0
Grapes, per lb.	0 9– 6 0	Peaches, per doz.	6 0–15 0
Lemons, per 100	8 0–12 0	Pears, per doz.	1 0– 3 0
Melons, each	2 0– 5 0	Pine-apples, per lb.	4 0– 8 0
Nuts, Cobs, per lb.	0 4– 0 6	Figs, green, doz.	1 0– 3 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Horse Radish, p. bun.	4 0– ..
Aubergines, p. doz.	2 0– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per bushel	8 0– ..	Lettuces, per score	2 0– ..
— Scarlet Runners, per bushel	4 0– ..	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Brussels Sprouts, p. bush.	8 0– ..	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos:—Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.; Shaws, 100s. per ton.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Achillea, 12 bun.	3 0– 9 0	Mignonette, 12 bun.	2 0– 9 0
Asters, 12 bun.	3 0– 9 0	Myosotis, 12 bunch.	3 0– 9 0
Bouvardias, per ½ in.	1 0– 4 0	Pelargoniums, 12 spr.	0 6– 2 0
Calceolaria, per in.	0 6– 1 0	— zonal, 12 sprays	0 3– 1 0
Chrysanthem. 12 bun.	4 0– 6 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	3 0– 9 0	Pyrethrum	4 0– 9 0
Dahlias, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	2 0– 9 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	4 0–12 0
Gardenia, per doz.	3 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Sweet Peas, 12 bun.	3 0– 9 0
Jasmine, 12 bun.	4 0– 9 0	Tropæolum, 12 bun.	1 0– 4 0
Lilies (in var, 12 spr.	1 0– 2 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	2 0–12 0	Ficus elastica, each	2 6–15 0
Begonias, per doz. ..	6 0–12 0	Fuchsias, per dozen..	2 0–12 0
Bouvardias, do. ..	12 0–24 0	Heliotrope, per doz.	4 0–12 0
China Asters, dozen	3 0–12 0	Liliums in var., each	1 6– 6 0
Chrysanth., per doz.	5 0–12 0	Mignonette, per doz.	6 0– 9 0
Clematis	6 0–24 0	Myrtles, do... ..	3 0– 9 0
Cockscombs, per doz.	3 0–12 0	Palms in variety, each	3 6–21 0
Coleus, per dozen ..	3 0– 9 0	Pelargon., scarlet, p. dozen	2 0– 9 0
Cyclamen, per doz ..	18 0–24 0	Petunias, per doz. ..	4 0–12 0
Cyperus, do... ..	4 0–12 0	Roses, fairy, p. doz.	4 0–12 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Valotta purpur., doz.	9 0–18 0
Ferns, in var., p. doz.	4 0– ..		

SEEDS.

LONDON: *September* 26.—Nothing of special importance or interest has this week transpired in connection with the trade for farm seeds. As respects the leading descriptions of Clover, seed merchants appear resolved to adopt this season a policy of extreme caution, and they resolutely refuse to operate unless at the moderate quotations which in their judgment the promised abundance of supply will alone justify. For Winter Tares the demand continues very active; no excessive quantity has come forward, and, consequently, the late advance is fully maintained. For sowing Rye occasional orders drop in, which are executed on former terms. The stock of Trifolium incarnatum seems about used up, the market being almost completely cleared of fine parcels. Hemp and Canary seed are without quotable change. The same can be said of both Rape and Mustard seed. Feeding Linseed is in good request, and the tendency of values is upward. The blue Pea crop has proved this year disappointing, both as to yield and quality: holders of handsome samples have, therefore, advanced their demands 1*s.* to 2*s.* per qr. There has been more business doing in grass seeds. A noteworthy feature of the present week has been an eager speculative inquiry for Trefoil and Alsike seeds. Some accounts just received speak unfavourably of the new French Lucerne, and state that prices in France are creeping up. Information is awaited with interest as to the Clover crop of the United States, and also of Canada. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday good and fine qualities of Wheat realised full prices to 1*s.* per quarter advance; but inferior produce met with a slow and irregular sale at about previous rates. Foreign wheat was in moderate supply, and the tendency was in an upward direction. Barley of fine quality suited for superior malt realised high quotations. Medium qualities and feeding descriptions were well supported. Malt was firm, with an upward tendency; choice qualities were held at high quotations. Oats were firm at fully late rates. For Indian Corn the trade was firm, with an upward tendency. Beans and Peas sold at late rates. For flour an advance of 6*d.* per sack and barrel on the prices of Monday se'nnight was quoted.—On Thursday the trade for the better qualities of Wheat was not active, but former prices were about supported. Inferior produce was dull, and irregular in value. Foreign Wheat of good and fine quality was held at full rates. Choice Barley was scarce and dear; for medium kinds there was a steady demand at previous currencies. Oats were in modcrate request, at late rates, but Indian Corn sold slowly at about previous quotations. Beans and Peas were unaltered in value. For flour the trade was quiet on former terms.—Average prices of corn for the week ending Sept. 22:—Wheat, 57*s.* 6*d.*; Barley, 43*s.* 8*d.*; Oats, 25*s.* 10*d.* For the corresponding period last year:—Wheat, 47*s.*; Barley, 38*s.* 6*d.*; Oats, 26*s.*

CATTLE.

At the Metropolitan Market on Monday, the supply of beasts being small prices advanced, and a fair clearance was effected. There were not quite so many sheep, and trade was more active, and choicest kinds rather dearer. Choice calves were also dearer. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.* 4*d.*; sheep, 5*s.* 6*d.* to 6*s.*, and 6*s.* 6*d.* to 7*s.* 2*d.*; pigs, 4*s.* to 5*s.* 4*d.*—On Thursday trade was decidedly dull. Supplies both of beasts and sheep were rather above the average for a Thursday, and as the demand was not active, prices gave way. Calves also were dull and lower.

HAY.

The Whitechapel report for Tuesday states that a large supply of fodder was on sale at that day's market, but trade rather dull. Clover gave way in price. Quotations:—Prime old Clover, 100*s.* to 145*s.*; inferior, 85*s.* to 95*s.*; good new, 100*s.* to 135*s.*; prime old meadow hay, 90*s.* to 120*s.*; inferior, 70*s.* to 85*s.*; good new, 80*s.* to 120*s.*; and straw, 44*s.* to 57*s.* per load.—At Thursday's market there was a large supply on sale, but with a dull trade prices were with difficulty maintained.—Cumberland Market quotations:—Superior meadow hay, 110*s.* to 120*s.*; inferior, 88*s.* to 100*s.*; superior Clover, 138*s.* to 147*s.*; inferior, 105*s.* to 112*s.*; and straw, 55*s.* to 60*s.* per load.

POTATOS.

The Borough and Spitalfields markets reports state that moderate supplies are on sale, and the trade steady at former quotations:—Kent Regents, 95*s.* to 120*s.* per ton; Essex ditto, 85*s.* to 110*s.*; Victorias, 100*s.* to 130*s.*; kidneys, 80*s.* to 120*s.*; Early Rose, 90*s.* to 115*s.*; rocks, 80*s.* to 90*s.*—The imports into London last week comprised 3910 bags from Hamburg, 568 bags 112 sacks Boulogne, 335 bags Antwerp, 74 baskets Amsterdam, 232 bags Harlingen, 400 Bremen, and 10 baskets Rotterdam.

Sole English Medallists for the Best Hot-Water Apparatus at the United States International Centennial Exhibition, Philadelphia.

WRIGHT'S
ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

"The 'Boiler of the Future.' I have no doubt about this."—WM. THOMSON, *Clovenfords.*

By Her Majesty's *Royal Letters Patent*

NEW PRICE LIST.

Boiler Number.	Length.	Width.	Height.	No. of Top Sections.	Surface Exposed to the Flame.	Calculated Heating Power. 4-in. pipe.	Recommended for 4-in. pipe.	Price.
	ft. in.	ft. in.	ft. in.		ft.	ft.	ft.	£ s. d.
1 A	2 0	1 6	1 10	2	13	520	400	10 0 0
2 A	2 0	1 6	2 2	3	17½	700	500	11 10 0
3 A	2 0	1 6	2 6	4	22	880	600	13 0 0
4 A	2 0	1 6	2 10	5	26½	1,060	700	14 10 0
5 A	2 0	1 6	3 2	6	31	1,240	..	16 0 0
6 A	2 0	1 6	3 6	7	35½	1,420	..	17 10 0
1 B	2 6	2 0	2 4	2	20	800	650	14 10 0
2 B	2 6	2 0	2 9	3	27½	1,100	750	17 0 0
3 B	2 6	2 0	3 2	4	35	1,400	850	19 10 0
4 B	2 6	2 0	3 7	5	42½	1,700	950	22 0 0
5 B	2 6	2 0	4 0	6	50	2,000	..	24 10 0
6 B	2 6	2 0	4 5	7	57½	2,300	..	27 0 0
0 C	3 0	2 0	1 11	1	18	720	700	16 10 0
1 C	3 0	2 0	2 4	2	27	1,080	1,000	20 0 0
2 C	3 0	2 0	2 9	3	36	1,440	1,300	23 10 0
3 C	3 0	2 0	3 2	4	45	1,800	1,600	27 0 0
4 C	3 0	2 0	3 7	5	54	2,160	1,900	30 10 0
5 C	3 0	2 0	4 0	6	63	2,620	..	34 0 0
6 C	3 0	2 0	4 5	7	72	2,880	..	37 10 0
0 D	3 6	2 6	1 11	1	24½	980	850	20 0 0
1 D	3 6	2 6	2 4	2	37½	1,500	1,500	25 0 0
2 D	3 6	2 6	2 9	3	50½	2,200	2,200	30 0 0
3 D	3 6	2 6	3 2	4	63½	2,540	2,540	35 0 0
4 D	3 6	2 6	3 7	5	76½	3,000	3,000	40 0 0
5 D	3 6	2 6	4 0	6	89½	3,580	..	45 0 0
6 D	3 6	2 6	4 5	7	102½	4,100	..	50 0 0
0 E	4 0	3 0	1 11	1	30	1,200	1,100	27 10 0
1 E	4 0	3 0	2 4	2	48	1,920	1,900	35 0 0
2 E	4 0	3 0	2 9	3	66	2,640	2,600	42 10 0
3 E	4 0	3 0	3 2	4	83½	3,340	3,300	50 0 0
4 E	4 0	3 0	3 7	5	101½	4,060	4,000	57 10 0
5 E	4 0	3 0	4 0	6	119½	4,780	..	65 0 0
6 E	4 0	3 0	4 5	7	137	5,480	..	72 10 0

We can supply Foundation Plates—which form Ash-pit—and Smokestacks, if wanted, thereby doing away with the necessity for even a single brick in their erection.

	A	B	C	D	E
	s. d.	s. d.	s. d.	s. d.	s. d.
Foundation Plate	35 0	45 0	60 0	75 0	90 0
Smokestack, Damper, and Soot-Door	30 0	30 0	40 0	40 0	40 0
Furnace and Ash-Pit, Frame and Doors; also Furnace Bars, Bearers, Dumb-Plate, &c. ..	30 0	40 0	50 0	60 0	70 0

Foundation Plates are arranged to heat the air before it is sent into the ash-pit at back, and furnace-doors to heat the air before its admission into the furnace, furnishing in fact two "hot air" blasts to the furnace; the admission of large volumes of cold air being most injurious to the economical working of the furnace.

In preparation an entirely NEW SERIES of SEVENTY BOILERS, embracing a large variety suitable for small places, &c., and all specially adapted for low situations where shallow boilers are a necessity. Particulars on application.

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The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

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THE CHEAPEST and MOST DURABLE SHADING.—"Lasting for years."
MADE of PREPARED WOOL and HAIR.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied.
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"FRIGI DOMO" CANVAS.

2 yards wide	1*s.* 10*d.*
3 yards wide	3*s.* 0*d.*
4 yards wide	3*s.* 10*d.*

"FRIGI DOMO" NETTING, 1*s.* 6*d.* per yard.
Can be had from all Florists and Seedsmen, and of
E. T. ARCHER, Brockley Road, Forest Hill, London, S.E.
*** Late of Cannon Street, City, E.C.

THOMAS'S
FITTINGS for WIRING WALLS.

NEW and IMPROVED SYSTEM.

The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall:—	20 yds.	40 yds.	60 yds.	80 yds.	100 yds
	s. d.	s. d.	s. d.	s. d.	s. d.
No. 14 Gauge Wire	1 0	1 7	2 1	2 7	3 1
No. 13 ,, ,,	1 3	1 10	2 5	3 0	3 7

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.

Five per cent. discount allowed for prompt cash on Orders amounting to 20*s.* and upwards.

Special quotations for larger quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

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H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantial made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. Estimates given in wood or iron.

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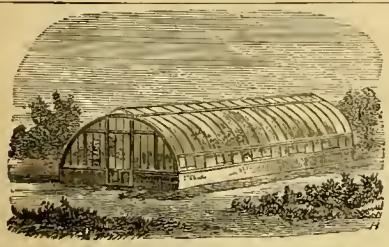
GREENHOUSES—every description,
VINERIES—all the latest improvements,
GLASSHOUSES—perfect ventilation,
} From £10 to £1000.
HORTICULTURAL BUILDER and TIMBER MERCHANT,
West End Steam Joinery, Newcastle.

Metallic Hothouse Builder to Her Majesty.

HENRY HOPE
(late Clark & Hope, formerly Clark),
HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER.
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5*s.* each.
☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plans, or Designs prepared and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, 3*d*.

HEREMAN AND MORTON, 2, Gloucester Street, Regent's Park, London, N.W.



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The curved house is more durable, stronger, lighter in construction, and no bent glass is required.

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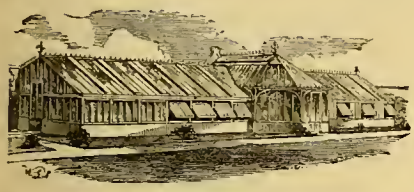

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Hot-water Apparatus fixed in any part of the Kingdom, and guaranteed.

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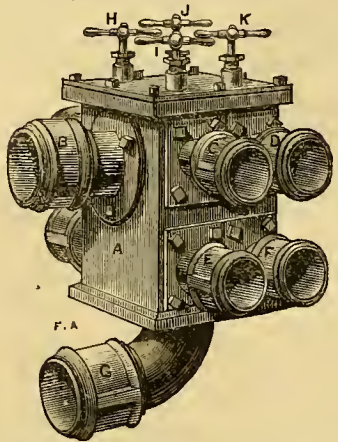
CRITCHLEY'S PATENT HEAT REGULATOR,

AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

The following Testimonial has been received :—

"Berkeley Castle, April 13, 1875.

"Gentlemen, — I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve: in fact, I think it the greatest improvement that has come out for horticultural purposes.

"I am, Gentlemen, yours truly, "R. H. CRONK,
"Gardener to the Right Hon. Lord Fitzhardinge."

Estimates and Plans furnished for Warming Gentlemen's Mansions and Public Buildings. Orders attended to in any part of the kingdom, and guaranteed to answer their intended purposes. Prospectus and Price Lists post-free.

Messrs. CRITCHLEY & CO.,
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HOT-WATER APPARATUS.

Complete Apparatus for the

HEATING of GREENHOUSES,

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HOT-WATER APPARATUS WORKS,
31, BANKSIDE, SOUTHWARK,
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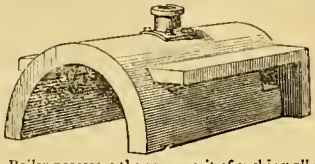
Silver Medal, 1874.

THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



"This Boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 254.

"I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 327.

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Prospectus post free.

T. JONES, Temple Street, Manchester.

SILVER MEDAL
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Royal Agricultural
Society,
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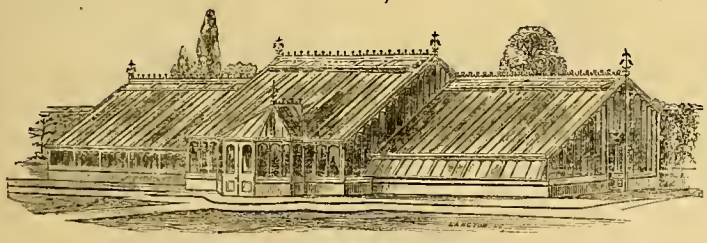

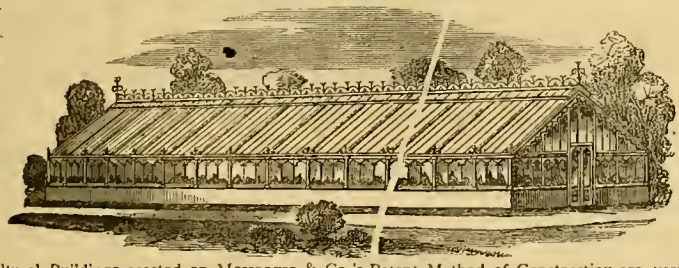

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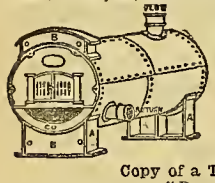

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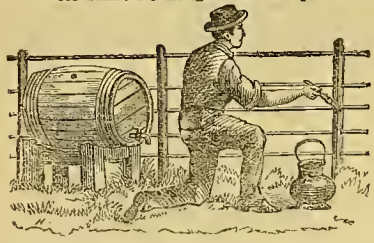

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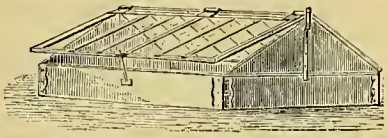

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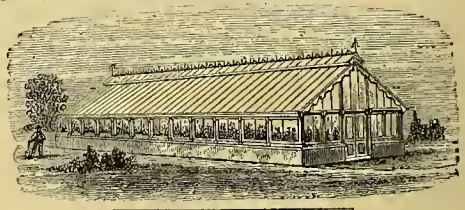

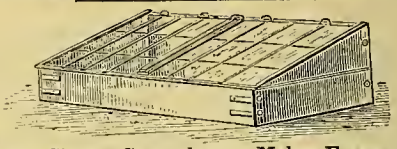

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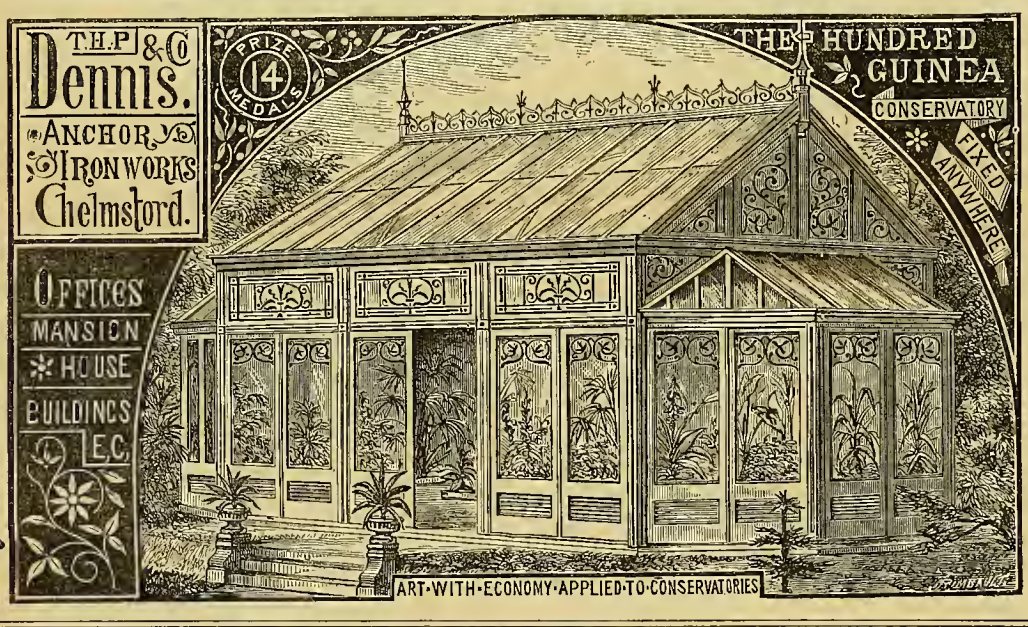

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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 197.—Vol. VIII. { New Series. } SATURDAY, OCTOBER 6, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, 5½d.

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THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

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NOTICE.—In consequence of the very small competition (3 bunches), and the bad condition in which Golden Queen was shown at the Crystal Palace, the Judges withheld the Prizes offered. We propose therefore to offer the same Prizes of £5, £2 and £1 for the best single bunch of Golden Queen; also, the same amount for the best single bunch of Mrs. Pearson, at one of the autumn shows next year, probably during September, due notice of which will be given in these columns. J. R. PEARSON, Chilwell, Notts.

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On view the mornings of Sale, and Catalogues had

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MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Kircaldy to SELL the above stock by AUCTION, without reserve, on the Premises, on TUESDAY and WEDNESDAY, October 9 and 10, at 12 for half-past 12 o'Clock precisely each day.

Stock now on view. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C.

Hale Farm Nurseries, Tottenham.

IMPORTANT SALE of beautifully-grown NURSERY STOCK, including 600 Standard Planes, 7 to 11 feet, fine Limes and other Ornamental Trees, thousands of young and thriving Shrubs, a considerable number of Fruit Trees of all kinds, unequalled for growth and quality; 2000 remarkably fine Standard Roses, a fine Collection of Bulbous and choice Alpine and Herbaceous Plants, Climbers, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Thomas Ware to SELL the above Stock by AUCTION, on the Premises, on TUESDAY, October 16, at 11 for 12 o'Clock precisely. One month allowed for clearing the Stock.

May at any time be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Exeter Nurseries, Exeter.

GREAT UNRESERVED SALE of a considerable quantity of young and thriving NURSERY STOCK, in fine variety, consisting of thousands of choice and useful Evergreens and Coniferæ, a capital assortment of selected Fruit Trees of every description, STANDARD ROSES, together with several thousands of unrivalled Specimens for Ornamental Planting, in excellent condition for removal, the whole having been carefully prepared.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Messrs. Lucombe, Pince & Co., to SELL this beautiful Stock by AUCTION, on the Premises, on TUESDAY, October 16, and three successive days, at 11 o'Clock precisely each day.

Now on view. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Heatherside Nursery, Bagshot, Surrey.

(3 miles from Farnborough Station.)

THREE DAYS' CLEARANCE SALE of valuable NURSERY STOCK, arranged in large lots to suit the Trade and Others engaged in making extensive Plantations; also the whole of the Glass Erections and Fittings thereto.

MESSRS. PROTHEROE AND MORRIS are instructed by the Proprietor to SELL by AUCTION, without reserve, on the Premises as above, on WEDNESDAY, October 17, and two following days, at 11 for 12 o'Clock precisely each day, a considerable quantity of valuable NURSERY STOCK, comprising, in addition to a large assortment of handsome Specimen Coniferæ and Evergreens, many thousands of Bord r Shrubs in endless variety, also Forest and Ornamental Trees covering several acres, likewise many thousands of Fruit Trees; 1500 Camellias, large and small; Azaleas, and a few other Greenhouse Plants; together with 18 GREENHOUSES and PITS, containing about 8000 feet super, 3000 feet of Hot-water Piping, 3 and 4-inch, and a capital SADDLE BOILER, 6 feet by 2 feet.

May be viewed any day prior to the Sale. Catalogues may be had of Mr. SHEPHERD, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Tooting, S.W.

IMPORTANT SALE of THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on MONDAY and TUESDAY, October 22 and 23, at 12 o'Clock each day, several thousands of NURSERY STOCK, remarkably well grown, and in excellent condition for removal, comprising choice Evergreen and Coniferæ Shrubs, in specimen borders, admirably adapted for effective planting; a large quantity of handsome specimen Coniferæ, a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees in bearing condition, Ivies, Clematis, Virginian Creepers, Lily of the Valley, &c.

May be viewed at any time previous to the Sale. Catalogues are now ready, and may be obtained on the Premises or of the Auctioneers.

Mayfield, Falkirk.

HIGHLY IMPORTANT PLANT SALE.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER, has been favoured with instructions from John Russell, Esq., of Mayfield, to DISPOSE OF by AUCTION, on TUESDAY, October 16, at 11 o'Clock, owing to extensive alterations in the Conservatories, the whole of the magnificent Collection of FINE-FOLIAGE PLANTS, TREE FERNS, PALMS, CYCADS, ZAMIAS, YUCCAS, AGAVES, &c. The Mayfield Collection is well-known to be one of the finest in the country.

Catalogues may be had from the Auctioneer, 6, Comely Bank, Edinburgh; or Mr. THOMAS SORLEY, Gardener, Mayfield, Falkirk.

Bowdon Nurseries, Bowdon, near Manchester.

GREAT SALE of VALUABLE NURSERY STOCK, lease expiring December 21.—7000 Gold, Silver, and Green Hollies and Yews; 5000 choice Coniferæ, including noble specimens 6 to 12 feet; 5000 fine Rhododendrons and Laurels, 8000 Aucubas and other Evergreens, 12,000 Forest Trees, Flowering Shrubs, Roses, Climbers, &c.; 12,000 fine well-grown Fruit Trees, Plants, GREENHOUSES, FRAMES, &c.

MR. J. WALTON, instructed by Mr. R. Thornhill, will SELL by AUCTION, October 17, 18, 19, and 20, the whole of the stock as above.

Catalogues at the Nurseries.

Hereford.

GREAT SALE of NURSERY STOCK, at the Barr's Court Nursery, Hereford.

MR. O. SHELLARD is instructed by Messrs. G. Davison & Co. to SELL by AUCTION, on TUESDAY and WEDNESDAY, October 23 and 24, at 12 o'Clock each day (in consequence of the land being required for the erection of the Middle Class College), the whole of the VALUABLE STOCK, including many thousands of strong Apple Stocks of superior quality; strong Hawthorn Quick and transplanted Ash; large quantities of Spruce and Austrian Firs; other Shrubs and Trees in great variety; several thousands of dwarf Roses and fine Christmas Trees.

Full particulars in Catalogues, on application to the Auctioneer, 13, King Street, Hereford.

White Cross Nurseries, Hereford.

IMPORTANT to NURSERYMEN, SEEDSMEN, FLORISTS, and Others.

TO BE SOLD, by Private Treaty, as a going concern, in consequence of a Dissolution of Partnership, the whole of the valuable STOCK-IN-TRADE, with 8 Greenhouses, Propagating Houses, 2 Vineries, and 4 Ranges, about 500 feet in length, of Pits, fully stocked, and in good repair; Horse, Yan, Spring and Heavy Carts, Tools, Implements, Utensils, and Plant, upon and belonging to the White Cross Nurseries, situated on the confines of the City of Hereford, together with the Stock of Agricultural and Garden Seeds, Fixtures and Effects at the Seed Warehouse, occupied in connection with the Nurseries, and situated in Library Buildings, Hereford, aforesaid.

The Nurseries (with the Cottages and Buildings thereon) cover an area of about 23 acres, are well stocked with the choicest variety of every kind of Fruit, Standard and Dwarf Roses, and other Trees, Ornamental and other Shrubs, Plants, &c., are well and pleasantly situated, close to the City of Hereford, and within a few minutes' walk of the Barton Railway Station.

The Nurseries, together with about 12 acres of Pasture Land, are held under a Lease, of which about 5 years are unexpired, and will be included in the purchase.

To view, apply to Mr. CHARLES WHITING, the Foreman at the Nurseries. Any further particulars which may be required may be obtained on application to H. C. BEDDOE, Esq., Hereford; or, Messrs. DEWES, SON AND WILKS, of Coventry, Joint Solicitors.

Sealed Tenders (marked "Tender for White Cross Nurseries") to be forwarded to Mr. HENRY MERRICK, of Earl Street, Coventry, Public Accountant, not later than October 25 next. The Vendors do not bind themselves to accept the highest or any Tender.

To Nurserymen and Others.

TO BE DISPOSED OF, one of the oldest established NURSERY BUSINESSES in the North of England, with valuable connection.

The executors of the late Mr. John Harrison, of the North of England Nurseries, Catterick Bridge and Scorton, are open to treat with a gentleman possessing capital, for the disposal of the business, which has an established connection of nearly 50 years.

The Nurseries consist of about 60 acres of Freehold Land, about 40 acres of which are stocked with a choice Collection of Roses and General Nursery Stock. There are good Residences in the Grounds, and fine Ranges of Glass, close to the Catterick Bridge Station of the North-Eastern Railway, situate between Darlington and Richmond, and offering unusual facilities for doing a large and profitable business. A large portion of the purchase money could remain on security of the property at a reasonable rate of interest. Possession could be given at any time as a going concern. Principals or their Solicitors only may apply to the undersigned,

A. E. HARRISON, Solicitor, Church Yard, Rotherham.

Capital Farm of 186 Acres,

TO BE LET, from Michaelmas, within 14 miles of London, and 2 miles from a Station. About 40 Acres are in Grass, the rest Arable, equally suitable for Corn or Root Crops, and a portion would carry Sheep well. It is also admirably adapted, both by soil and situation, for Market Garden Purposes. Comfortable House and roomy Buildings.

Apply to Messrs. DEBENHAM, TEWSON AND FARMER, 80, Cheapside, E.C. (24,758).

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

NOTICE is hereby given that an Addition to the LIST of PENSIONERS of this Institution will be made in January next. All persons desirous of becoming Candidates are required to send in their applications to the Committee, on or before November 5 next, after which day they will not be received. Preference will be given to those Applicants who have been Subscribers for fifteen years and upwards. Should there not be sufficient Applicants of that class then the claims of those who have not subscribed so long, or not at all, will be considered.

By order, EDWARD R. CUTLER, Secretary.

14, Tavistock Row, W.C.—October 5, 1877.

Printed Forms of Application may be obtained from the Secretary.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

WM. LEWIS GOAD (Messrs. Fraser, Goad & Co.), respectfully informs his numerous Friends that he has resumed Business on his own account, as a WHOLESALE and RETAIL SEED MERCHANT, at 7, Borough Market, London, S.E., and trusts that the kind support given to him for so many years will be extended to him in the future, as it will be his constant endeavour to merit a renewal of the confidence hitherto reposed in him.

PINES.—For Sale, cheap, Twenty-five strong Fruiting Plants, and about Thirty Succession.

Mr. STEVENS, Chesterford Park Gardens, Chesterford, Essex.

Solanums.

F. AND A. SMITH have a large stock of the above fit for immediate use, being well berried and coloured. Prices, which are low, on application.

The Nurseries, West Dulwich, S.E.

JASMINUM NUDIFLORUM, 5 feet, splendid stuff, in 48's, 50s. per 100.
JASMINE, common White, splendid, in 48's, 50s. per 100.
IVY, Irish, extra fine stuff, in 32's, 100s. per 100.
" " good, in 48's, 50s. per 100.
" " extra strong, from ground, 25s. per 100.
WILLIAM HOLMES, Frampton Park Nursery, Hackney, London, E.

NERTERA DEPRESSA, good stuff, in single pots, 4s. per dozen, 30s. per 100.
MENTHA PULEGIUM GIBRALTARICUM, good clumps, in single pots, 16s. per 100

These are the greatest acquisitions for Carpet Bedding yet introduced.

WILLIAM HOLMES, Frampton Park Nursery, Hackney, London, E.

MENTHA PULEGIUM GIBRALTARICUM.—Notwithstanding the demand for this charming new carpet-bedder, unsurpassed for compactness, fragrance, and beauty, I can still supply thousands of nice healthy plants, at 5s. per 100, post-free. Now is the time to procure and increase it.

WILLIAM ARRAHAM, Nurseryman, Limerick.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These trees have been grown expressly for Street and Avenue Planting. They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER, Knap Hill, Woking, Surrey.

FORDELDEAN DUKE of EDINBURGH STRAWBERRY.—The Subscribers, having arranged with Messrs. Moffat, of Fordeldean, to send out their famous Duke of Edinburgh Strawberry, are now prepared to execute Orders. As none have been sold previous to this season, the Subscribers are the only holders of the genuine stock. Strong plants, 25s. per 100.

JAMES DICKSON AND SONS, 32, Hanover Street, Edinburgh.

Important Notice to the Trade.

SEAKALE, ASPARAGUS, RHUBARB, Extra strong Roots for Forcing.

H. THORNTON, having devoted great attention to the production of fine roots, and having an immense stock on hand, invites the inspection of large Buyers, or he will be happy to forward Prices for large or small quantities on application.

H. THORNTON, 12, Maxwell Road, Fulham, S.W.

Florists' Flowers, and Roses.

Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Paeonies, Phloxes, Violas, Violets, &c. Free on application.

Hale Farm Nurseries, Tottenham, London.

Palms.—To the Trade.

OSBORN AND SONS are now offering:—

ARECA ALBA, in thumb pots, 75s. and 100s. per 100.
,, CRINITA, in 3-in. pots, 30s. per dozen.
,, HERBSTII, 60s. per dozen.
,, PURPUREA, 24s. per dozen.
COCOS WEDDELLIANA, in thumb pots, well established, 24s. and 30s. per dozen.
CHAMÆROPS EXCELSA, in large 60-pots, 12s. per dozen.
CORYPHA AUSTRALIS, in large 60-pots, 12s. per dozen.
SEAFORTHIA ELEGANS, in thumb pots, 40s. per 100, 6s. per doz.
PANDANUS UTILIS, 35s. per 100, 5s. per doz.

Fulham Nurseries, London, S.W.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

Address, HENRY SHEPHERD, Manager.

TO GENTLEMEN INTENDING TO PLANT.—In consequence of the decease of the late Mr. R. Webb, of Calcot Gardens, near Reading, his valuable Collection of Young Prize NUT TREES, of named sorts, are offered at half the usual selling prices. Printed LISTS will be forwarded on application.

Immediate Orders are solicited, as the Trees will be supplied in the rotation in which the orders are received; delivery commencing on October 1. Apply to

The MANAGER, Calcot Gardens, near Reading, Berks.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

STRAWBERRY PLANTS, STRAWBERRY PLANTS.—Purchasers' selection from Fifty-five of the best sorts known. For LIST see large Advertisement in last week's *Gardeners' Chronicle*. 3s. 6d. per 100, our selection; 2s. 6d. per 100, 20s. per 1000, all true to name.

HARRISON'S MUSK, 2 plants 1s, 12 for 3s. 6d.

PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2s. per dozen.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

6000—Camellias—6000.

H. WALTON begs to call attention to his extensive collection of the above, of all sizes, from 42s., 63s., 105s., to 120s. per dozen; large handsome plants of all the best varieties, from 21s. to 105s. each, all home grown.

AZALEAS, all the leading varieties in fine healthy plants, from 24s. to 63s. per dozen.

A large quantity of Specimen STOVE and GREENHOUSE PLANTS in fine condition.

ERICAS, in Half and Quarter Specimens, all the best Exhibition varieties.

Inspection invited.

Edge-end Nurseries, Brierfield, near Burnley, Lancashire.

See Report, No. 190, page 212, Aug. 18, 1877.

To Large Planters and the Trade.

LIMES, Red-twigged, from 6 to 7, 7 to 8, 8 to 10, and 10 to 12 feet.

YEWS, English, well furnished, 2½ to 3, 3 to 4, and 4 to 5 ft.

CHESTNUT, Horse, 6 to 12 feet.

LAURELS, 2½ to 3, and 3 to 4 feet.

OAKS, Hedge-row, and Standard ROSES, &c.

Prices and sample dozens on application.

A. GODWIN AND SON, Ashbourne, Derby.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.

SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)

Agents: Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Winter and Spring Flowering Plants.

MESSRS. JOHN STANDISH AND CO.'S stock of these is unusually fine this season, and includes the following:—

AZALEA INDICA, bushy and well budded, in good variety.
BOUVARDIAS, good bushy plants.
CAMELLIAS, good plants and well budded.
CARNATIONS, Miss Jolliffe and others.
EPACRIS, good plants.
ERICAS, Hyemalis, Sindryana, Wilmoreana, ventricosa varieties, and others.
ROSES, Tea-scented and H.P.'s, in great variety.
POINSETTIA PULCHERRIMA.
SOLANUM, well-berried plants; and other plants.

They have also a great variety of PALMS and other plants suitable for decoration; also of ADIANTUM and many other FERNS, besides a varied stock of STOVE and GREENHOUSE PLANTS and GRAPE VINES.

CATALOGUES post-free on application.

Royal Nurseries, Ascot, Berks.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.

,, Half Specimens, 5s. to 7s. 6d. each.

NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—CRANSTON & CO.

For the best List of Choice Hyacinths, Tulips, Crocuses, Narcissus, &c., see our Beautifully Illustrated

CATALOGUE

OF

DUTCH FLOWER ROOTS

FOR

Autumn, 1877,

Containing numerous fine Engravings and much Valuable and Original Information on the successful Culture of Bulbous-rooted Plants. Should be read by all intending purchasers before ordering. Post-free on application.

Our 21s. Collection (No. 7),

For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

Other Collections for Greenhouse or Conservatory, &c., 12s. 6d., 21s., 42s., 63s., and 84s. each.

From Mr. H. Bennett, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

From R. Pronyer, Esq., *Bathgate, N.B. February* 7, 1877.

"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

DANIELS BROS.,

THE QUEEN'S SEEDSMEN, NORWICH.

Alnwick Seedling Grape Vine.

D. P. BELL begs to offer young plants of the above Vine, the true variety as grown at Clive House, from which the only exhibit has been made, and for which he received the First-Class Certificate from the Fruit Committee of the Royal Horticultural Society, December 6, 1876, regarding which the report of the Committee, as given by the *Journal of Horticulture*, is as follows:—"The bunch is large and heavily shouldered, with a stout stalk. The berry stalks are stout, and the berries large and roundish oval, frequently with sutural furrows; skin quite black and membranous, covered with a fine bloom; flesh firm, tender, very juicy, and sweet. It was unanimously awarded a First-class Certificate. This is a far superior fruit to Alicante, and will no doubt prove to be a late-keeping variety of great value." It is important that the public should know that this, the only certificated variety (and therefore the original), has been exclusively raised at Clive House, and cannot be had elsewhere. Plants 15s. each.

The fruit now hanging on the parent Vine may be seen on application.

To the Trade.

W. HEATH AND SON beg to offer the undermentioned plants, all of which are healthy and well-established:—

STATICE PROFUSA, good plants, 3-inch pots, 12s. per dozen; 4 and 5-inch pots, 24s. and 30s. per dozen.
DENDROBIUM NOBILE, splendid plants with 7 to 12 branches, 6-inch pots, 7s. 6d. and 10s. 6d. each.
CROTONS, healthy young plants, of all the best varieties, 4-inch pots, 12s. and 18s. per dozen.
IXORAS, of varieties, 3-inch pots, 18s. per dozen.
GARDENIAS INTERMEDIA and RADICANS MAJOR, 4-inch pots, good plants, 18s. per dozen.
ARDISIA CRENULATA and CRENULATA ALBA, young plants, 9s. and 12s. per dozen.
DIPLADENIA BOLIVIENSIS, good plants, 24s. per dozen.
POINSETTIAS, a splendid stock of healthy plants, 4½ and 5-inch pots, 9s. and 12s. per dozen; smaller plants, 6s. per dozen.
BEGONIA INSIGNIS, good plants, 1 foot high, 5-inch pots, 9s. and 12s. per dozen.
BOUVARDIAS, all the best varieties, 4½-inch pots, 10s. per dozen.
PELARGONIUMS, 1877, new varieties, strong plants, 24s. per dozen.
ABUTILON BOULE DE NEIGE, fine healthy plants, 8s. per dozen; larger, in 4½ and 5-inch pots, 12s. per dozen.
ROGIERA GRATISSIMA, 3½-inch pots, 18s., 30s., 42s. per dozen.
PRIMULAS, ALBA PLENA, several thousands of strong healthy plants, in 3 and 4½-inch pots, 9s. and 10s. per dozen.
CINERARIAS, all the best varieties, to name, thumb-pots, 4s. per dozen.
ADIANTUM CUNEATUM (Maidenhair), splendid plants, 4-inch pots, 12s. per dozen, £4 per 100.
ADIANTUM FARLEVENSE, nice young plants, 24s. per dozen.
PTERIS SCABERULA, good plants, 12s. per dozen.
,, SERRULATA, small plants, 3s. per dozen; plants in 5-inch pots, 5s. per dozen.
CARNATIONS, The Bride, Miss Joliffe, and La Belle, splendid plants, well rooted, 9s. per dozen.
CARNATIONS and PICOTEES, named varieties, 50s. per 100 pairs.
PANSIES, best named varieties, 25s. per 100.
,, best bedding varieties, 20s. per 100.

WILLIAM HEATH AND SON, Nurserymen and Seed Merchants, Cheltenham.

HOTEIA (SPIRÆA) JAPONICA.—100,000 in very strong and sound condition.

SPIRÆA JAPONICA, 16s. to 20s. per 100: have been awarded several First Prizes, and always considered best shown.
DIELYTRA SPECTABILIS, very strong, 20s. to 26s. per 100.
LILIUM LANCIFOLIUM ALBUM MONSTROSUM, 30s. to 40s. per 100: very free flowering.
,, ,, ROSEUM, strong, 20s. to 26s. per 100.
,, ,, RUBRUM, strong, 20s. to 26s. per 100.

Trade Catalogues on application. Post-office Order or good reference from unknown correspondents.

BUDDENBORG BROS., Nurserymen, Hillegom, near Haarlem, Holland.

Vines and Strawberries.

"Plant now to ensure a full crop of fruit next season."

FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3s. 6d. to 5s each; strong Fruiting ditto, 7s. 6d. to 10s. 6d. each.

Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16s. to 20s. per 100; from the open ground, 3s. to 5s. per 100.

Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.

Sheen Nursery, Richmond, Surrey.

SPECIAL OFFER TO THE TRADE.

LILIUM AURATUM, very sound home-grown bulbs, 1½ in in diameter, 100s. per 100; 1½ to 2 inches in diameter, 125s. per 100; 2 inches in diameter, 167s. per 100; 2 to 2½ in. in diameter, 209s. per 100.

LILIUM THUNBERGIANUM, Prince d'Orange (the most beautiful of the Thunbergianum section), 84s. per 100.

STOCKS for BUDDING and GRAFTING.

PYRUS MALUS, Crab-Apples, 20s. per 1000.
ROSE, Manetti, 25s. per 1000.
,, multiflora de la Grifferaie, 25s. per 1000.

FRUIT TREES.

APPLES, on Crab and on Doucin, extra strong, beautifully trained, Maidens, 25s. per 100, 209s. per 1000; 2-yr. Cordon's, 42s. per 100; 2-yr. Palmettes and Pyramids, 42s. per 100; 3-yr. Palmettes, 50s. per 100.

PEARS, on Crab and on Quince, extra strong, beautifully trained, Maidens, 34s. per 100, 292s. per 1000; 2-yr. Cordons, 50s. per 100; 2-yr. Palmettes and Pyramids, 50s. per 100; 3-yr. Palmettes, 67s. per 100.

PLUMS, on Prunus St. Julien, extra strong, beautifully trained, Maidens, 34s. per 100; 2-yr. Cordons, 50s. per 100; 2-yr. Palmettes and Pyramids, 50s. per 100; 3-yr. Palmettes, 67s. per 100.

A List of the Names of the Fruit Trees gratis on application.

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B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each. For Detailed List see BULB CATALOGUE.

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ASPLENIUM NEOTOPTERIS, 4 feet by 3 feet ..	2	0	
LEPTOSPERMIUM BULLATUM, 4½ feet by 3 feet .	1	0	
ADIANTUM FARLEVENSE, 4½ feet by 4½ feet, very fine condition and full, in a tub	10	0	
CYATHEA SMITHII, 6-ft. trunk, 5 ft. across the head	4	0	
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ASPLENIUM BULBIFERUM, 3 ft. high, 4 ft. through	1	10	
PANDANUS JAVANICUS VARIEGATUS, 4 feet by 4 feet, good colour	1	10	
LATANIA BORBONICA, two, 6 ft. by 6 ft.:—the two	8	0	
TECOMA JASMINOIDES, 4 feet by 3 feet	1	0	
PANDANUS UTILIS, 7 feet high, 5 feet through ..	2	0	
MARANTA ZEBRINA, 3 feet high by 4 feet through	2	0	
LOMARIA GIBBA, 5 feet by 5 feet	2	0	
PHŒNOCOMA PROLIFERA BARNESII, 4 ft. by 3 ft.	4	0	
PHORMIUM MACKENZII, 4 feet by 4 feet	5	0	
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„ JACKSONII, scarlet, 1 foot, 50s. per 100; 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, 75s. per 100.
„ WOOLLERII, scarlet, 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, £5 per 100.
„ HYBRIDS, from all choicest named varieties, 1 foot, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100; 2 to 2½ feet, 60s. per 100.
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CURRANTS, Black, very strong, 10s. per 100.
GOOSEBERRIES, strong, 10s. to 12s. 6d. per 100.

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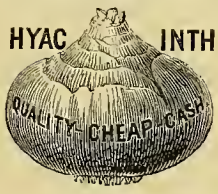

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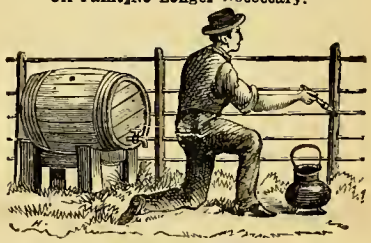

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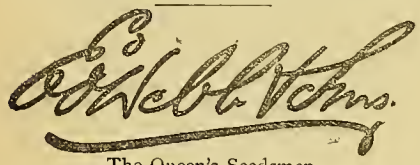

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THE QUEEN'S SEEDSMEN, READING.

SATURDAY, OCTOBER 6, 1877.

HYACINTHS IN POTS, GLASSES, AND BEDS.

It is only those acquainted with the bulb trade that can have any idea of the immense quantity of Hyacinths annually imported from Holland, where their culture is made a speciality by the Dutch growers, and from whence they are sent to supply the English and other markets that keep up an ever increasing demand for them. This is not much to be wondered at when we take into consideration their great value as decorative plants, and the ease with which they may be grown either with or without soil in dwellings in smoky towns or cities, or in beds or borders, for either of which purposes they are without rivals, coming in as they do in mid-winter or spring, when there are so few flowers to cheer and enliven.

The first to greet us is the small Roman, that may be had in bloom by the middle of November and from that time onward, provided bulbs are obtained at once and potted successionally, and grown on gradually till they are sufficiently rooted for forcing. Owing to their small size they may be potted almost as thick as Crocuses, as they require but little soil, their capacity for flowering depending more on the strength already stored up in them than on any benefit they derive from the material their roots have to feed on. This is the case with the larger varieties, and therefore to obtain fine spikes it is necessary to get heavy well-matured bulbs, and to secure these orders should not be delayed, as first-comers are supposed to get the pick, although some growers hold a contrary opinion, thinking that the best and soundest bulbs are held back, as only such will keep plump for any length of time. Be this as it may, certain it is that any advantages gained that way are more than counterbalanced by not having them potted early so as to get them well rooted and allowed to come slowly on. In potting the small Roman variety already alluded to, as many as six or seven may be put in a 32 sized pot, and if placed regularly at equal distances apart they will make a fine display, and be most valuable for standing in windows, or affording cut flowers, a purpose for which they are particularly suited.

In cultivating the large Dutch kinds for conservatory or room decoration, I would much rather have them three in a pot, than singly in the way they are usually grown, as the effect is far better, and a greater variety of colour may be had in a given space, as distinct shades may be associated together according to taste. Any one who has once seen them grown in this way will never be satisfied with the comparatively meagre display single plants make where the pots are generally quite disproportioned to the size of the plants and the head of bloom they carry. Seeing that the embryo spikes of these are already formed in the bulb, and only require further slight assistance to develope the same, very little soil is necessary, and therefore the pots need in no case be larger than 4 or 5-inch for the one bulb, and 6 or 7-inch when it is desired to have three together. These should be placed triangularly close round the sides, and in potting the quickest and best way is to loosely fill the pots with soil, and having put a pinch of sand for

the base of the bulbs to rest on, to keep them from coming into immediate contact with any earthy or manurial matter, the next thing is to press them sufficiently low down, that when finished off only just the crown of each is visible. Should new pots be used for the purpose they ought, first of all, to be soaked in water for some time, otherwise the tips of the roots die when they come in contact with the sides, owing to some deleterious salts evolved, or chemical action that takes place during the process of burning.

The soil best adapted for growing Hyacinths is a good turfy loam that has been laid up for a time so as to become mellow, and this should be chopped up and used in a tolerably rough state, and not sifted, as is frequently done, the small nodules being a great help in encouraging a free and healthy root action and ensuring proper porosity. As the space in the above sized pots will be small, it will be well to enrich the loam by adding about one-fourth of thoroughly decomposed cow-manure and a little leaf-soil and sharp sand, to prevent the whole from binding together. In a general way pots are frequently over-drained, and this should be avoided in growing Hyacinths by placing only one large crock to cover the hole, and on this a handful of the roughest soil, filling up with the other just as it comes. By doing this loosely, as before adverted to, the bulbs can be pressed in to about two-thirds of their depth and potted much more expeditiously and firmly than they can in any other way. It frequently occurs that when Hyacinths are purchased there are small offsets or loose particles around their base, and these should be removed before potting, or they act as robbers, or cause decay to set in.

Having completed the potting, the next thing is to stand them on a good hard bottom of coal ashes, or other material impervious to worms, and, this done, to give them a thorough watering through a fine-rosed pot, after which they should be allowed to stand for a few hours to drain and then be covered over to a depth of 6 inches or so with some old tan, half decomposed leaves, or anything of that kind. So favoured they at once begin to emit roots, and when the pots are full of these, and the bulbs have made a little top growth, it is time to remove them to some light cool pit or shelf in a greenhouse, from whence they can be drafted for forcing, or allowed to remain to come slowly on. It should be borne in mind, however, that the transition from being buried under the plunging material and their exposure to sun and light should not be too sudden, as in their then blanched state the tips of the leaves are apt to become injured, and when this takes place they are much weakened, and their beauty considerably marred.

In forcing it is best to begin with a low temperature, and to gradually increase the same from 50° or so by night to 55° or 60°, allowing a further rise by day of about 10° more, by which treatment they will come sturdy and strong. To encourage free growth the syringe should be well plied so as to wet them thoroughly overhead, and at this stage they will be much benefited by liberal supplies of liquid manure, which should always be given whenever they require water at the root. The great weight of the spike of bloom renders early support necessary, and the neatest way to afford this is to use pieces of small wire about 1 foot long made sharp at one end to thrust into the bulb close to the flower stem, to which it can then be tied. This may appear rather barbarous, but it will not do the least harm, and even if it did, as Hyacinths are generally discarded after blooming, it would not much matter. This is a waste, however, that ought to be avoided, for if the bulbs were taken care of and kept watered till their foliage died away naturally, they would be valuable for beds or borders, and ultimately become as strong and good as those generally sold for such purposes. To come in late in the spring, another potting should be made a month or so hence and treated in the same way as those already touched on till they require light and air, when any cold frame or pit will suit their requirements. In such situations they do best plunged in leaves or moss, which keeps them in a state of uniformity as regards both heat and moisture, and this is a consideration when fine heads of bloom are desired.

There are probably quite as many or more grown in glasses as pots, and for this purpose the heaviest and best of the bulbs should be selected. Tye's Hyacinth glasses are perhaps the most ornamental and suitable, but any will do, and whichever are used should be filled sufficiently full with clear soft water for the bottom of the bulb just to touch it but no more, or they will be likely to rot. This done, the best place to stand them in is any cool dark cupboard or cellar, where they should be allowed to remain till the roots attain a length of 3 or 4 inches, when it will be time to remove them by degrees to some light airy position. In dwellings they cannot well be placed too close to the glass, as from want of air they have a tendency to become drawn, especially when the room is kept warm; and the coolest place they can occupy at such times is where they are almost touching the panes. It sometimes occurs that the water becomes fetid and offensive through standing, and when this is the case it should be changed for fresh, always using such as is pure and soft, but if a few small pieces of charcoal are put in at starting it will keep sweet much longer than without it.

All the attention they require is to keep the glasses filled up as the water evaporates or becomes absorbed by the plants, and when frosty nights occur to remove them from the windows to some safe position in the room, to be replaced again in their former situations the following morning. So managed they afford much pleasure and interest from day to day in watching their progress up to their final development—a time when they become doubly attractive and scent the air with the delicious perfume they exhale.

For growing in glasses the middle or end of October is quite soon enough to start the bulbs, and choice should be made of the single varieties, these being of a stronger and more robust constitution than the doubles, and even more beautiful, owing to the individual flowers not being so crowded and of a more symmetrical form.

In preparing beds for Hyacinths it is necessary to trench or break them up to a good depth, and in doing this to work in plenty of leaf-soil, old spent hotbed manure and road scrapings, or sharp sand, to secure a free and natural drainage during the winter, so as to preserve the bulbs in a sound healthy condition. Hyacinths look best in circular rows of decided colours or groups of one kind, and in planting they should be put in from 4 to 6 inches deep, and have a little sand scattered over them before being covered with the soil. To ward off frost during severe weather the buds will require some protection; the neatest and best material for the purpose is either cocoa-nut fibre or half-decomposed leaves, neither of which are at all objectionable in appearance or likely to be disturbed by wind in the way any littery matter would.

As a carpeting for the ground to take off its bare appearance in early spring, when the bulbs are coming into flower, a few golden Pyrethrums, or Thyme, have a good effect, and enhance the beauty of the Hyacinth by the contrast they afford. *J. S.*

TRADE MEMORANDUM.

Enquiries have reached us as to a nurseryman near Kidderminster, signing himself J. Jackson. Is he the same person as H. Jackson, or William Jackson, who writes from the same place?

New Garden Plants.

Lælia Sedeni, *nov. hybr.* (Cattleya violacea superba × Lælia devoniensis).*

Crossing may be done in different ways. The one grower crosses only to get a mule without the least idea to improve one plant by the good qualities of the other, provided there is hope of getting a new mule; another grower will make his endeavours the consequence of profound meditations, and will cross with the hope of getting something new, and better perhaps, than what we have, at least for certain qualities. The good horse-mule is far superior to both his parents in steady strength and the facility of hearing the coldest Highland showers. Thus, if we had a Vanda with scarlet flowers, such a meditating grower would cross it with V. cœrulea in the certain expectation of getting a new mule of light violet tint. It was decidedly an excellent idea of Mr. Seden, of the Royal Exotic Nursery of Messrs. Veitch, to cross the splendid old C. violacea (superba)—that combines brilliancy of colour and sweetness of smell with the bad habit of seldom succeeding well in our European stoves—with the free growing, free flowering tall Laelia devoniensis.

The lucky result of this cross is a free-growing tall plant, nearly like the old, now rather well-known Lælia devoniensis, having at the same time the brilliant warm tints of the flowers of Cattleya superba. The sepals and petals are of a very strong lilac, and the anterior part of the lip has that glorious deep purple which is the pride of the Oponopodoli, or Ducksmouth, or Masamo. The chief part of the residuous part of the lip is white, the side laciniæ rosy, with a purplish apex, and a deep brownish purplish bar extends from the base of the anterior lacinia to the very base of the lip. The column is white with purplish edges, and purplish tint at the front side. It is decidedly a very recommendable plant.

May I be allowed to add once more a few words about my calling the plant a Lælia. It has, indeed, only four pollen masses, as a Cattleya, but they are attached on both sides to the caudiculæ, and have a certain stricture, that proves they would like to be split; and I have, indeed, observed such pollinia to be divided in two, as one might have suggested before. In Cattleyas the caudicle (strap) is never adherent on both sides to the pollinium, but one side is free, and thus it is in all the Epidendrums you may look to, the more so as, botanically speaking, there is no difference between the Encyclia section of Epidendrum and Cattleyas. Increase a flower of Epidendrum Candollei by six diameters, and show the representation to any of the British Orchidists, what will they say? "Oh, indeed—a new Cattleya." The Lælia elegans (Cattleya elegans of Morren the elder) has always such pollinaria with straps adherent on each side, and very often two pollinia on each strap. The Cattleya devoniensis is a very curious product, since it is very much like Lælia elegans; I even would regard it the same, if it was not said to descend from Lælia crispa and Cattleya guttata, when there is—at least of our actual knowledge—at the natal place of Lælia elegans no Lælia crispa to be seen, and no Cattleya guttata, but the next cousins, Lælia purpurata and Cattleya guttata Leopoldi. It is much to be wished that Mr. Seden may soon raise magnificent hybrids by crossing the two last plants, the more as within my knowledge the demand for Lælia elegans is far greater than can be supplied by the English growers. *H. G. Rchb. f.*

Montbretia Pottsii, *Baker, n. sp.*†

This is one of the most valuable additions that has been made for a long time to our stock of hardy Cape bulbs. It flowers in August, and was introduced by Mr. G. H. Potts, of Lasswade, near Edinburgh. In popular language the genus Montbretia may be defined as consisting of those Irids which possess the habit and small scariose spathe-valves of Ixia, in combination with the irregular funnel-shaped perianth and parallel unilateral stamens of Gladiolus. For a Montbretia the present plant is unusually large, as it reaches a height of 3 or 4 feet. The individual flowers are about the same size as in the short-tubed species of Monthretia already known, such as securigera and lineata. In colour they remind one most of those of Tritonia (Crocosma) aurea, *Botanical Magazine*, t. 4335, being a bright deep yellow, tinted on the outside with red. These Montbretias are amongst the least fugacious in their flowers of all the Iridaceæ,

* *Lælia Sedeni*, nov. hybr.—Habitu, caule foliis Lælia devoniensis, inflorescentia pluriflora; sepalis ligulatis acuminatis; tepalis oblongis acutis; labello trifido; laciniis lateralibus antrorsis triangulis; lacinia media cuneato oblonga emarginata denticulata crispa; columna clavata trigona abbreviata. — Cattleya violacea (superba) × Lælia devoniensis. *H. G. Rchb. f.*

† *Montbretia Pottsii*, Baker, n. sp.—Rhizomate repente filiformi, bulbis globosis, caule 3—4-pedali dimidio superior ramoso; foliis 5—6 distichis glabris lineari-ensiformibus, modice firmis, paniculæ laxissimæ ramis ascendentibus laxe æquilateraliter spicatis; spathæ valvis parvis integris vel apice emarginatis inferne viridibus superne rubellis scariosis exteriori lanceolata interiori oblonga; perianthii infundibularis fulvi segmentis oblongis obtusis subæqualibus, tubo medio cite ampliato dimidio brevioribus, genitalibus inclusis.—Gladiolus Pottsii, M'Nab, in *Hort. Edin.*

and as the present plant bears four or five gradually centripetal spikes of twelve to twenty flowers each, it keeps in flower over a long time. Mr. M'Nab has cultivated it successfully on his rockeries at Edinburgh, and distributed it under the name above cited. For the specimen from which the present description was drawn up I am indebted to Max Leichtlin, Esq., who has grown it in the open air at Baden-Baden. Altogether I venture to predict with confidence that it will become a popular favourite.

Bulbs globose, connected by a thread-like rhizome. Stem 3—4 feet long, including the inflorescence, which reaches about half way down. Leaves about four in a distichous rosette at the base of the stem, and two others higher up, below the inflorescence, linear-ensiform, moderately firm in texture, green, glabrous, reaching a length of 1½—2 feet, and a breadth of ½—¾ inch. Panicle 1½ foot long, consisting of 3—4 lateral branches in addition to the end one, the lower ones subtended by reduced leaves half a foot long. Spikes 6—9 inches long, equilateral, 2 inches broad when expanded, 12—20 flowered. Spathe-valves ¼ inch long, entire, or faintly emarginate at the tip, green in the lower part, purplish and scariose in the upper half, the outer valve lanceolate, the inner oblong. Ovary green, oblong, ⅛ inch long. Perianth funnel-shaped, an inch long, deep bright yellow on the outside flushed with brick-red, the sub-equal oblong obtuse segments about half as long as the tube, which is cylindrical at the base, without any calli, dilated suddenly at the middle, especially on the upper side, to a diameter of ⅓ inch at the throat, genitalia included. Stamens unilateral, inserted half way up the tube; filaments filiform, bright yellow, ⅓ inch long; anthers linear-oblong, basifixed, the same colour as the stamens. Style protruded from the perianth, with three branches $\frac{1}{12}$ inch long, which are entire and cuneate at the tip and stigmatose round the outer edge. *J. G. Baker.*

DOMESTIC FERNERIES, MOVABLE AND FIXED.

Under this heading we include all kinds of arrangements for growing Ferns and other plants which do well under similar treatment, either in the rooms of dwelling-houses or attached to the outside of windows, and attended to from the rooms. The simplest form of fernery is that of a bell-glass placed over a plant growing in a pot or shallow pan; and this plan of cultivating each kind separately has many admirers amongst true lovers of plants, inasmuch as it admits of varying the management to an unlimited extent. But the space taken up by even a small collection grown in this way is so great that few can afford it in rooms. Hence the more frequent employment of larger pans or cases capable of containing several species which are thus grown without taking up much space in a room, while they afford the pleasure of seeing the contrasts and harmonies between different forms and shades of foliage when judiciously selected. These cases are too often crowded with as many plants as can be crammed in, without allowing space for the plants to grow, and as a natural result the dwarf kinds are soon killed by the stronger-growing species, and the effect of the original arrangement is completely lost. But when a selection of slow-growing plants is properly made, and when they are properly planted, with room enough between for the development of every plant, and with the surface of

Fig. 82.—Movable Fern Case.

the soil hidden by some small species of Selaginella or Ficus, such a case becomes and long remains an object of beauty and interest, as may be seen in the engraving (fig. 82).

Great improvements have of late years been made in these movable ferneries, both in the convenience of access to the growing plants, in the means of regulating the ventilation, and in heating them when necessary. The last-mentioned aid to healthy growth is sometimes attained by pouring hot water into a receptacle below and around the soil, and sometimes by suspending a small lamp under the water-tank, the degree of heat necessary being regulated by the size of the flame and its distance from the water which it has to heat.

In connection with this it will not be out of place to allude here to the heated propagating cases of Messrs. Barr & Sugden, which have enabled amateurs to strike cuttings of very many plants which without their assistance they would not have succeeded in growing.

Amongst window ferneries we have seen few better than those in the coffee-room at the City of London Club, near the Bank of England (see pp. 428, 429); of these we are able to furnish engravings from photographs taken some time ago by Mr. Arthur E. Smith. The room is 60 feet long, 30 feet broad, and 30 feet high, and at each end there is a central mantelpiece, with a large mirror over it, and a window upon either side of the fireplace. The lower half of these four windows opens into a miniature conservatory of foliage-plants, and a different appearance is presented by each of them. One end of the room is shown in fig. 83, where in the mirror is seen a reflection of the opposite end of the room. The handles seen above the ferneries indicate that the lower sash has been thrown up to its highest point.

Each window-sash is 4 feet 6 inches wide by 5 feet high; but this does not indicate the size of the ferneries, which are 8 feet wide, and 7 feet high near the window-pane, with a glass roof sloping off to 6 feet in height at the back. They are 4 feet deep.

We are careful in giving these dimensions, because window conservatories are too often constructed of just the same width as the window, and with the bottom on the same level with the window-sill. In those here figured the space for growing Ferns extends for more than 18 inches on either side of the window, so that large plants can then be used, and portions only of them contribute to the general effect in the room—an important advantage, which could not be otherwise obtained. Again, the depth of the fernery below the window-sill is another great advantage, since it permits the use of much taller plants than could otherwise be employed.

One of the ferneries has on its right a series of pocket-like pools on the face of the rocks, with a stream trickling down from one pool to another until it is lost amongst the plants growing at the bottom. This trickling is not seen unless the observer is close to the left side of the window; but a reflection of it is seen in a good-sized mirror placed diagonally across the further left angle of the case, apparently at the end of a deep cave, the edges of the reflecting glass being concealed amongst the rockwork, which is covered with Ferns.

Another has for its central object a fine young plant of Cibotium princeps, under the gracefully arching fronds of which a little fountain mimics the curves of the Fern above. In this fernery two pieces of reflecting glass are inserted amongst the rockwork at the back, one on the extreme right, the other on the extreme left, the result of which arrangement is that the sides of the fernery are repeated, and that the fernery appears to be twice as deep as it really is.

The third has a deep aquarium, through which a

Fig. 83.—Window Ferneries at the City of London Club.

stream of fresh water flows, entering below and overflowing into a cavern on one side. The rockwork is here arranged so as to carry out the leading idea of a large pool, the surplus water of which descends into another pool which is out of sight, and the contents of the upper pool are rendered visible through a sheet of stout plate glass on the side nearest to the window.

The fourth has a dashing cascade just in front of the spectator, the water falling upon a shallow ledge of rocks, which causes a greater splash than if it fell into a pool. There is much less light in the last two cases than in the others, owing to the nearer proximity of tall buildings, and consequently the foliage is neither so varied nor so luxuriant. This drawback is, however, overcome by using here a preponderance of such plants as have been found to do best under those unfavourable conditions.

It will have been noticed that, in all the four, water plays a not unimportant part, and, particularly in the hot weather, conveys to both the ear and the eye a more refreshing feeling of coolness than foliage alone could impart.

These ferneries are provided with ventilators above and below, and are heated during the colder months with two flow and one return pipes of 2 inches diameter, with means of regulating the heat in each at will. A cold-water pipe is carried for some distance along by the sides of the flow-and-return pipes, and is connected with a screw-nozzled tap in each case. When the plants require syringing or watering, a piece of flexible tube, with a rose at the other end, is screwed on to the tap, and water with the chill off is thus at command.

The ferneries have their bottoms composed of slabs of slate 2 inches thick, which are supported each upon three strong iron brackets fastened into the external walls. The three sides of the ferneries are partly slate and partly glass, the lower 3 feet being of inch slate mortised at the angles.

The rockwork is built of brick burrs below and rough bark above; the former (of which three cart-loads were used) is fixed with Portland cement, and the latter is fastened with copper-wire. This portion of the work was entrusted to Mr. Alexander Blake, of Fulham, whose skill in copying natural rockwork with such materials is well known. Mr. Blake also supplied and planted all the Ferns, Palms, and other plants.

Palms appear to do equally well in all the cases, especially species of Seaforthia, Latania, Areca, Geonoma, &c. These, with Aspidistra lurida variegata, Ficus elastica, Dracænas, and a few other things, form the leafy decoration of the two more gloomy cases, the climbing Fig growing well, and the Japan Lygodium hanging in bunches from the wires attached to the roof. In the lighter cases there is more variety, the climbing Fig hanging in graceful festoons, while Begonias, Marantas, Anthuriums, Cyperus, and numerous Ferns, together with many of the plants previously mentioned, look quite happy.

As the effects described are the result of plants put in four years ago, we are not premature in pronouncing the arrangement to be a great success, and we can well imagine the relief which the jaded man of business must derive from partaking of his hasty luncheon under such influences.

For much of the foregoing information we are indebted to Mr. W. Thomson, under whose superintendence these ferneries were constructed and furnished, and who merits warm commendation for the taste with which he has managed to bring a sub-tropical garden into each of the four corners of a London club-room.

THE CULTIVATION OF THE ROSE.*

I shall in this paper endeavour to describe clearly some of those essential items of culture most calculated to ensure a fair measure of success.

Although the Rose possesses charms which enchant the senses more than any other flower, it is, on the whole, void of some desirable qualities found in other genera of less pretensions, that is to say, the habit of the Rose forbids its combination with other plants with good effect; even in such gay company as scarlet Pelargoniums and Calceolarias it neither looks dignified, nor heightens the appearance of its neighbours. It is in groups alone and in the pure Rose garden that its supreme beauty is displayed to advantage.

Propagation by Cuttings.

With many others I prefer this mode of propagation for dwarf plantations, which are, as a rule, pegged down near to the surface of the soil. Plants on their own roots can be handled with more freedom, and they will not trouble the cultivator by starting up "rogues" or stock shoots, as budded plants so frequently do. Roses will root freely if operated upon in the months of September and October by selecting well-matured growths. Such growths ought to be carefully chosen, with an eye to preserving a uniform number of growths on the plant left, while those detached ought to have a small portion of the previous year's growth, which is known in the profession as "heel." In forming the cuttings, the operator has first to cut off with a keen-edged knife a portion of this old wood intended to form a "heel," leaving about one-eighth of an inch for that purpose. The cuttings are then shortened back to 8 or 10 inches by taking off their tops, thus making them ready for insertion.

In some localities cuttings root readily without the aid of protection, if planted at the bottom of a wall in a sunny part of the garden, and the weather prove favourable; but under all circumstances that process is assisted by a covering of glass. More especially is this protection essential where the place is cold, with a damp, adhesive soil, and the quantity of cuttings limited. Seeing the risk of diminishing the number is great in a cold, open aspect, it is preferable to form a comfortable bed for their reception under a glass frame or hand-glass. The bed ought to be 9 inches deep, composed of light, fresh loam, river sand, and leaf-mould, the last ingredients in equal proportions, while the loam should be present in greater quantities. Moderately beat the bed to a rather firm consistency, so that the cuttings are held secure after being inserted. Plant the cuttings in lines 8 inches apart, and 2 inches between the plants, inserting them so that three eyes are exposed above-ground. Carefully tramp the soil firmly around the cuttings as the work proceeds, and leave the surface trim and neat, after which give a moderate watering over the whole, and cover with the glass frame. Ventilate moderately daily, and shade when the sun shines strongly, but not otherwise.

Nothing further need be said regarding the attention required, excepting that a couple of mats should be used to protect them from severe frost, but on no consideration should they be kept covered in the absence of frost. With such encouragement most of the cuttings will root, but Tea-scented and some of the Bourbon varieties are rather stubborn in that process. However, give them time; so long as their wood retains freshness, there is vitality in them.

Keep the soil free from weeds and moss; the latter is apt to accumulate when left undisturbed by the hoe. With the first indication of returning spring, allow a judicious quantity of water to be supplied by means of a pot provided with a rose. Keep the bed moist until the cuttings have assumed the character of plants, as indicated by their strength, or by the young shoots beginning to push. When it is ascertained by their growth that they are properly rooted, lift them carefully, and plant them at wider distances; shade from the sun, and keep rather close until their roots have retaken to the soil, when shading must be discontinued, and air admitted more freely. Ultimately, the sashes should be altogether removed.

Propagation by Layers.

This is a very successful method of increasing the stock of Roses, and may be effected with great ease with plants previously laid to the ground. The proper time to layer Roses is from June to the middle of July, but it is to their advantage to have it performed early, so that the layers get rooted before autumn is far advanced, else they will continue through the winter in the same state as they happen to be in the autumn.

For layering, first have the bed pointed a few inches deep with a digging fork; follow this up by sifting an inch of sharp sand over the surface. Next stir with a Dutch hoe, leaving the surface level. Have the required number of hooked pegs, and likewise a similar quantity of short stakes. Proceed then by selecting such shoots as are most convenient, choosing those which are neither too strong nor too weak, but which show a good bone of ripe wood, yet not too hard ripe. Bend the middle of the shoots to the ground with both extremities inclining upwards, then make an incision exactly at that part where the shoot touches the ground. Direct the knife upwards, making a clean cut up the centre about 2 inches long, then hollow out the soil where this incision is intended to rest. Again bend the centre of the shoot, and cause the tongue of the slit thus formed to dip into the soil. Next fix it in position securely with a hooked peg, supporting the upper extremity by tying it to a stake, then to fill up the hollow made for the reception of the layer.

Three months after this operation most of those shoots ought to be rooted, when they may be separated from the mother plants, and potted into a loamy mixture, giving them the benefit of a cold frame for the succeeding winter. March is perhaps the best season of the year to have them turned out of their pots and transplanted where they are to form permanent plants.

Propagation by Budding.

This operation is at once an interesting and pleasing recreation, more especially to the amateur. To be an expert budder requires much practice—not that any material difficulty attends the performance of it, but what is demanded of the operator is care not to insert the knife too deeply while making the slit in the stock, causing damage to the wood and the thin layer of cambium, whose chief functions are to form new layers, heal up wounds, and form a union with the adopted bud or graft. This important formation is most sensitive to exposure to sun or wind, which causes it to brown and form a thin bark-like skin, making a union between it and the bud an impossibility.

Being furnished with the required materials, commence by cutting back all the leaves of the shoot that is to furnish buds; also displace the spines or prickles from both it and the stock. Having now determined where to plant your bud, make an upright cut about an inch long, penetrating the inner bark and no more. At the upper extremity of this incision make a horizontal cut; the thin edge of the knife-haft is carefully introduced between the bark and wood, entering it where the horizontal and longitudinal incisions unite, gently raising the bark and sliding the knife along at the same time. The opposite side of the bark incision is operated upon in the same way. Scooping out a sheath of bark containing a bud comes next to be considered. This ought to be performed by a single cut of the knife, inserting the knife about half an inch below the bud, guiding it inwards and upwards until the edge is opposite the bud, when the knife must take an outward course, sloping the cut at top into a similar form to the one below the bud. The extracton of the wood which fills the sheath of bark thus formed requires care to prevent extracting the core of the bud along with the wood; but to lessen this danger cut off the sheath with as thin a body of wood in it as possible, allowing sufficient margin of bark on each side of the bud. Remove the wood out of the sheath by an easy twitch. Having inserted the point of the knife between the bark and wood insert the bud by raising one side of the bark by means of the knife-haft and the thumb, placing the sheath parallel with the lengthened cut, then gently push in the sheath until the bud is neatly placed; the bark on the opposite side should be treated in a similar way. The bud adjusted, hold it in position with the thumb, draw the knife through the horizontal cut in the stock, cutting the upper portion of the sheath so that it fits exactly the cross cut in the stock, wrap up the bud with soft matting, being careful to cover the incision, and only allow the bud to peep out.

I shall not stay to inquire regarding the different "stocks" recommended by various authorities whose opinions are divided. Some incline to prefer the Manetti, but the great majority are disposed to favour the Dog Rose, which I consider, on the whole, preferable to all others for general budding. All stocks have a tendency to generate stock-shoots more or less, but the Manetti especially, and its excessive vigour of growth is objectionable. If restrained by having weak-growing Roses budded on it, it invariably starts stock-shoots, which, if not soon discovered, have a fatal effect upon the Rose, causing it to dwindle and die. Further, it takes a practised eye to distinguish it from the genuine Rose shoots when forming part of a mass of growths. The proper time to collect stocks of the Dog Rose is at the fall of the leaf. It is most important to cut away all useless protuberances on the roots, dressing them back to the last fibres rather than allow them to remain and produce stock-shoots. Plant in rows, after having previously trenched and manured the ground well. Cow manure in a moderately fresh condition should be preferred to all other

* Read at a Meeting of the Scottish Horticultural Association, by Mr. A. Kerr.

home manures, and it is desirable not to have too much of the manure in immediate contact with the roots; rather have the body of it near the bottom of the trench. The roots will find sufficient food for their immediate wants if a portion of this stimulant is incorporated with the soil. Plants intended to form standards may at once be cut back to the desired height, while those required for dwarfs must be cut back to 6 inches above the ground. In all probability the standards will furnish many growths up their stems; these should all be removed, excepting two or three selected for budding near the upper extremity Budding ought to be done early in the summer, when it is found that the bark will rise freely, and the shoots from which the buds are taken are in a medium state of maturity. A sunless mild day is perhaps the best for this operation. Hot dry weather has a tendency to dry the opening on the stock in which the bud is deposited, and besides causes the sheath to shrink unless expertly performed.

About a month after budding, when union has been effected between bud and stock, have the wrappings cut, so that no interruption may be made to the swelling of the stems. All buds still dormant must continue to wear their wrappings until a union has been accomplished. In February following let there be a general pruning away of all rank growths on the stocks, cutting them back to a couple of eyes above the buds, which will afford great assistance to them in their first start, and will further materially assist the buds by allowing them to appropriate to their own use food offered through the reviving action of the roots, while at the same time an over copious rush of sap will be restrained by detaching the vigorous growth of the stocks, whose powerful agency proves more than enough for inactive buds. Ultimately let the remaining part of the shoots be cut off above the buds when the buds have started a few inches.

(*To be continued.*)

HARDY TREES AND SHRUBS.

Under the title of "Half-hours at Kew," two years ago, I contributed some notes, among other things, on the hardy Oaks and other deciduous and evergreen trees and shrubs. Since then many of the species and varieties in the plantations at Kew have considerably developed their characters, and I therefore propose adding to, or repeating, what I then said respecting certain species and varieties, and mentioning some forms that did not come under observation at that time. It is true that the winters of 1875-6 and 1876-7 were not so severe as to afford any test of the hardiness of the doubtful subjects, and the peculiar nature of the soil where most of the new plantations have been made—in fact one might say of the whole gardens—is so favourable to the success of tender plants that not all of the same species will be hardy in all situations around London even. It is very dry and gravelly, consequently growth is never excessively luxuriant, and the wood ripens pretty well; and, what is equally important, the roots lie dry in winter. Unfortunately there is a reverse to this, for although there are many large trees at Kew and a few very fine ones, they die off very fast. Possibly the copious rains which have fallen during the last twelvemonths may arrest to some extent the widespread decay, of which there is now only too much evidence in the shape of dead and dying trees.

One particularly fine Oak, of much greater age apparently than the bulk of the trees, deserves notice. It is near the lake in the pleasure-grounds, at the end farthest from the Thames, and is still in tolerably vigorous health, although its trunk must be nearly or quite six feet in diameter breast high. Any one really fond of trees will find many others to interest him in the wilds of the pleasure-grounds, where there is a greater variety than most people are aware of. This takes us naturally to the consideration of some of the Oaks first. The number of species and varieties perfectly hardy in the climate of London is legion, but there are some which are far preferable to others, and there are many which nobody except those making collections would care to plant. And, again, there are others which cannot be bought, and exist in a cultivated state in botanic gardens only. All who are able should go to Kew and see for themselves what an immense variety of deciduous trees and shrubs there is to choose from, though very few nurserymen keep a large variety, because ninety-nine people out of every hundred will only purchase the familiar Elm, Poplar, Oak, Beech, &c.

Evergreen Oaks.

Among evergreen Oaks, for instance, we rarely see anything except the small-leaved varieties of Quercus Ilex, which are certainly very useful for planting in exposed situations and near the sea, but rather gloomy withal. Q. glauca, a Japanese evergreen Oak, is a very fine species, of shrubby habit at Kew, but growing to a tree of considerable size in the south of Japan. The leaves are thick and coriaceous, dark glossy green on the upper surface, and somewhat greyish or glaucous beneath, where the nerves are prominent, and from 4 to 6 inches long by about 1½ inch broad. This is a really distinct, and apparently quite hardy Oak; and it is not only distinct as an Oak, but possesses a habit and *facies* peculiarly its own. The leaves, though larger, as seen from above, are not unlike those of Kalmia latifolia. There are several other Japanese forms having the same general character. Q. Ilex var. latifolia is a shrubby form with large leaves, about 3½ inches long by 2½ inches broad, but like most of its kin it has rather dull dark green leaves. Q. Ballota, as it grows at Kew, is an exceedingly ornamental tree, with lanceolate-oblong or rotundate leaves, the broader ones 2 inches across and all more or less prickly on the margin. It is rather a fast grower, making shoots 12 to 18 inches long.

Deciduous Oaks.

In the *Gardeners' Chronicle*, October 9, 1875, p. 455, and April 7, 1877, p. 440, I have enumerated, with descriptive remarks, a large number of the most striking varieties of Q. Robur, and the most noteworthy American species. I will repeat some of them here, and refer back to the places quoted for details. Among those most noteworthy of Q. Robur pedunculata are:—taraxacifolia and filicifolia, having elegantly cut and lobed leaves; concordia, with rich yellow foliage; and Granbyana, with reddish-purple acorns and inner bark. These all retain their special characters. An Oak called Q. sessiliflora pannonica, with handsome, deeply lobed, almost pinnate leaves, is particularly deserving of a second mention. [This is probably Q. conferta: see *Gardeners' Chronicle*, 1876, vol. v., p. 85, fig. 18. Eds.] A small plant of an evergreen Oak, labelled "Species from Japan," is a very handsome thing, having broad, nearly sessile leaves of a bright glossy green on both surfaces, and more or less prickly on the margin. Some of the leaves are between 2 and 3 inches across, and the young shoots and leaves are tinged with red. Altogether, this promises to be a very ornamental shrub or tree. A dwarf dense variety of Q. coccifera, of almost spherical growth, looks exactly like a miniature Holly, the leaves being those of the common Holly, but usually less than an inch long. Another, labelled Q. mongolica, is remarkable for the large size of its leaves, which are about a foot long and 6 inches across in the broadest part, gradually tapering towards the base to the very short petiole. The outline of the leaf is nearly obovate-lanceolate, and is deeply lobed, the lobes being broad and rounded, with rounded sinuses. I have only seen quite a young specimen of it, and it is possible that the foliage is not so fine in adult trees; but it will be remembered that the American, Q. bicolor, as a small tree, at least, has even larger leaves, Q. nigra nobilis has also fine bold foliage. Q. lyrata is a North American species, with obovate leaves lobed at the tip, and narrowed down to a cuneate base. A very pretty small-leaved Oak is named Q. lutea macrocarpa, and perhaps also Q. Ehrenbergii. It has slender ash-grey branches, oblong, convex, pale green leaves about 2½ inches long, prickly-toothed, and strongly waved at the margin. Among the very distinct American species I may again name the narrow-leaved Q. aquatica, which is not unlike the Olive tree in habit and foliage, but the latter is of a livelier hue; Q. heterophylla, which some botanists have regarded as a hybrid, is ranked as a distinct species by Dr. Engelmann (see *Gardeners' Chronicle*, August, 1876, p. 164), in his classification of the Oaks of the United States. It has slender glabrous yellowish-green branches something like a Willow, and the leaves are also glabrous and glossy. The latter vary very much in outline.

Varieties of Spanish Chestnut.

One of the most striking is called heterophylla dissecta. The peculiarity of this is that three or four of the terminal leaves are much longer than the others and very narrow. Some that I measured were 7 to 9 inches long by less than half an inch broad, and some of them are furnished with a few irregular scattered lobes. This curious variety is certainly worth growing, and it is a very conspicuous object in a plantation. A variety of the ordinary Castanea vesca, in which the leaves are slightly margined with white, is exceedingly chaste and pretty. Another, foliis aureo-marginatis, is equally attractive. There are also several varieties differing more or less in the size, form, toothing, and surface of the leaves. One of the best bears the appropriate name, glaberrima. This has bold, brilliant foliage, and ornamentally is far superior to the common state.

Alders.

These are not much in request for the embellishment of the garden or park, though there are some cut-leaved varieties which are very beautiful, and retain permanently their special characters. The now pretty well-known Alnus glutinosa var. imperialis is certainly one of the handsomest varieties of its kind; Oxyacanthifolia has pinnatifid leaves, resembling those of the Whitethorn, but in consequence of a constriction of the midrib the leaf is curled back from the tip. The variety aurea is one of the best of yellow-leaved shrubs, and rubronervia has not very decidedly red ribs and petioles. A. cordifolia is a very distinct species, of rapid and symmetrical growth, and having smooth and shining cordate leaves. For planting in islands on the margins of lakes and streams, and in damp places generally, the Alders are useful for mixing with Willows, &c.; but they do not absolutely require wet ground, thriving perfectly in deep, rich soil.

Privets.

These most useful shrubs, from our native species to the most ornamental of the many fine forms introduced from China and Japan, are not planted so generally as their merits entitle them to be. Ligustrum vulgare makes a neat hedge in a short time, where a strong fence is not required; but it has the reputation of exhausting the soil in its vicinity. This character it enjoys in common with its near relative, the Ash tree, and it may deserve it to a certain extent, but it is certainly within control; on the other hand, most of the specimens of Ligustrum are very accommodating as regards soil and situation. L. japonicum is a very handsome evergreen shrub, attaining a height of 15 to 20 feet, or perhaps more, even in this country; its glossy dark green foliage, set off as it now is (beginning of September) by the large panicles of white flowers, is very effective. It is also a valuable shrub for sea-side planting, and, without disparagement to its congeners, it may be said to be the best of the genus. L. coriaceum, which has a denser habit and much thicker leaves, is probably a Japanese garden variety of L. japonicum. L. lineare has linear-lanceolate leaves 6 inches long, and L. macrophyllum is very much like L. lucidum, but the leaves are trough-shaped. Some of the variegated varieties of the species mentioned are very pretty, especially a silver-edged one of L. japonicum.

Elæagnus and Allies.

I have elsewhere more than once strongly advocated the claims of the Sea Buckthorn, Hippophäe rhamnoides, for a place in ornamental plantations, not only in the neighbourhood of the sea, but also inland, and particularly on poor gravelly soil, in which also the Elæagnuses do well. I am not able to say much as to their behaviour in a stiff soil, but as far as my experience goes, the Sea Buckthorn does not thrive so well as in a gravelly or sandy soil. The European Elæagnus angustifolia, and the American E. argentea, or Silver Berry, are both very pretty, the latter especially; it is of shrubby habit and has glistening silvery leaves. The Japanese species, planted out in one of the beds near the winter garden, do not grow much in height, but spread from the root, covering a considerable space. The handsomest one is named E. conferta variegata. It has broad leaves variegated with yellow on the upper surface and silvery beneath. E. reflexa or japonica is less ornamental in the green-leaved variety, but there are some pretty variegations of it, and the under-surface of the leaf is brown. Here may be mentioned the aromatic Myrica californica, a shrub of moderate size with linear-lanceolate leaves about 3 inches long, and its more elegant congener M. asplenifolia, better known as Comptonia asplenifolia. The latter is deciduous, forming a round-topped shrub 4 or 5 feet high, and when healthy, as it is in this gravelly soil, it is very pretty, the form

and lobing of the leaves being very distinct from anything else.

Some Japanese Shrubs.

The species of Zanthoxylon mentioned in my former notes appear to be quite hardy at Kew. Z. schinifolium and piperitum seem to promise well as ornamental shrubs. Clerodendron trichotomum is flowering sparingly, and is by no means a showy or striking object, as it is said to be in its native country. It is described as a small ornamental shrub, bearing a profusion of purplish-red flowers in large terminal panicles. The flowers on the specimen at Kew are borne singly in the axils of the leaves, or only three or four together, and not conspicuously coloured, the corolla being white and the calyx dull red. This may be due to want of vigour, and under more favourable conditions it might deserve the praises travellers have bestowed upon it. On the other hand it is also likely that there are several varieties, and this the least ornamental. Nandina domestica, an evergreen shrub belonging to the Barberry family, and extensively cultivated in China and Japan, has elegant ternately compound leaves and terminal panicles of white flowers. Although hardy in the West, as well as the allied Akebia quinata, it is doubtful whether either of them will prove perfectly so in the climate of London. But the most conspicuous Japanese element lately noticeable was the great variety of splendid Clematis in full flower. These are of undoubted hardiness, and as they come in now when nearly all other climbers are past their flowering season, their value as decorative plants cannot be over-estimated. The flowering season of many of the large-flowered varieties is naturally of long duration, and with a little management one may obtain a succession of bloom for a longer period; and with a careful selection of species and varieties it is possible to have Clematises in flower from May to October. The Japanese Snowdrop tree, Pterostyrax japonica, suffers in a comparison with the North American Halesia tetraptera.

Miscellaneous.

A very pretty cut-leaved variety of Beech, Fagus sylvatica comptonicefolia, is not commonly seen. The Chilian Aristotelia Macqui variegata, Azara microphylla, crassifolia, &c., are handsome shrubs. The latter are remarkable for their large leaf-like stipules, Aralia spinosa and Tecoma radicans are flowering freely; Coriaria myrtifolia and Paliurus virgatus are almost past flowering. Most of the plants named under this head are to be found in the new plantations near the Douglas Pine spar, where also are several Cistineæ; Kitaibelia, Lavatera, and other Malvaceæ are in flower now. Macleaya cordata is also in flower in the same place, and there are many curious and rare plants, which to see would amply repay a visit. *W. B. H.*

FRUIT TREE CULTURE AT NORTHAMPTON.

At the Billing Road Nurseries of Messrs. John Perkins & Sons, Northampton, the culture of fruit trees has long been a special feature; and not only are they grown extensively, but they are also grown well. This is not matter for surprise, because the best possible attention is given to the production of good plants.

The soil is a peculiar one, for a surface soil of a good generous loam, to the depth of 2 feet or so, rests upon a bed of ironstone, and fruit trees do well in it, and it can be worked at any time. Heavy rains soon pass away from the surface; and the soil being free and open, it does not cling, or become stiff in the wettest weather. There is, however, this disadvantage, that a long spell of drought would be somewhat severely felt, but the best remedial measure under such a visitation is to keep it well stirred on the surface with the hoe.

The extensive breaks of black and red Currants, and white Currants in less quantity, form one of the features of the nursery. There are about 50,000 black and red Currants, remarkably good three-year plants, and Gooseberries of the same age, and capital bushy plants too, in almost equal proportions.

Of Raspberries, which are also largely grown, the Northumberland Fillbasket is one of the leading varieties. This is regarded as a great improvement on the Fastolf; it is a very free bearer, the fruit large and finely coloured. Mr. John Perkins states that it does not suffer so severely during dry weather as the Fastolf, and it does not make wood so freely.

What is known as the Farleigh Prolific Damson, the old Kentish green variety, is the most extensively grown, worked on the Mussel stock, which is considered the best for all Plums, Apricots, &c. This Damson Mr. Perkins considers the best in cultivation, being a free bearer, having a good crop on young trees. It is not considered to differ from Mr. Rivers' Cluster or Crittenden Damson.

Apples are largely grown, worked on the Paradise stock to form pyramids and dwarf bush trees for small gardens, and on the Crab stock for standards. In the latter case only such sorts are worked as are likely to be profitable in this form, such as Lord Suffield, Blenheim Orange, Normanton Wonder, or Dumelow's Seedling, Cellini Pippin, Cox's Orange Pippin, Annie Elizabeth, &c. The leading varieties worked as pyramids are Scarlet Nonpareil, red and white Juneatings, Claygate Pearmain, Scarlet Pearmain, Eve Apple, Cox's Redleaf Russet, a variety distributed by Mr. William Paul, and regarded at Northampton as a very fine and useful Apple, &c.

Pears are also a leading feature. There is an abundance of handsome pyramid trees on the Quince stock, as well as on the Pear stock, the latter being employed principally for standards. Of the newer Pears, Beurré de l'Assomption and Souvenir du Congrès are highly thought of, and do well worked on the Pear stock. There were several pieces of two-year-old Pears and Apples in fine condition.

Plums are largely grown, especially the Diamond and Victoria, which are worked by the thousand, and sold as two-year untrained trees for market gardens or for rearing into standards.

Cherries are numerous also, worked on the common Cherry stock as well as on the French stock. Two of the newer varieties, the Early Lyons and the Olivet, the largest of the Duke tribe, are being largely worked as dwarfs. They are both very productive and of excellent flavour.

Peaches, Nectarines, and Apricots are largely grown on dwarf-trained trees, the latter especially. Some two-year-old trees had from seven to nine strong shoots each, while the one-year trained plants were very good. These are all on the Mussel stock. Peaches are also on the same stock, and of a like vigorous character. The principal varieties are Royal George, Noblesse, Early Alfred, Early Beatrice, Early Louise, Lord Palmerston, Lady Palmerston, Barrington, Bellegarde, Galande, and others. Nectarines are also well done, and include the leading varieties.

At the Billing Road Nurseries there are about 70 acres of trees, a general nursery stock being largely represented. In addition there are extensive seed farms, in which Potatos, Broccoli, Mangel, Cabbage, and many other garden and agricultural seeds are grown; and there are also farm buildings and seed stores requisite for the proper harvesting and cleansing of the seeds. Large breadths of plants are also grown for covert, such as Privet, Hazel, Blackthorn, English Yew, common Laurel, Portugal Laurel, Larch, &c. All these, owing to the cool, moist summer, have made a vigorous growth. *R. D.*

Forestry.

The general benefit of woods and plantations to a community and country are too vast to enumerate, but the following will at least illustrate some of them. Grazing is at present more profitable in this country than growing corn, and it is likely to become still more so, since, as is too frequently the case, flocks and herds die by the thousand in foreign parts for want of water, while ours at home do not suffer in this way.

It is from cold and wet, rather than heat and dryness, that this country suffers. In the memorable dry season, 1868, when grass was very scarce, there was much more cream and butter produced than in the wet season, 1872, with superabundance of grass.

According as the breeds of animals improve for feeding purposes their constitution becomes more delicate and tender, hence arises the necessity for warming and sheltering the country to suit their new condition.

In the improvement of pasture lands it is well to consider which species of trees sweeten and improve the grass, and which embitter and impoverish it most. Where choice can be had Oak and Larch are most beneficial, and Ash and Norway Spruce most injurious. In the agricultural statistics for the past year a considerable increase of permanent pasture lands is given, and a corresponding decrease in arable land, thus showing that there is a falling off in grain and an increase in grass.

On light, sandy soils much exposed the wind often in a few hours completely levels Turnip drills, whereas, if duly sheltered by belts of plantations no such evil result will arise from it. One farm known to the writer has been given up by the tenant on account of want of shelter; and another would have also been given up but for the proprietor undertaking to plant shelter belts upon it.

Fig. 84.—Window Fernery (see p. 425).

The first thing to do in a waste moorland district about to be brought under cultivation is to drain the surface well, and plant shelter belts and groups with an unsparing hand, and as certain as the plantations grow up so will improvement of the land follow and keep abreast with them. Many bleak and wild districts where no one would have thought of taking up their residence even during the summer months, are now inhabited by a comfortable and well-to-do community, all the result of planting and sheltering the country.

Figures in arithmetic are excellent in their way, but the culturist who studies well the soil observes the various phenomena in Nature, and resolutely obeys her laws, will himself sooner grow rich, and thereby so far enrich his country, than he who dives deep into figures and employs much of his time in abstruse calculations.

To what extent, and in what manner trees, woods, and plantations affect the health of man, and how far they aggravate or modify diseases inherent to his constitution, is as yet unknown. Some maintain that clearing great tracks of woodland renders the climate more healthy and favourable to his constitution, while others maintain the very opposite. Now it is very likely, as is often the case, that both views may be right. It has been pretty clearly demonstrated that several woody and particularly swampy districts, both in India and America, have been greatly benefited by clearing and drying, that is to say, fevers have been greatly modified or prevented by it. On the other hand, such districts as Strathspey in our own Highlands, which was formerly a dense forest, has, since the forests were cut and cleared away, become much more liable to lung diseases, such as consumption; indeed, at the present time more persons die of consumption in the Highlands than of any other diseases, or, as respects person of middle age, more than all other diseases put together. Now I am credibly informed by some of the oldest persons living that in their youthful days such diseases were little known.

How much or how little diseases, either in the human family or the lower animals, are produced by such changes as planting, or clearing, is very difficult to say; true, such and such results take place, but whether the cause and effect are these or others is uncertain. It appears to me at least that the different modes of living, especially with respect to such matters as diet, clothing, and occupation, have as much, if not more, to do with disease as any other cause or causes. *C. Y. Michie, Cullen House, Cullen, N.B.*

Fig. 85.—Window Fernery (see p. 425).

The Villa Garden.

Information Wanted.—"I wish," remarked a Villa gardener a few days ago, "that the gardening papers would give us less information about new plants, and occasionally, in place thereof, some information how to manage old ones." He laid no definite charge at the door of any individual paper; in fact he bore enthusiastic testimony to their great value to the horticultural community, but he thought, and probably with some substantial show of truth, that the fact that many good old things have become almost lost to cultivation is to some extent owing to the fact that they have been forgotten by the gardening Press. This fact would appear to cut both ways: things go out of cultivation because they are not referred to in the gardening journals, and having gone out of cultivation for various reasons they are unfrequently referred to by the present generation of writers.

Autumn Treatment of Polyanthus.—Pointing to two lines of fine plants of Polyanthus growing on a narrow border between the line of Box edging by the side of a kitchen garden walk, and one of espalier Apple and Pear trees, he asked, "What would you advise should be done with these?" They had made a robust growth during the summer, owing to the season having been so moist, and, as is customary with these plants, had thrust themselves up out of the soil. Our friend's impression was that it would be best to lift the plants, divide, and transplant them; and this would have been the correct thing had the plants been older than they were, and not a bed of seedlings that had only partially flowered for the first time last spring. It was unnecessary to disturb them, for they were well established; and our advice was to pick away the decaying leaves from the plants, loosen the soil about them, and add a good top-dressing of soil and manure. At this time of the year Polyanthuses throw out roots close to the surface, and a top-dressing is of great value to the plants just when they are making their autumnal growth. Then next spring the best varieties should be marked, and the inferior ones got rid of.

In the case of plants of greater age that had bloomed well last spring, it would be best to divide them. We are now doing this in the case of double and single Primroses, and fancy and gold-laced Polyanthus. They are plants that had become well established, and were thrusting themselves up out of the soil. The clumps were lifted, the soil shaken from the roots, and the plants pulled asunder; for when this is carefully done, one good-sized clump will make from three or four to seven or eight plants. When divided, the tap-root in each case should be cut off as far as it is bare of roots, or if unnecessarily long, to within an inch or so of the lowermost leaves. These should be planted deeply, and pressed firmly into the soil. In making a bed for Primroses, or preparing spots in mixed borders for them, let the ground be dug deeply, and some manure buried to the depth of 6 inches or so. This gives a cool bottom, and something for the roots to go in search of. A top-dressing of good soil at midsummer is of great advantage to the plants.

Double Daisies.—These very pretty and serviceable spring flowers can be treated the same way as recommended for the Primroses, as they also thrust themselves up out of the soil. In all cases Daisies do best when divided in the autumn, and if planted out in store beds in lines, after breaking the plants up into single stems, they grow into fine stuff for planting out in spring. Large clumps of Daisies, if left undivided, are pretty well certain to become impoverished and die; in this way many plants are lost by Villa gardeners.

Double Rockets.—At this time of the year the plants throw up fresh growths round the base of the flower-stem, and if these are removed they make good cuttings and strike freely. They are best placed singly in small pots, for if put out in the open air they are so liable to be destroyed by slugs and snails. The flower-stems also sometimes furnish cuttings, that is if the flower-spike be cut away just below the flowers; the stem will throw out young shoots, and if these are taken off and made into cuttings they strike pretty freely; but the cuttings do best when made in August. The old plants that are left in the borders to stand the winter are greatly helped by loosening the soil about them, and top-dressing with a little leaf-mould and manure.

Double Pyrethrums.—It is no uncommon thing to find these handsome flowers in the borders of Villa gardens; not only are they attractive in appearance, but they are also continuous in flowering, and some in our own border are yet yielding bright and attractive flowers. "What is best to be done with these at this time of the year?" is a question constantly being put. In an open and somewhat dry border or bed the plants will do well through the winter, for their great enemies are wet and slugs rather than frost. The stronger and better established plants are, the more likely are they to stand the winter; and where they are left a ring of sharp cinder ashes put round the stools at the end of October will serve to keep the slugs at bay. "But how to propagate?" it may be asked. This is a simple matter. At the end of the summer the plants throw up small side growths, and if these be carefully removed as near the stem of the parent plant, and are put singly into small pots, or a few round the sides of a large pot, they soon take root, and in this manner fine varieties can be increased. The parent plants can be divided, but this is best done at the end of March, just when the plants are getting active, and then when divided they invariably grow away safely into size.

Colchicum autumnale and Crocus speciosus.—These two plants are now extremely attractive in the open border. They have thrust their flowers up through the foliage of other plants surrounding them, and they seem to defy, in their way, the raw foggy mornings, the cold nights, and the deepening gloom of autumn. They require planting where they can remain for a few years undisturbed. The Colchicums when grown into strong crowns flower with amazing freedom, and the same remark holds good of Crocus speciosus. And there is the old Crocus nudiflorus also, flowering away with amazing ardour. We saw some large old-established clumps of this a few days ago, 18 inches to 2 feet in circumference, and they had literally "heaped up their flowers in happy plenteousness."

Natural History.

Golden Butterflies.—The year 1877 will be long remembered amongst observers of Nature for the unusual abundance of a conspicuous golden butterfly, the Colias Edusa (Clouded Yellow). In the south-eastern counties, especially near the coast, this butterfly is tolerably common, although in some years not one is to be seen. In other years its range is more widely extended, and instances are on record of its appearance, in particular seasons, not only in every

part of England and Wales, but in some of the Scotch counties. We have not, however, had such a visit as has recently occurred for at least fifty years. The Clouded Yellow is one of those butterflies which commonly live through the winter, lying up in some sheltered place, like the genus Vanessa. They reappear late in the spring, and it is probable that their eggs are not deposited until that time. This year they appeared in considerable numbers about the middle of May, and as they were by no means in the same abundance in the summer of 1876, there can be little doubt that they came to us from the south-east, across the sea. They were probably accompanied by swarms of the Cynthia Carderi (Painted Lady), which has also been unusually abundant. The eggs of these visitors were laid in May, and the perfect insect reproduced in manifold abundance about the end of July, lasting in many places through August and September. A similar flight of Colias Hyale (Pale Clouded Yellow) appeared in 1842, but in far less numbers. Another well-known migratory butterfly is the Vanessa Antiopa (Camberwell Beauty), a flight of which appeared all over England in August, 1873. On the subject of the migration of these butterflies there is an interesting passage in Mr. Charles Darwin's *Voyage of the 'Beagle,'* chapter 8, December 6, 1833:—"One evening, when we were about ten miles from the Bay of San Blas (in South America), vast numbers of butterflies in bands or flocks of countless myriads, extended as far as the eye could range. Even with the aid of a telescope it was not possible to see a space free from butterflies. The seamen cried out 'it was snowing butterflies,' and such was in fact the appearance. More species than one were present, but the main part belonged to a kind very similar to, but not identical with the common English Colias Edusa. The day had been fine and calm—hence we cannot suppose that the insects were blown off the land, but we must conclude that they voluntarily took flight. The great bands of the Colias seem at first to afford an instance like those on record of the migrations of another butterfly, the Vanessa Carderi (Painted Lady), mentioned in Lyell's *Principles of Geology, &c.*" *C. Wolley Dod, Eton.*

The Cuckoo.—I can quite agree with what "Yorkshire" says in last week's issue of the *Gardeners' Chronicle* concerning magpies sucking eggs, and I think that the eggs he found destroyed were sucked by them and not by cuckoos. As an instance how easy it is to be deceived, I may mention the following incident which occurred some years ago. I saw a cuckoo busily engaged searching the shrubs and bushes, as I then thought, for the purpose of eggs, and she at last flew into an Ivy bush, where I knew a pair of wagtails' nest to be. I allowed her to remain there a few minutes. I then cautiously approached the bush, and when within a few feet of it out flew the cuckoo from the very spot where I knew the nest to be. Having the gun with me, I fired and broke the poor bird's wings, and when killing her to end her misery, to my great surprise and sorrow she dropped an egg at my feet. It at once struck me that this bird did not go to the wagtails' nest for the sake of plunder, which was fully confirmed by my finding the wagtail's eggs quite undisturbed. What she was searching for was a home for her future offspring. Another thing appears curious: how is it that the cuckoo does not suck the eggs in the nest which receives her own? for I know in some instances they are laid before those of the cuckoo. I may mention that while jays and magpies may be trapped with eggs, I never heard of any one catching the cuckoo by the same means. The nightjar is an insect-feeding bird, and what I suggest is, that the cuckoo may do in the day what the nightjar does in the twilight? In closing I hope that some of your obliging correspondents will help to remove some of the doubts that still surround the cuckoo. *N. E. T., Stanmore, N.W.*

Shooting Wild Birds.—I did not read the note by "Subscriber" upon the landrail (see p. 398) with the pleasure that usually attaches to the natural history notes. The reason is obvious: your correspondent tells us of an interesting bird which he saw and then shot. Why this latter act of vandalism and useless cruelty? Why does the sportsman who carries a gun seem to regard all that is living in Nature as game for his bag, killing birds that are rare or beautiful without compunction and without sense? The schoolboy as he wends his way along the country lanes is, in spite of the moral and religious teaching lavished upon him, so ignorant of natural history that he regards all wild birds as natural enemies, and fires away at them with stones in the hope of felling them to the earth. He is not cruel naturally, but he is grossly ignorant, and his bravery has not been diverted into a better channel. His entire ignorance is his excuse. Not so, however, is it with the sportsman: he has knowledge, and should have age and enough of discretion to guide him aright, but alas! armed with a gun and he is as thoughtlessly cruel as the schoolboy. No doubt the handling of a gun has a demoralising influence on the mind as there comes with it the anxious desire to use it upon whatever object may present itself; and if it be some rare or beautiful bird so much the better. What this poor landrail had done to make it the fitting object for a sportsman's enmity and love of destruction I am at a loss to perceive. I should be sorry indeed to boast that I had thoughtlessly or ignorantly killed any harmless bird. It is to this feeling of foolish ambition to possess these beauties of the air, that we owe our present dearth of many once plentiful wild birds. *A. D.*

The Landrail Perching.—I believe it is a very unusual thing for this bird to perch, but that he will occasionally take refuge in a tree when frightened by a dog I know; one did so last autumn when a colley dog of mine disturbed it. It flew across the road, and alighted in an Ash tree close to where I stood. The corncrake will sham death when caught, and is likewise a good ventriloquist. *Helen Watney.*

The Cuckoo and Wagtail.—For the last three years a young cuckoo has been hatched and reared by the wagtail, outside my bed-room window, in a hole in the wall. In the early part of the season I had a few pairs of pigeons given me, and accordingly I placed a box for them close by the hole, so that I might attend to them at my leisure. However, my pigeons soon left, and later on the wagtails deserted their comfortable old quarters, and built their nest in one of the compartments of the box. My curiosity being aroused, I began to wonder whether the annual young cuckoo would appear. After waiting a reasonable time (and reckoning that incubation had taken place), to satisfy my curiosity I approached the box, and discovered the cuckoo's egg with five others. I was greatly interested, and closely watched their movements. Both wagtails and cuckoo were duly hatched, and in their extreme infancy it was difficult to distinguish one from the other, the young cuckoo being but a very little the larger. It increased in size rapidly, greedily snapping up every bit of food that could be brought by its fostering parents. What became of its companions? The cuckoo soon became too powerful and saucy for them, and they were either stifled or starved to death, perhaps both. As the cuckoo became fully fledged I took it in my hand, after which it became restless, and soon left. I was sorry to see the charge of egg-sucking brought against the cuckoo, and shall be glad to learn whether either of your correspondents can prove it by ocular demonstration, without which it would be hard to accuse. If you ask any aged countryman the question, he will invariably answer in the affirmative, yet not one of them is able to speak from actual experience. Putting the question to a very old man a few days since, he replied: "Oh, yes; and that's what makes their voices so clear." It is true the cuckoo arrives with the egg-season, and departs at its close; so do caterpillars, and a host of other insects which I have been led to believe form their primary food. It seems strange to me in reference to this proceeding of the cuckoo—of dropping its eggs by chance, that she does not then and there commit the monstrous outrage of devouring the eggs of the nest in which they lay; or is she sympathetic by way of deception, for the protection of her own deposit? This seems somewhat feasible, inasmuch as the size and colour of the cuckoo's egg vary but little from that of the wagtail. Your correspondent "Yorkshire" says he is convinced that both cuckoos and magpies destroy eggs. There is no doubt about the latter, but though he is convinced that the cuckoo does also, he has failed to particularise it. It is not uncommon for the wagtail to build its nest in shrubs, especially when growing against walls. A few years since, at Cricket Gardens, the seat of Viscount Bridport, a wagtail made her nest on the surface-soil of a fine Heath specimen that stood inside the door of one of the conservatories. The little creature was careful to raise the edge of her nest to the height of the pot-rim, seemingly to allow for the man watering. The conservatory was usually closed by night, and one morning an egg was found on the door-mat: this was of course carefully placed in the nest, and afterwards the sash was left a little open for egress and ingress. The wagtails were hatched and reared quite unconcernedly, much to the amusement of every one who saw them. So much for the domestic instinct of this little favourite. *J. Mullins, Beaminster, Sept. 24.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—The ripening process in all deciduous, or partially deciduous, stove plants, of which Allamandas, the twining Clerodendrons, Bougainvilleas, and Dipladenias, may be taken as the leading representatives, and which was advised to be commenced a short time ago by withholding water, all the light available, and the admission of more air, must be continued for some weeks yet. The most useful character of these plants for early flowering, with their ability to afford a succession through the summer and autumn, is sufficient to establish them amongst the most desirable subjects that can be grown, totally apart from their use as trained specimens, where needed for exhibition purposes. But in the treatment of these and all similar plants for producing their flowers freely early in spring, say from the beginning of April to the middle of May, it is necessary to do much more by way of a thorough ripening of the wood at this time of the year than by many is deemed requisite, and without this it is useless to expect them to bloom early and freely. It is no uncommon occurrence to see plants of the above cut back and started in a brisk heat by the end of the year, or soon after, when they push growth, but make weak puny shoots that refuse to produce flowers in anything like quantity until midsummer or later. The cause for this is often erroneously assigned to the application of too much heat early, but which generally might be much more correctly attributed to the soft, immature condition of the wood, resulting from the indifferent usage they have received. It would just be as unreasonable to expect a good crop of fruit from badly-ripened Vines or other fruit-bearing trees when insufficiently ripened, as it is to look for flowers from hard-wooded plants of the above nature that have to be cut back each year, when not properly prepared. I am led to these remarks by a knowledge that at the present time, in almost every garden, large or small flowers for the decoration of stands, vases, or similar contrivances are continually in demand, and through proof based upon the use of these plants for many years, that where a stove is at command there is nothing that can be grown that will give such an abundance and lengthened supply as the above subjects, when the ripening process has been effectually carried out through the autumn previous. Where a sufficient number are grown a plant or two of Allamanda and Dipladenia may be kept on flowering up to the end of the year by giving them a position at the warmest end of the stove, but as a matter of course there must be no stint in the supply of water, as advised for the earliest ripened plants that have to be started the first. Gardenias: The earliest of these—whether grown on from cuttings or cut back after flowering—that have now got their flower-buds a good size, should have a brisk heat to induce them to open freely. The supply of water must also be so regulated as to be sufficient but not in excess, as if the roots are allowed to get too dry, or the opposite, very wet, the buds have a tendency to fall off much more at this time, when growth is languid, than in the spring. Gardenias through the dull season of the year are also very liable to throw off their buds when the plants are placed under conditions of insufficient light, often caused by plunging them in bottom-heat at a considerable distance from the glass; but if instead of this they are raised up on inverted pots or temporary shelves so as to be near enough to the light much more satisfactory results will follow. Bouvardias that have been in frames and pits with just sufficient warmth to keep them moving must now be put where they can receive more heat. It is well to divide the plants so as to bring them on in batches at intervals. To bloom them freely through the winter they should not be subjected to a lower temperature than 65° in the night. There are few places where these most useful and continuous flowering subjects might not with advantage be grown; a shelf on the back of a Pine stove, or a row of plants stood on the curb of the plunging pit take up little room, do no injury to the permanent occupants, and in such a position will furnish a supply of cut blooms all through the winter. Form, colour, scent, and enduring capabilities alike

place Bouvardias amongst the very best flower-producing plants we possess. Their medium-sized compact habit, with ability to go on making fresh growth and bearing flowers on every bit of young wood they form renders them suitable for growing by those who have little room for stove subjects in general, and were they but better known there is no doubt their culture would be much extended. Another advantage is, they do not exist in such unlimited numbers as to make a selection perplexing; B. Hogarth, scarlet; B. Humboldtii corymbiflora, white; B. jasminoides, white; and B. Vreelandii, also white, a remarkably free bloomer, and compact in habit, will be found second to none, and these varieties will be sufficient for the requirements of most growers. Autumn flowering Salvias that have occupied cold pits or been stood out in the open air during the summer should have a little warmth given them through the autumn; they too ought to have all the light that can be afforded them, not crowding the plants too closely together. A limited number, grown with sufficient room and favourable conditions generally, will produce many more flowers and keep on blooming longer, than when too many are attempted to be grown for the space that can be devoted to them. It will be well now for some weeks to redouble the exertions made in the destruction of the worst species of insects, such as mealy-bug and scale, so difficult to deal with on evergreen stove plants. As I have frequently urged, it is impossible to grow stove plants satisfactorily where mealy-bug exists; the plants whilst small may be dealt with in a way that will keep the insects in check, yet in their case at an expenditure of labour greater than all their other cultural requirements put together; but as the specimens attain a size such as enables the production of flowers in the quantities necessary to exemplify their useful character, the work involved in keeping the bugs under becomes intolerable. Its total eradication, no matter how numerous, is not impossible, and it would be difficult to point to a wiser economy than following up its destruction so as to lead to complete extermination. At no time of the year can this be so effectually done as the present, when the whole season's growth has become sufficiently matured to bear without injury stronger applications than in summer, of whatever insecticide is employed; but whichever is used nothing less than complete and repeated immersion of the heads of the plants, or a repetition of syringing so thoroughly carried out as to reach every crack and crevice in the bark, leaves, and footstalks, will suffice. *T. Baines.*

Orchids.—The growing season being now well advanced, and a considerably less amount of light at command, it will be incumbent on those who have the charge of these plants to use such means and adopt such treatment as shall induce and assist the thorough ripening of the growths and bulbs already formed, and at the same time the speedy completion of those that as yet are only in a half-finished condition. For a week or two the shading required will be reduced to the barest amount possible; in fact only where any structures are so built as to get the full force of the sun at mid-day will any be required at all, and then only for about a couple of hours, say from 11 A.M. to 1 P.M., it being better just to shade for a short time, for by withholding it altogether the risk is often run of many of the plants in baskets, through being so near the glass, having their leaves burnt, and consequently being disfigured for a long time to come. In houses thus situated it will be necessary to bear this in mind, and in these and all others the object must be by well regulated exposure to light, air when the weather is favourable, and less water at the roots, to harden all the growths as they are formed, so that when dull and dreary winter is upon us the plants may remain healthy, though in many cases they will appear to be inactive. The night temperatures should now be—East India-house, 65°; Dendrobium-house, 60°; Cattleya-house, 58°; Odontoglossum-house, 55°. The lowering of the night temperatures will materially assist in the hardening of the tissue, and also one of the chief means of retaining the leaves on the plants of such as are evergreen, it being certain beyond a doubt that the cause of many, East India plants more particularly, losing so many of their leaves being the high night temperatures to which many are subjected, coupled with the fact that they are during the winter months treated far too liberally to heavy supplies of water.

The Pleiones now will need careful treatment. As the leaves turn yellow and fall off it will be necessary for a few weeks to lessen the amount of water, only giving just enough to keep the soil moist and the bulbs plump. The flowers will very soon be showing themselves, first on Wallichii, then lagenaria and maculata, and later on during the winter the distinct humilis. Whilst the blooms are on the plants it will not do to give much water, otherwise the flowers soon lose the freshness of their colour, and quickly damp off; but as soon as the flowers are off, and the young leaves appear, the treatment given must be that accorded to a growing plant. These are all easily increased, most of the large bulbs breaking double, and in some cases three young shoots appear. P. humilis, however, will often send out one or more small breaks around the bulb, beside the leading growths; and during the summer the old bulbs, which do not shrivel and dry away so rapidly as in the other species, will send out a dense tuft of small leaves from the top of the bulb in the axils of the old leaves, which ultimately form small bulbs. These should remain till the early spring, and then be taken off and pricked out carefully in a small pot, placing them near the edge of the pot. Though Oncidium Cavendishianum cannot boast that it is of recent introduction, and therefore be recommended on the plea of novelty, it is, nevertheless, of such a showy and useful nature that an allusion to it here may not be out of place. Anything of real worth that flowers during the winter is doubly valuable; and in this, with its long branching spikes of flowers, the labellum of which is of a cheerful yellow colour, we have one that is very acceptable and desirable, and should be in every collection. O. bicallosum is in many respects similar to this; the leaves of bicallosum, however, are rounder, flatter, and less pointed than those of the former, whilst the spike of Cavendishii appears directly the growths are formed; the same occurrence, however, does not take place in bicallosum until two or three months have elapsed after the finishing of the growth. The spike, too, of bicallosum is much shorter, the number of blooms considerably less, but these are of a larger size than those of Cavendishianum. They are best grown in pots, placed well up above the rim, and stood in the Cattleya-house, and enjoy a good share of light at all times. The leaves, being very thick and fleshy, are capable of standing firm and green with but a small quantity of water during the resting season. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

The time is now at hand when extra attention is required to keep everything as clean and orderly as circumstances will allow, and as the leaves have begun to fall the lawn near the family residence should be swept every morning. Frost sharp enough to mar the beauty of the flower garden may be expected any day. Have potting material and pots in readiness that whenever the plants show that the cold weather has taken hold of them all the tenderest and most desirable should be lifted and stored away for the winter. We always begin with the tricolor and variegated Pelargoniums, then any of the other sorts of which the stock may be limited. In some gardens it is occasionally wished to have the flower-beds left entire as long as possible, but it is rather a risk, and is better if it can be avoided, for the best plants may get so injured that a large percentage of them may be entirely lost, and the others rendered unsightly for the winter. This entails a great deal of anxiety and extra labour in spring, when the stock must be made up to the required number. Where the turf has become unlevel it may now be lifted and relaid, using sand or any light soil to make up the ground. By having all such work done early the grass gets rooted before the cold weather sets in, and labour is economised at a busier season of the year. Where the ground is sufficiently moist, or in dry localities after the first rain, shrubs and trees may be transplanted. By having this work done early, while the temperature of the ground is considerably higher than after the autumn rains, the plants get established and form fresh roots before winter. Give water according to the state of the ground and the requirements of the plants; but much water is seldom wanted at this time, and is often injurious. There are so many ornamental trees and shrubs with beautiful foliage that most pleasure-grounds may be greatly improved with an addition of those interesting plants, which can be had at a moderate price in all the best nurseries. Fruit-bearing trees may also be used with good effect. Annuals, such as Nemophila, Collinsia, Godetia, Saponaria calabrica, Mignonette, &c., may be sown in beds and flower borders for a display in spring and early summer. Take the first opportunity after rain to have the walks rolled down smooth that may have been broken up. *T. Blair, Shrubland Park.*

HARDY FRUIT GARDEN.

The change of the leaf with a sting of frost in the air are unmistakeable tokens that winter is fast approaching and that it is high time to prepare for its advent, as the season will soon be here when planting operations should be commenced in good earnest. There is nothing like beginning this work early, as then the trees at once set about repairing the injury caused by removal, in which they are greatly aided by the heat in the ground now slowly and gradually effecting its escape. There is an idea prevalent that the roots of deciduous plants are dormant throughout the winter, but that is a most erroneous notion, as may readily be proved by any one who will take the trouble to examine them a month or so after a tree or shrub has been transplanted or laid in, when they will find them bristling with white, fresh formed fibres. This I have seen repeatedly, but the thing is so patent by what may be observed above-ground in the gradual swelling of the buds with their slow and steady development after the fall of the leaf that one feels as sure of what is taking place below, as if open to the vision, and that the feeders, although not so active, are ever at work building up and forming fresh organisms. If arrested in this work after the turn of the year they have not time to recover the check, and the result is that the buds break feebly, whereas if planted early they push out strong and vigorous, and make double the progress during the summer they otherwise would. The advantage, therefore, of getting all fruit trees in as soon as the leaves are fairly off will at once be seen even by the most inexperienced; and that all may be ready when that time arrives, soil should now be got in, and stacked up near where it will be required for use, so as to save labour in wheeling, and to have it in suitable condition for chopping up if the weather during November happens to be wet and unfavourable.

Trenching as a preparatory measure for the planting of all kinds of bush fruit should likewise be taken in hand, for to grow any of these well the ground must be stirred deeply, that the roots may ramify freely and be out of reach of drought during the heat of summer. In all well managed gardens, plantations of such things as Gooseberries, Currants, and Raspberries are never allowed to stand to attain old age or become unsightly objects, as the positions or quarters they occupy can always be turned to good account after such a rest where a regular and systematic mode of cropping is carried out. It is the practice with some to plant Gooseberries and Currants near walks, so as to form narrow borders on which to grow Strawberries or other low-growing crops, and the plan is a good one, inasmuch as it is a saving of ground, and the arrangement gives an air of order and neatness, as well as improves the quality of the fruit by being so fully exposed to the influence of sun and air. The Raspberry, however, being more of a surface-rooting plant and fond of partial shade, with a cool loose soil to grow in, does best in plantations by itself, as there the ground can be mulched over and left undisturbed, as it should be, except any hoeing that may be necessary to extirpate weeds. The best crops and the finest fruit I ever saw were grown on canes that stood near a building, by which they received shelter from the sun for a few hours during the heat of the day; and in choosing sites for planting such positions should be taken advantage of, especially where land is of that light dry nature as to be unsuited for their culture. Autumn-bearing kinds require more exposure to ripen the fruit and give it its proper flavour, but the situation for these should be so chosen as to be out of reach of strong winds, or they get sadly knocked about and so damaged as to be of little value. In trenching and preparing the ground for planting Raspberries plenty of short decomposed manure should be worked in if the soil is light; but if of an opposite character, leaf-mould or decayed vegetable rubbish of any kind will be more suitable, as either of these will assist in keeping it open, and any stimulant will be better applied as a top-dressing during the summer. The ingathering and storing of Apples and Pears must now be proceeded with, as we have already had slight frosts, and although not yet sufficient to injure either as regards keeping, they are likely to suffer in flavour if left much longer exposed. In plucking them from the trees it is best to make two classes, so as to avoid further handling or loss of time afterwards in looking them over to separate the sound from the unsound, the latter of which will come in for present use. *J. Sheppard.*

FRUIT HOUSES.

Melons.—The magnificent weather which has prevailed since the middle of September having been all that can be desired, late Melons are swelling fast, and the quality, where summer-heat has been maintained, is excellent. Water must henceforth be given more sparingly to plants in all stages, particularly to those which are carrying fully-developed fruit; but a thorough soaking should be given to the latest plants on fine mornings when watering is absolutely necessary, and if at hand some dry mulching may be spread over the tops of the pots to prevent evaporation. Keep the foliage thin and evenly placed, so as to admit every ray of sunshine and a free circulation of dry, warm air when fire-heat is necessary. As days decrease in length the superiority of fruit from pots placed immediately over the bottom-heat pipes will more than compensate for the trouble saved by growing them in large masses of cold sour soil, as Melons of indifferent flavour are worse than useless, and it is better to leave off with a good fruit in September than to prolong the season with Melons which ripen after the leaves have passed away. Plants in pits and frames must be kept as dry and warm as possible by frequent attention to the linings, and by judicious thinning of the foliage and elevation of the fruit. Let the glass be well washed inside and out, and mat well at night. *W. Coleman.*

THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 6, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Oct. 8	Sale of Dutch Bulbs at Stevens' Rooms.
Tuesday,	Oct. 9	Sale of Specimen Azaleas and Orchids at Stevens' Rooms.
Wednesday,	Oct. 10	Sale of Dutch Bulbs at Stevens' Rooms.
Saturday,	Oct. 13	

THE growers of the POTATO have held their annual gathering; and although, unlike the average run of autumn assemblages, there has been little talk, there has been no lack of display, and that of useful works and remarkable results.

In looking over the singularly fine collections that covered the tables at the Royal Aquarium on Wednesday, the first question that presented itself to the mind of the practical inquirer was—Under what conditions of soil and culture are these marvellous samples produced? Is it by ordinary culture such as is adopted by nine-tenths of those who cultivate Potatos, or is it by some magic means known only to those favoured few who constitute the chief prize-takers at the show? Probably the most successful of these would be the first to discountenance the notion of anything magical about the proceeding. The lessons derived from many years of successive cultivation have not been lost upon them, and if perchance some are favoured naturally with soil that would produce handsome Potatos under any conditions, yet there has been no lack of care displayed in the selection of seed tubers, of efficient storing, and in the general cultivation of all of which success has been made doubly certain. Yet in one case a successful competitor in several classes was enabled to say that his success was entirely due to ordinary field culture, in soil of moderate quality, but where the production of good clean seed samples was of the first consequence, and from these had been selected his prize tubers. That such should be the case is strong evidence that the opinions we gave expression to last week as to the superior quality and value of medium-sized tubers over large ones have not been without effect, and this knowledge should spur others to enter the lists as competitors, as the fact thus mentioned entirely explodes the notion that only by some magical mode of culture can show samples of the Potato be produced.

Perhaps the most striking feature apparent in the general collection of tubers was the excellent average quality present, and the comparative absence of coarse, large, ungainly tubers. A few growers of the old school, but new to the International Potato Show, brought some of their cattle-food kinds, but these only served by comparison to show how far ahead the perfect exhibition tuber was of such samples as these. The judges of the Potato show will have done a good work if by their awards, consistently made from year to year, they can eliminate the most undesirable quality of mere size from the Potato to a gerat extent, and perhaps eventually altogether. To attempt to ally art with a show of Potatos will doubtless appear to some cynical minds as the height of absurdity, and yet can any unbiassed visitor to this exhibition of tubers deny that its teachings were not largely of an æsthetical kind? A Potato is but a Potato after all, but there is found in many, shall we not say in the larger portion, of those staged on Wednesday beauty of form, curves perfect in outline, bodies of elegant proportions, variety that is ever charming in colours and markings, and, not least, that clearness of skin and polish which betokens refinement; and do not all these features educate the eye and fascinate the imagination? The uncultivated visitor in taking a cursory look over the show alights upon the prize collection from among many others. He asks at once "Why does this lot stand before its neighbour, for in the latter there is more material for the pot, and that is my only notion of a Potato?" But in the prize lot a closer inspection reveals more refinement, more beauty, more evenness; the form of each tuber is almost perfection, and thus he is taught to perceive that art in a humble way has entered into the judgment, and in the award has found expression.

One phrase was frequently heard in the show after the awards were made—"The judges have gone in for quality"—a phrase well understood as indicative of beauty in preference to ugliness, and form and evenness in preference to size. To this version we, however, beg to add the wider and, perhaps, more suitable one—viz., that which we so strongly urged last week: medium size, or the greater proportion of nutriment in the tuber as compared with the greater proportion of water in large ones. Therefore quality in its widest Potato sense means not only beauty and other external virtues, but also the essential one of superiority as an article of diet—the most valuable feature to be found in any Potato. Perhaps, also, the judgments generally tended to explode the idea elsewhere suggested that a tuber of 10 ounces in weight was a fair average size for exhibition purposes. It cannot be too strongly urged that the Potatos of the show-table and those of the dinner-table ought to have, in regard to size, very considerable affinity. Unlike plants and flowers, which are grown only for the delights they render to the eye and nostrils, the Potato is essential as an esculent, and if it were not this it would never have found its place in gardens or on exhibition tables.

The first consideration in all cases with judges should be, How far are the samples before us suited for the dinner-table? Of course we do not refer to the diverse qualities that may be found in various sorts, because these differ materially with soil and situation, and can hardly be included in the calculation; but if we take the size that finds most favour with the consumers we find that tubers ranging from 5 oz. to 6 oz. each are the favourite bulk for that purpose, and that size should prove the safest guide with those judges who desire to have the size of the exhibition tuber and the edible tuber in close alliance. Perhaps the most perfect dish of tubers in the whole show was the dish of Rector of Woodstock, to which the 1st prize was awarded in its class for a single dish of white round kinds; these tubers averaged three to the pound, and in size and all other essentials were the acme of perfection for table consumption.

A fitting question was asked in the show—"With all these fine samples before us, we know nothing as to their productiveness?" That feature could, of course, only be known to the grower, but it is a question that ought to be replied to, and that satisfactorily. It is a very safe platitude to assert that two blades of grass are better than one, because it is a self-evident truism. To assert, however, that size is indicative of a heavy crop is scarcely so apparent, inasmuch as with the Potato generally the greater size usually indicates the more disease; farther, size alone goes for nothing when the plants produce two big ones instead of six smaller ones; and, farther still, if, as we repeatedly urge, size indicates not bulk of food, but bulk of water, then size in all respects is the reverse of advantageous, and is to be highly deprecated. The extra blade of grass desired in the Potato is rather that the plant should produce two pounds of tubers more in quantity, not in size, than a similar plant before produced. On this head, however, all the growers were silent, not because they so desired to be, but simply because the organisation of the arrangements of the show are so crude that nothing is done, beyond showing the tubers, to let the public understand how these tubers are produced, and what are the varying features of the respective kinds. May we not urge that something should be done in the future to remove the apparent taciturnity which at present seems to overshadow the doings of our Potato friends?

Here we had a gathering in our midst of all the most famous exhibition cultivators of this delicious vegetable in the kingdom; they had come from all parts of the country to pay homage to their favourite tuber. What a wealth of experience these men must possess of the cultivation of the Potato in their varied climes, soils, and situations; they are all, more or less, suffering from the attacks of that fell disease that year after year plays havoc with their crops, and in face of it are powerless for good. It is not a personal or local danger, it is a national one, and, we might almost say, an universal one. Here, then, are reasons broadly and clearly stated why the promoters of the International Potato Exhibition should in future years endeavour to turn their gatherings to some practical account. These exhibitions have all proved to be complete successes, not in all cases perhaps pecuniarily, but with that matter we have at present nothing to do. So far as they have brought together remarkable representative collections of Potatos, that year by year grow in beauty and quality, so far have their efforts met with complete success.

It now only remains for them to develope in the future the wide knowledge and experience the cultivation of these tubers have brought into play. They must take a leaf out of the book of the modern congress, and utilise the idea to some good purpose. There may be much talk and perhaps some nonsense spoken, but this will creep out in the best regulated assemblies. The grain can be winnowed from the chaff, and perchance it may again grow and produce further knowledge, till at length the problem of the Potato disease and its eradication may be solved for all time.

—— The Rev. W. C. Raffles Flint, M.A., Vicar of Sunningdale, has presented to the Zoological Society a Bust of his uncle, Sir Stamford Raffles, F.R.S., the Society's first President. The bust has been ably executed by Mr. Ruddock, West Street, Pimlico, after the original by Chantry, and it has lately been placed in the new lion-house in the Society's gardens, Regent's Park. Sir Stamford Raffles devoted himself to active researches in natural history during the whole period of his residence in the East, where, as Lieutenant-Governor of Java, and then of Sumatra, he had great facilities for making fresh acquisitions both of the flora and fauna of the Eastern Archipelago. The largest known flower bears his name, Rafflesia Arnoldi, a life-size model of the flower and flower-buds of which may be seen in the Kew Museum, No. 3. His discoveries in zoology were published in the *Transactions* of the Linnean Society in 1820, but the fruits of his subsequent labours in the various branches of natural history were lost to the world in the total destruction by fire of the ship *Fame*, in which he was returning, with his family, and the results of his years of labour, in 1824. On reaching England he expressed his opinion of the possibility of establishing a society somewhat upon the plan of the Jardin des Plantes at Paris, and enlisted in his cause Sir Humphry Davy. His hopes were crowned with the utmost success in the following year—1825—when the Zoological Society of London was established. To it he bequeathed the remains of his valuable collections; but he scarcely witnessed in reality more than its splendid commencement, and died in 1826 at the early age of forty-five.

—— Mr. D. Sym Scott, forester, Ballinacourte, writing to the *Journal of Forestry* on the subject of Preserving Fence Posts, remarks that "the proper

Fig. 86.—STUARTIA VIRGINICA, NAT. SIZE; FLOWERS CREAMY WHITE.

seasoning of timber before being used in any sort of structure is far more important than the season of the year it is felled in, kind of timber used, or preventatives employed. There are paints, washes, and heterogeneous steeps recommended for preserving posts, but each is comparatively costly, and only partially successful. One great objection to the application of solutions externally rests on the fact that the sap, being confined, accelerates decomposition in the interior. Most foresters must have observed this. What I would recommend with fencing posts is, the materials, when felled, to be directly sawn into posts and stored under sheds thoroughly ventilated, where they will remain at least a year exposed to 'sun and wind.' The neck, or part between wind and water of each post should be slowly charred over a strong fire—slowly, because our principle means heating the timber thoroughly to the heart, so as to extract any moisture which may be still lodged at the centre, and hardening a crust on the surface of the posts. Afterwards, to prevent the posts absorbing water, they should be well coated with coal-tar, having its acid destroyed with fresh quicklime. The tar should be thoroughly boiled to evaporate all watery matter, and applied boiling hot. A large tank holding the posts set on end, and filled with the scalding tar from a boiler answers the purpose very well. Of course the upper half of the posts can be painted when placed *in situ*. I am fully convinced coal tar, properly applied to thoroughly seasoned timber, is far more effectual in preserving posts than creosoting, poisoning, kyanising, or all the paraphernalia of iron prongs, sheet iron wrappers (an American invention), &c. One great recommendation in favour of the above process is that it requires no skilled labour, and the cost is a mere trifle."

—— The death of Mr. Charles Stuart, at Woodstock, New South Wales, is announced. For the last thirty years Mr. Stuart has been known as a collector of Tasmanian and Australian plants.

—— Mr. Richard Smith, of Worcester, has favoured us with a sample of his beautifully-coloured and excellently flavoured new Worcester Pearmain Apple, which has before been recommended to planters in these columns, on account of its extremely showy appearance and other good qualities. Mr. Smith states that it crops as freely as Lord Suffield, and its season is from August to October.

—— In order to show how scarce some of the fine old named Gold-laced Polyanthuses of a quarter of a century ago have become, the sum of 6*s.* each was asked for by and paid to a Middleton (Manchester) florist for plants of Maud's Beauty of England and Hufton's Earl of Lincoln, so difficult is it to obtain plants of these varieties. In the edition of Thomas Hogg's *Treatise on the Auricula, Polyanthus, &c.*, published in 1822, the author gives a list of forty-two named varieties of Polyanthus, and of these only three in all probability could be found, namely, Cox's Regent, Pearson's Alexander, and Steed's Telegraph. The second of these is a fine variety, but exceedingly scarce. The most common of the named varieties are Cheshire Favourite, Exile, Lancer, and President (Hilton). Two grand old flowers, viz., Kingfisher (Addiss) and Lord John Russell (Clegg) are, it is feared, quite lost to cultivation. That the named Polyanthuses of the gold-laced section are rising in favour is seen in the fact that any cultivator known to have a plant or two is deluged with applications for offsets, and in all probability some of the varieties have succumbed to excessive propagation. With this great scarcity of named Polyanthus it is amusing to find seed lists containing offers of gold-laced Polyanthus seed "from the finest named varieties," and we are tempted to ask "Where do the named varieties of gold-laced Polyanthus exist from which seed appears to be so plentifully obtained?"

—— There is now appearing, sheet by sheet, a supplement to the *Botanische Zeitung*, entitled *Die Schutzmittel der Pflanzen gegen Thiere und Wetterungunst und die Frage vom salzfreien Urmeer*, or, in English, "Preservatives of Plants against Animals and Unfavourable Weather, and the Question of a Primeval Fresh-water Sea," by Otto Kuntze. This work is a kind of preliminary essay on the development of plants and animals, and the struggle for existence between the members of the two kingdoms, with special reference to the means of protection plants possess against eradication by animals and unfavourable climatal conditions. It is an amplification of three lectures given on the same subject, and embodies the author's observations during a voyage around the world. Regarding this as a distinct branch of botany, the author proposes calling it "phytophylakteriology"—a word that is sufficiently expressive, but abominably ugly and inconveniently long. He also discusses the probability of the sea having originally consisted of fresh water. When completed we may have occasion to refer to this publication again.

—— Messrs. Carter & Co. have forwarded us a specimen of the finest Green-eyed monster of a Dahlia we have yet seen. The flowers proper are not produced, but the scales of the receptacle, instead of being relatively inconspicuous, are here very numerous and bright green. We do not suppose the florists will give it a certificate, but the lover of curiosities and the botanist will appreciate it. It is not new, but it is the best specimen of the kind we have seen.

—— One of the fine New Auriculas raised by Mr. John Read, of Market Raisen, named Dr. Horner, is now in course of distribution by Mr. Jonathan Booth, Failsworth, Manchester. It is a fine grey-edged variety, a well proportioned flower of good size, and was much admired at the last exhibition of the National Auricula Society at Manchester.

—— The seventeenth annual exhibition of the Birmingham and Midland Counties Chrysanthemum Society is to take place in the Town Hall on November 21 and 22. In addition to prizes for plants in pots and fruit, some special prizes are offered; one of them, give by a tradesman of the town, is a bottle of scent "for the best arrangement of flowers for the hair." This, if it does not bring a considerable competition from the fair sex, will no doubt prove of great interest for them; but who shall be considered competent to award the prize? Surely a living form, if not a lay figure, will be necessary, in order to display the arrangements to the best possible advantage. Madame Tussaud might be invoked to send down a detachment of female figures from her exhibition, to give a completeness to the competition.

—— Among the more interesting subjects recently brought forward at the meetings of the Berlin Horticultural Society was a Tropæolum flower in which the entire plan of construction was reversed. In the place of the normally odd posterior sepal were two spurred sepals, and the odd one was anterior. Further, only two, instead of three of the petals were bearded. The stamens also, which were otherwise like the normal ones, discharged their pollen in a contrary order; and the carpels were also reversed in position, two being posterior, and the odd one anterior. Another flower with two posterior spurs had four beardless petals, and a third one was observed with nine stamens. A Fuchsia was exhibited in which the parts were in threes, and a second flower was developed on the upper side of one of its sepals. Dr. Ascherson described a hybrid Dianthus, between D. superbus and D. barbatus, and enumerated upwards of a dozen different crosses between various species which have been found in central Europe. Dr. Wittmack showed specimens of Peronospora sparsa, Berkeley, which until last year had not been observed in Germany. It appeared in a Rose forcing-house in the vicinity of Berlin, and eventually overran the whole of the plants so that they perished.

—— It is stated in the *Berliner Monatsschrift* that Cratægus Pyracantha is hardy, whereas C. crenata, a Himalayan form, usually regarded as a variety of C. Pyracantha, is tender. In the same number Dr. Tschaplowitz commences a series of articles on water and warmth in their relations to plants, and with especial reference to their management and application to plants growing under glass.

—— One of the best of late flowering summer plants is the old Gazania splendens, which is rarely ever so attractive as during the months of September. During the bright hot weather of summer the flowers close directly the sun's rays are withdrawn from them, but in autumn the blooms remain expanded during the hottest weather. It is very free of bloom also, and as successional plants are as valuable in the flower garden as anywhere else, the Gazania deserves employment for the purpose. In the garden of Mr. George Dunn, surgeon, Stevenage, the Gazania can be seen taking on a semi-double form; that is, from the centre of the flowers have issued a number of quill-like florets, which fill up nearly the whole of the centre of the flower. This may not be an uncommon occurrence, but if the sport were followed up, a perfectly double flower, like a Ranunculus Marigold might be obtained in course of time. The double Pyrethrums originated in much the same way.

—— The usual monthly meeting of the Horticultural Club was held on Tuesday last, when the following new members were elected:—Dr. Newington, Ticehurst; Messrs. E. G. Smeaton, Walham Green; T. Serle Jerrold, Avenue Road, Shepherd's Bush; and J. C. Fowler, Cumberland Lodge, Lewisham.

—— There is in the Billing Road Nurseries of Messrs. John Perkins & Sons, Northampton, such a clump of the Double Furze as one seldom meets with. It is 22 yards in length by 5½ yards in width, and is of a very dense growth. It is grown for obtaining cuttings from, the double Furze being in great demand for covert. During the month of May, when this really grand bank of Furze is in full bloom, the effect is very fine.

—— Introductory lectures at medical schools are, as a rule, apt to be perfunctory performances, abounding in vague platitudes and good advice, strongly tinged with dreariness. We had the opportunity of hearing one the other day, however, of such a character as to justify our alluding to it in this place. The lecturer was Professor Lister, of King's College, the gentleman appointed to succeed the late Sir William Fergusson. Never was a greater contrast observable between both the method and the matter of these two eminent surgeons than was that of which the theatre of King's College was the scene on Monday last. The subject of the lecture was one in which plant-growers are as much concerned as surgeons, and hence the propriety of our reference to the matter. Fermentation and putrefaction, as affected by the introduction and propagation of fungoid germs, or of other bodies capable of exciting fermentation and decay, formed the theme of Professor Lister's address. His experiments, the results of which were shown to the audience, showed conclusively that, provided fungoid germs, bacteria, or other ferment-generating bodie be carefully excluded, blood neither coagulates nor putrefies, milk remains sweet, and so forth. The bearing of all this on the generation and spread of various fevers, diptheria, and on the healing of wounds is obvious, and its relationship to the spread of the Potato murrain, the oidium of the Vine, and other plant diseases, is not less apparent.

—— Mr. Mussell, late gardener to the Right Hon. Sir W. Hutt, Bart., at Apley Towers, Ryde, has been appointed gardener to E. A. Drummond, Esq., at Cadland, Southampton. Those who have been in the habit of visiting the gardens at Apley Towers during the last eleven or twelve years can well judge of Mr. Mussell's abilities as a gardener. We also hear that Mr. Harding, gardener to the Rev. W. Arthur, Clapham Common, is appointed to succeed Mr. Collie as gardener to the Marchioness of Huntley, at Orton Hall, Peterborough.

—— For conservatory decoration the new hybrid Fuchsia, Earl of Beaconsfield, is worthy of high commendation, as the flowers are large, bold, and striking, and numerously produced. In point of form it would scarcely pass muster with the strict florist, but its vigorous habit, free-flowering character, attractive appearance, and somewhat distinct character, will cause it to be sought after for embellishing a greenhouse. A Continental variety, named Madame Jules Mensreau, very nearly resembles it in character, but the Chiswick trial this summer proves it to be distinct from Earl of Beaconsfield.

—— Some of the Primulaceæ appear to be very active this autumn. The single and double Primroses, show and alpine Auriculas, and Polyanthuses are all flowering much more than usual. Generally show

Auriculas are sending up autumn trusses, but though they are pleasant to look upon they never attain to that perfection which is presented in the spring. It sometimes happens that certain varieties will form a truss, but keep it low down in the heart during the winter, and when this happens it comes up slowly in spring and invariably unfolds glorious pips. Some of the varieties having powdered foliage take on a charming winter dress during the winter. A variety of Primula Auricula known as marginata has during the winter mealed foliaged of an exceedingly attractive character, more so, perhaps, than any Auricula in cultivation. The young leaves put up at this time of year are white with the peculiarly beautiful farina with which they become clothed at mid-winter. It is only those who cultivate this "beautiful and fascinating flower" that can come to understand something of the constant changes in its leaf garb which it is continually presenting. It is always active in a more or less degree, and there is scarcely another class of plants that presents such a variety in the character of the foliage as the Auricula.

—— We intend shortly to publish a coloured plate, by Mr. Worthington Smith, representing a group of Edible Mushrooms and of Poisonous Fungi which might be mistaken for them.

—— Mr. D. T. Fish requests us to state that he has resigned the editorship of the *Villa Gardener*.

—— Look out, gardeners, and all you that have plants to grow which will get dirty, and which will become a prey to aphis and thrips, red-spiders (and green ones !), mealy-bug, and scale, notwithstanding all your exertions to the contrary. Long have your tempers been sorely tried by these most destructive and ubiquitous pests, which will persist in multiplying and thriving in spite of all the wonderful antidotes that have so persistently been placed before you. Take courage, we say, your millenium is at hand ! Your troubles are to be reduced, and your hours of labour considerably curtailed. In winter and spring your only anxiety will be about the frost ; in summer, as far as insects and cleaning plants is concerned, your leisure will be abundant, so that there will be no excuse now for your not rubbing off the rust that will grow upon those who cannot find time to take an occasional peep over their neighbours' fences. At last the good time has come that you have so long been looking forward to—at least, if we may credit a circular that has reached us relating to a certain chemical manure, and some extracts from which we append, with the hope that you will not be disappointed by a perusal of them.

"Bouvardias, Roses, Pelargoniums, Cinerarias, &c., which are so subject to red-spider and green-fly, will not be attacked by either—if this manure is used in potting those plants.

"The foliage in every case is vastly improved, and the blossoms are more abundant, and the colour is intensified.

"Camellias will never require sponging, as the foliage will continue healthy, and the bloom-buds are not liable to drop off.

"Azaleas will not be attacked with red-spider, and where large plants are already attacked a good top-dressing will in about six weeks' time completely free the plants from the pest without dipping or syringing. You will rarely require to smoke, and if the manure is regularly used probably fumigating will never be needed. Please try for these results to satisfy yourselves."

—— The New Pyramidal Laurustinus, sent out a short time since by Mr. Knight, of Hailsham, appears to be a very desirable evergreen, as it is not only stronger in growth than the old form, but it is much hardier in constitution also. Mr. John Perkins, of Northampton, who is growing the new Laurustinus somewhat largely, states that while the common one gets cut up by frost in his nursery, the new one is unharmed. The flowers also are larger, and the individual trusses bolder in appearance.

—— At the farm of Lin Mui, in Aberdeenshire, at 1300 feet elevation, there are several old Ash Trees, the two largest of which, in 1843, were 5 feet and 4 feet 2 inches in girth at the base respectively ; in 1859 their girths were 5 feet 6 inches and 4 feet 4 inches. At Her Majesty's Lodge at Loch Muic, 1350 feet above the sea, and 50 miles inland, where most of the ordinary culinary plants are grown, Bay and Portugal Laurels also succeed. There are also thriving Larches, the girths of four of the largest, near the ground, were :—

	In 1843.	In 1859.
No. 1	4 ft. 9 in.	5 ft. 7 in.
,, 3	4 5	5 6
,, 2	4 0	5 4
,, 4	3 6	5 0

—— We are glad to hear that an accession of nearly forty new members represents the number of new subscribers to the Gardeners' Royal Benevolent Institution, in consequence of Mr. Cutler's canvass at the Carlisle show and elsewhere. We are specially pleased to see that the new members are mostly representatives of the gardening class, either as nurserymen or as gardeners. It is not creditable that such an Institution should depend so much on the patronage of outsiders. We are satisfied that if the advantages of the Institution were more understood the number of members would be increased. Like other institutions, it is not perfect, but the way to improve it is to obtain an increase in the number of members, and for the existing members to take an active interest in the proceedings of the Society. We believe there is a good chance of a large addition to the number of pensioners at the next election.

—— Dr. Dickie, in a paper published in 1843 in the *Quarterly Journal of Agriculture* (xiii., 393), gives particulars of a large number of Trees in Aberdeenshire, from which the following are selected :—

	Girth at 4 feet from the ground.		Locality, &c.
	Ft.	in.	
Pinus sylvestris, Scotch Fir ..	13	7	Mar Forest—est. cubic contents, 250 feet [den
Larix europæa, Larch	10	1	Mar Lodge Gar-
Abies excelsa, Spruce Fir ..	10	6	Whitehaugh
Abies pectinata, Silver Fir ..	10	11	Strichen
Taxus baccata, Yew	12	6	Ellon
	12	10	
	12	9	
Quercus Robur, Oak	9	6	Huntly Lodge
Do.	5	7	Ballater (natural Oak)
Fagus sylvatica, Beech.. ..	18	6	Crathes [Ellon)
Castanea vulgaris, Chestnut ..	11	10	Waterton (near
Tilia europæa, Lime .. .	9	8	Aboyne
Fraxinus excelsior, Ash ..	15	0	Do.
Ulmus montana, Scotch Elm ..	9	8	Craibston [mar)
Acer Pseudo-platanus, Sycamore	11	1	Glenkindy (Brae-
Betula alba, Birch	8	2	Craggan
Alnus glutinosa, Alder	7	5	Haughton
Pyrus Aucuparia, Rowan ..	6	3	Edinglassie
Cratægus Oxyacantha, Hawthorn	4	2	Leith Hall.
Prunus Cerasus, Cherry and Gean	7	6	Edinglassie.
Populus tremula, Aspen ..	6	10	Invercauld.
Salix alba, Huntingdon, Willow	8	4	Echt.
Juglans regia, Walnut	5	6	Crathes.
Æsculus Hippocastanum, Horse Chestnut	9	0	Do.
Ilex Aquifolium, Holly ..	5	9	Blackhall.

Professor Barlow experimented on three specimens of Mar Forest Fir, one of which had been felled three years, another one year, and the third eight months. "Each of these trees was about 28 inches in diameter at the root, and contained 50 feet in length of serviceable timber—the grain remarkably clean, free from knots, and full of turpentine ; and, from the results in the tables, it appears that the strength exceeds that of any other Fir that was submitted to experiment, although the second specimen of Riga was selected from a tree supposed to be of superior quality, on purpose to form a comparison."

—— One very evident indication, to use a surgical term, afforded by Mr. Worthington Smith's discovery of the resting-spore of the Potato fungus and its mode of growth is not yet acted on by Potato growers as it ought to be. It takes a very long time for scientific information to be appreciated by practical men, even when it is of the greatest moment to them. It is clear, however, to those who will read Mr. Smith's observations that by the Immediate Destruction of the Haulm of Diseased Potatos by fire the extension and propagation of the fungus might, to a very considerable extent, be arrested, while on the contrary our present carelessness in this matter affords the best possible opportunity for the perpetuation and dissemination of the plague.

—— In accordance with our plan of publishing from time to time illustrations of our finer hardy trees and shrubs, especially of such as are not so well known as their merits entitle them to be, we now give a figure of Stuartia virginica (fig. 86). This is as to its flowers a noble shrub. It is a native of the Southern States of North America, and is as to its kinship a close ally of Camellias and the Tea plant. It was introduced according to Loudon as far back as 1742, but is rarely met with in British shrubberies. Our illustration was taken from a plant which flowered in great profusion at Sion House, near Brentford, during the present season, and for specimens of which we are indebted to the kindness of Mr. Woodbridge. A peaty soil, such as that generally used for "American plants," is most suitable, but we remember to have seen it in great beauty in the Canterbury Nurseries in a stiff loamy soil. The flowers in our illustration are of natural size. In colour they are creamy white, the very numerous filaments being of a purplish hue.

THE MILFORD NURSERIES.

To a lover or admirer of the beautiful, as it is found amongst hardy trees and shrubs, an occasional ramble through any of the great tree nurseries affords a singularly interesting treat and many an instructive lesson in dendrology. Since the spring of 1874, when Mr. Young's nursery was last noticed in this journal, we have many times had the pleasure of paying him a visit, and are indebted to him for much valuable information freely imparted to us. The characteristic features of the nursery have been alluded to before, and our readers will find at p. 410 of our vol. i., new series, a couple of admirable illustrations of views in the grounds. The series of "striking situations" then alluded to have been increased and improved, and it is astonishing to see how much may be done by skilful planting, even on a limited area, to make a place enjoyable. But our object now is not to descant upon such topics as this, but rather, as the planting season is at hand, to note some of the more rare and beautiful of the trees and shrubs which Mr. Young has gathered about him.

The first to make a note of is perhaps the finest of all the green-leaved Oaks—Quercus laurifolia, a native of America, with large broad and entire, dark green, shining leaves, which hang on the tree nearly all winter. It is a very free grower, and would make a handsome tree, but is not sought after half so much as it deserves to be. The fine bold golden-leaved Quercus Concordia was in fine form, and Mr. Young remarked that its foliage gets burnt less as the tree increases in age. Q. Cerris pendula is a weeping form of the Turkey Oak, a novelty remarkable for its pendulous habit and the silvery grey hue of its foliage. Another handsome-leaved Oak deserving the notice of planters is Quercus conferta (pannonica), and also Q. fastigiata viridis.

The beautiful Scarlet Oak, Q. coccinea, is too well known to require more than passing mention, but in the rich purple-leaved Quercus nigra we have a tree that is only just coming into notice, but, like the Copper Beech, it will make a grand object in the landscape, and afford a lively contrast to its scarlet and golden congeners.

There are many fine subjects for the landscape gardener amongst the Alders. The first that we note here is Alnus incana variegata, a new form that has not yet been sent out. The leaves when true to character are heavily blotched with yellow, but this character does not seem at present to be well fixed, as the plants occasionally hark back to the green state to break out again into golden variegation further on. In Alnus glutinosa aurea we have the variegation well fixed, and a very pleasing tree it is with its pure lemon-yellow leaves. A. glutinosa imperalis is a fine thing, with deeply cut leaves and elegant pendulous branches. A. viridis is remarkable for the dark green colour of its wood and foliage ; and A. cordata for its fine heart-shaped leaves of a similar colour, and its fine habit of growth. The last named is sometimes called the Italian Alder, and is almost an evergreen, retaining its foliage well into the winter and spring.

A ramble amongst the Maples affords additional proof that the grandest of them all for landscape work is Acer colchicum rubrum, a good grower, whose ample foliage from spring till late in autum is of a bright rosy purple colour. Next comes Acer rubrum, the red-flowered Maple, a most ornamental object, whether we regard it when in flower in spring, or later on, when its foliage assumes a rich purple and crimson hue of colour. A. Wagneriana (eriocarpum) is a cut-leaved form, a fast grower, and very ornamental. For planting near the seaside none of the Acers do so well as the Norway Maple, which is a rapid grower, stands the sea breeze well, and dies off a rich

golden-yellow in the autumn. A pretty and interesting tree is A. saccharinum, the Sugar or Bird's-eye Maple of North America. It is a smaller tree altogether than A. rubrum or A. colchicum rubrum, and less handsome than either; but "handsome is as handsome does," and this produces the most valuable timber. A fine broad-leaved form is A. obtusatum, but it is not a well-known plant, though introduced so far back as 1825. There is also here a pretty golden variegated variety of the Norway Maple, and also a golden form of the handsome so-called Corstorphine Plane.

The Spanish Chestnuts, too, are remarkably handsome trees, and we noted a curious variety of Castanea vesca named heterophylla dissecta, in which the leaves are divided into long narrow segments, giving the tree an elegant feathery appearance, and the beauty of which is enhanced by its silvery variegation. Castanea chinquapin is a curiosity, while in C. vesca laciniata, with its deeply serrated foliage, and the variety named marginata, the leaves of which are margined with silver, Mr. Young has two fine novelties, which are associated with his own name

The Judas tree, Cercis siliquastrum, is worth planting for the sake of variety. It is not a particularly handsome growing tree, but it has beautiful foliage, and produces its rosy-purple flowers in spring before the leaves are developed. Koelreuteria paniculata possesses similar characteristics, but it is a free flowerer, and its yellow blossoms have a grand appearance in June and July. The comparatively new Catalpa syringifolia aurea, if anything increases in beauty and value as it gains in age. It is very hardy, gets brighter in colour as the power of the sun is intensified, and has truly noble foliage. It is one of the very best arboreal subjects of late introduction, and is deserving of extensive planting for landscape effect.

Young's Weeping Beech, of which the original tree is such an interesting feature in the nursery, is so well known as to require no more than passing mention; but in the new Weeping Birch, Betula alba pendula Youngii, which was found growing in the neighbourhood of the nursery a few years ago, we have an elegant variety, that requires only to be better known to receive its due amount of appreciation. The cut-leaved Lime makes a beautiful tree as a standard, and is very pleasing also in the form of a pyramid.

The Golden Chinese Juniper, which also originated here, is met with in considerable quantities, and right well does it maintain the high character it gained when first introduced to public notice. It keeps its golden colour bright right through the winter, and grows with great freedom. The new variegated Tulip-tree, sent out by Van Houtte, and the leaves of which are margined with golden-yellow, also promises to make a very handsome tree. Those who are in search of bold-leaved bushy growing trees should make a note of Magnolia acuminata and M. tripetala. Their foliage here is of grand size, and the general contour of the bushes magnificent in the extreme. Viburnum macrocephalum, an introduction from the North of China, proves to be a very fine shrub, and has pure white flowers very freely produced. This and the glorious V. plicatum should find a place in every sheltered shrubbery border. The fastigiate Robinia is remarkable for its pyramidal Lombardy Poplar style of growth, and occasionally produces golden-yellow leaves. We also found here some representatives of Cornus florida, an ornamental tree with obovate leaves, large white flowers and scarlet berries. It is a little known native of North America, but is said to be the finest of all, and to be seen in grand form at Rhode Island.

Of all the hardy golden-leaved shrubs yet introduced the golden-leaved Elder is, perhaps, the one that will prove the most accommodating; and, as has been said many times before, it is a most beautiful plant, and one that will in a short time produce great effect if planted on the margins of woods and plantations, or anywhere in view of carriage drives or wilderness walks, and yet, strange to say, it is a plant very seldom asked for. A free-growing, fine-foliaged tree is the new Rhus Osbeckii, and it has also the merit of producing large panicles of white blossoms. A fine companion plant to the golden-leaved Elder is the purple Hazel, whose rich dark bronze-coloured leaves would associate well with that bright and cheerful subject. The fringe of a wood would suit it to perfection; and another fine thing for a similar position is Sorbus pinnatifida, a large variety of the American Mountain Ash, and which produces very large clusters of berries. Ulmus campestris aurea is a new Golden Elm, of which more will yet be heard; and in the weeping deciduous Cypress, Taxodium distichum pendulum, we have a form, which promises to make a good tree. There is a good example of this at Valentines, near Ilford. The old Weeping Cherry, now seldom seen, we also found here, together with a new pendulous variety, which produces an abundance of rosy white flowers in spring. Mr. Young has also in preparation for sending out a weeping form of one of the garden varieties of Cherry.

A thoroughly good free-flowering shrub is Cotoneaster Wheeleri, raised and sent out by Mr. Wheeler, of Warminster. The Silver Poplar planted in a mass strikes the eye at once as a glorious object in the landscape; and another tree which must make its mark in years to come, when it reaches its full proportions, is the Fern-leaved Beech, Fagus asplenifolia, a round-headed tree and a very fine thing. A curious subject amongst the Poplars is Populus Tacamahac, which somewhat resembles a pyramidal Pear tree in its habit of growth. Carragana arborescens pendula is not often met with, but on account of its fine yellow leguminous flowers should be more often planted. The handsome Virgilia lutea, or Cladrastis lutea, also claims passing mention, together with Ulmus crispus, a close pyramidal habited tree, with fringed copper-green leaves, and Betula californica, which retains its foliage till late in the autumn. Another little known tree which possesses the same characteristic is the stiff-leaved Fagus ferruginea. Did the exigencies of space permit it a great many more beautiful and useful subjects might be enumerated, for there is a fine variety of such subjects to be found here.

The nursery is particularly rich in Japanese plants, and amongst them we noted Rhaphiolepis ovata, an evergreen shrub with thick ovate leaves, and terminal clusters of very pretty small white flowers. Aucubas are a speciality, and so also are Roses on the Manetti, which exactly suits the sandy soil of this district; as a consequence an immense quantity of plants are worked on it, and a splendid growth they make. Clematises are also propagated in large quantities, and well grown too in large tubs, in which they flower with great profusion during the summer and autumn months. Forest trees are also turned out on extensive scale, and besides all these there are the usual quantity of fruit trees, and of such miscellaneous subjects as go to make up the stock-in-trade of a well ordered nursery.

Home Correspondence.

The Early Ascot Frontignan Grape.—Will you allow me again to call attention to the merits of the Early Ascot Frontignan Grape. In this backward season it has served us as well as usual. Its advantages as a Grape grown without artificial heat are with us that it ripens its fruit earlier, that its bunches and berries are larger, and its flavour much higher than the other cold Grapes grown in the orchard-house with it. Messrs. Standish & Co., of Ascot, the raisers, have, at my request, sent a Vine to an artist in Surrey, a master of the art of growing and training hard Grapes over walls and roots, so its merits as an outdoor Grape will now be fairly tested. The owner of Heckfield Place informed me that he intended growing this Grape in a vinery to see how heat developed the fruit; perhaps Mr. Wildsmith will, in your columns, tell with what results. *George F. Wilson.*

The Culture of Clerodendrons.—I should feel much obliged if Mr. Baines would give me a little information on the cultivation of Clerodendron Balfourianum. The usual time it flowers with me is in May, but I have seen it in good bloom at flower shows in August and September. Is this the second bloom, or is it the first bloom retarded? or how is it managed? *G. W.* [Clerodendron Balfourianum is one of the most manageable plants grown as to the time of its flowering, as it can be had in bloom from the beginning of April till September; it requires some special treatment to have it in flower very late. If a plant that bloomed in the spring—say in May—was wanted to come in the year following as late as August or the beginning of September, instead of starting it into growth immediately after flowering it should be cut back as far as necessary and kept in a moderately cool house for a couple of months, it should then be transferred to the stove, the young shoots trained close under the roof, and kept growing to the end of the year. Water should then be withheld till the leaves flag freely, when give a little, just so as to freshen up the foliage, but not enough to soak the soil, or it will induce more growth. This checking process should be continued, letting the soil ultimately get quite dry, which will cause the leaves to die off. This will take about two months, when the plant should be removed to where it can be kept at from 55° to 60° in the night; it is not safe much lower than this. Here it may remain through March, April, and May, only just giving enough water to keep the bark from shrivelling. By this time it will show signs of wanting to make growth, when it may have a little warmth and the roots should be well soaked, but it must not be subjected to very strong heat, or it will come on too fast for the time it is required. Another method is to ripen a plant off early in the autumn that has been started soon in spring, give it a short rest and push it into flower, so as to have the bloom open during the winter, then let it make growth for two months, induce rest by withholding water, and again start into growth and it will flower through September. Or a plant that has been brought into bloom in May may after this be stood in a cool house, giving no more water than will keep the leaves from flagging to an extent that would destroy them; after this submit it to a brisk heat about seven or eight weeks before it is wanted in bloom. This Clerodendron may be had in flower late by any of these three methods, the first being probably the best. *T. B.*]

At what Depth should Bulbs be Planted?—This is a question of great interest to gardeners. My experience is decidedly in favour of deep planting for such bulbs as Winter Aconite, Crocus, Snowdrop, Narcissus, and Hyacinth. The depth should perhaps vary with the soil, being greatest in light open soils, but I have not found a foot above the crown of the bulb too much in any soil. The tendency of the Crocus, where not covered with turf, is to work upwards, new bulbs forming every year on the crown of the old bulb, but probably this tendency is counteracted in their natural state. In Nottingham meadows, where the blue Crocus is naturalised, I used often to dig them up, and think the average depth is about a foot. The surface of the ground is probably raised there by the alluvial deposit of floods faster than the new bulbs rise, but in getting up Snowdrops, Crocuses, or Daffodils which have been accidentally left wild, I have generally been surprised at the depth of the bulbs. In fields of stiff red clay in Cheshire the common double Daffodil flowers in luxuriant clumps, which I have wished to divide, and found that the full depth of a garden spade, 18 inches, does not reach the bulbs. The common autumn Crocus (Colchicum autumnale), which is perhaps native there, grows nearly as deep. Again, where garden ground has been dug deep, we see here and there a Crocus or Snowdrop which has been accidentally buried flowering quite as well as any others, and on taking it up to restore it to its proper place are surprised to find that not only is the bulb at least a foot deep but also upside down. The obvious advantage of deep planting in mixed borders is that spring bulbs so planted need not in any way interfere with such things as scarlet Pelargoniums or blue Lobelias planted over them, not to mention instances where gardeners who have not enough to do employ their superfluous time in autumn in digging the mixed herbaceous borders, an evil practice I have much difficulty in preventing. Of course the rule of deep planting does not apply to all bulbs, exceptions are Anemones, Cyclamens, &c. I believe that Hyacinths and Polyanthus Narcissus, where the soil is light, may with advantage be covered to a depth of 18 inches. *C. W. Dod.*

—— In the autumn of 1869 Crocuses were extensively planted at Bicton from 4 inches to 5 inches deep. This proved a failure, from the raids of mice and rooks, which made large gaps of 1 foot and upwards in our lines and circles. The remaining bulbs when matured were lifted and stored in the usual way. The following autumn we made a bold attempt at deep planting; holes were made from 12 inches to 13 inches deep, the bulbs dropped in, and a pinch of soot thrown in upon each, and then filled in. After flowering, instead of lifting as before, the leaves were tied in knots (until properly ripened) for a twofold purpose, viz., for neatness, and to enable us to prepare for summer bedding, by which time the leaves would come readily away, leaving the bulb safe and intact for another season. This mode of treatment proved a decided success year after year, thereby saving a deal of labour and anxiety, and last, but not least, the censure of many that know but little of the many contending enemies the gardener meets with in every branch of his profession. *T. Shingle, Tortworth Gardens.*

Dr. Hogg Melon and Telegraph Cucumber.—I believe I have grown as many different kinds of Melons as there are weeks in the year, and my favourite out of all kinds is Dr. Hogg. It is decidedly handsome, and beautifully netted, the flesh green and tender, of excellent flavour, and keeping well after being cut. Added to this it has a fine constitution, and sets freely. This, I think, embraces all

the good qualities of a Melon. And now let me say that, after many trials of Cucumbers, I very much prefer the Telegraph to any other. Years ago I heard of a gentleman who grew nothing but Beechwood Melon and Sion House Cucumber; I wish I could make up my mind to follow his plan, and grow nothing but the Melon and Cucumber I have named. I know by so doing I should be saved from many disappointments. *J. Rust, Eridge Castle.*

Lesson on the Potato Disease.—In the article printed in the *Gardeners' Chronicle* of the 29th ult. is given an exhaustive description how the Potato disease is to be set at defiance for the future. For the last quarter of a century I have at different times in the columns of the *Gardeners' Chronicle* promulgated, from experiments in planting early ripening varieties of Potatos, so as to have them matured early in July, that they were safe from the disease, and that this system would be the only one to be depended on for the future. We have now in some of the early-ripening American sort of Potatos great croppers and with short haulm, and if these were crossed with some of our best early kinds new varieties of good flavour and keeping qualities might be raised for main crops. One variety, named Alpha, has with me this year ripened in the end of June, a great cropper of good size, but with the objectionable earthy flavour of some of these American sorts; but crosses from it might give us a round early Potato of good flavour. Mona's Pride, Lee's Hammersmith Kidney, Feon's Early Market, and some other early sorts, if planted as early as the season and soil will permit, can all be raised ripe enough for late keeping before any disease appears, let June and July be ever so wet. There will doubtless be many growers of Potatos still planting them at the usual time and trusting to the chance of a dry, warm summer; but to make the risk less, if they were to plant them in alternate rows with root crops the loss then would not be so great as in years like the present. In the case of some of the strong-growing kinds of Potatos, with hard, woody haulm and leathery, red skins, the fungus seems to attack them very slowly, but they cannot be said to be disease-proof. One kind I grew here, and received under the name of Millett Manifold, is yet quite green and growing, although every kind in the garden near it has its haulm dead. Another seedling raised from it, and sent out under the name of Wood's Scarlet Prolific, has the same property of resisting the disease in both haulm and tubers. The Red-skinned Flourball and a red kidney variety I had from Prussia two or three years ago, both belong to this section; and all of them, if planted so as to ripen before the frosts attack them in October, would produce good crops. These varieties are not the best for table use, but they keep well, and their flavour is much improved by growing them on light soils without much manure. By growing our main Potato crops very early, or very late, the fungus would gradually be starved out for want of a suitable place for its resting-spores, whether in the soil, on the haulm, or on decaying tubers. As the critical stage of the disease appearing on the main crops of Potatos is in a certain period of their growth, and this is generally in the end of July or in August, an experienced watcher of the disease can tell in a few days when it will appear, should the weather be moist and the temperature high, and it is more quickly developed during thunder showers if the air is close and sultry; not that electricity has anything to do as the cause of it, but only that it favours the development of the fungus in thundery weather, when the temperature is high and heavy showers are falling. *William Tillery.*

The Vicomtesse Héricart de Thury Strawberry.—Mr. Harrison Weir, p. 373, makes rather a singular mistake in referring to my article on Strawberries (p. 10, Fruit Supplement), inasmuch as I did not even name the variety he mentions—Vicomtesse Héricart de Thury—which is a good forcer, but one that I should not grow out-of-doors only in exceptional situations. *Z.*

The Lathyrus as a Town Plant.—The above named leguminous plants form a very numerous group, of which the Sweet Pea is a familiar example. The perennial species, or "everlasting Peas," are charming things, but seldom seen in the right place; all attempts at staking, training, or tying-up with these plants are absurd: they must have, to look well, their own will and their own way. Nothing can exceed the beauty of L. grandiflorus rambling over a rough stony bank or among the broken masses in an old stone quarry. It has often struck me that the proper place for climbing plants of this tribe would be the divisional railing dividing the front gardens attached to the houses on the outskirts of most of our large towns; the perennial plants of this section are just suited for such places. Thriving luxuriantly in any place or in any kind of soil, establishing themselves wherever a bit of a root can be thrust in among paving-stones or flags, and left to ramble at will among the light divisional fences above alluded to, the effect would be charming; not a nail or a tie would be necessary—all the care required would be to interlace the main shoots as they grow on the fence and leave them alone. In such a situation they would make themselves at home, and make a display such as is never seen when the plants are tied up, besom-fashion, round the bole of a tree. In addition to the sorts commonly grown, such as L. grandiflorus, rotundifolius, latifolius, and its white var., the best of all, and the most vigorous grower, is a little known species, L. pyrenaicus, sometimes called venosus. *T. Williams, Ormskirk.*

Orchids in September.—I find that this monthly list is tempting many to indulge in Orchid-growing. It is, perhaps, right to inform them that the number it exhibits is due to a personal interest I take in Nature's varieties as well as in Nature's beauties, and consequently mine aims rather at being a collection than a selection. Many that appear there are more of botanical than of floral interest. Beginners should not be guided by these alone, but consult Mr. Williams' book for the most serviceable of them. The list is, however, useful by showing what we may look for in each month. To the regular Orchid-growers it has an interest of another kind.

Cattleya bicolor
,, marginata
,, maxima
,, intermedia
,, Harrisoni
,, Loddigesi
,, Forbesii
,, Wallisii
Lælia crispa
,, Pinelli
,, Dayii
,, elegans
Oncidium Rogersii
,, Forbesii
,, macranthum
,, ornithorhynchum
,, flexuosum
,, Kramerianum
,, incurvum
,, tigrinum
,, cucullatum
,, Lanceanum
,, triquetrum
Phalænopsis rosea
,, cornu-cervi
Saccolabium Blumei
Lycaste Skinneri
Warscewiczella species
Dendrobium cariniferum
,, secundum
,, formosum giganteum
,, chrysotoxum
Odontoglossum Alexandræ
,, Rossii
,, cheirophorum
,, grande
Zygopetalum maxillare
,, Gaultierii
,, Mackayi
,, species
Pleione lagenaria
,, maculata
,, Wallichii
,, species, new (two flowers on a stalk. Shall it be called biflorum?)
Masdevallia Veitchii
,, Lindeni
,, nycterina
,, amabilis
,, peristeria
,, myrostigmata
Burlingtonia venusta
Epidendrum dichromum
,, ciliare
,, cochleatum
,, vitellinum majus
,, species
,, striatum
Cypripedium Sedeni
,, Roezlii
,, niveum
,, barbatum nigrum
Sophronitis grandiflora

I have received many communications relative to the Odontoglossum described in my last as angustatum; it has been shown to several experienced Orchid growers, but has been recognised only by Sir Trevor Lawrence, who informs me that it once flowered in his fine collection, and was sent to Professor Reichenbach, who pronounced it to be new, and gave to it the name of O. linguiforme. Even so experienced a man as Mr. Dominy had never seen it. All agree that it is not angustatum, which, they say, has a short stalk. It was, however, bought both by Sir T. Lawrence and myself by that name. I have a second plant of it in flower bought under the name of O. distans, which it certainly is not, if another plant so-called be true, and which is just now sending up four long stalks. At all events, it deserves extensive cultivation, not so much for beauty and the individual flowers as for their profusion, their long lasting, their unusual colour, and the general effect of the mass; but do not wind them round sticks, let them turn and twist among the leaves of the surrounding plants, as they obviously love to do, and in which position the branchlets creep out from among the leaves and display their flowers with a grace that is in itself a new charm. So it should be with all the long-stemmed Orchids—Oncidium macranthum, for instance. It is often objected to them that the flowers are so far apart, but Nature has so ordered it for an obvious purpose. They grow among other loftier vegetation. The flower-stem is long because the flowers must rise above their surroundings to attract the fertilising insects. Each branchlet peers from out the foliage, or hangs over the projecting rock or stump, and thus its whole beauty is shown to the day. No person who has once observed the effect of allowing the stems to lie at length among the surrounding plants with the branchlets throwing out their blooms at intervals, will ever again attempt to twist a flower-stem round a stick. *Edward W. Cox, Moat Mount, Mill Hill, N.W., October 1.*

Pumpkin Preserve.—Except that your correspondent, "S. W.," advocates the making of preserve from the Pumpkin instead of from the Vegetable Marrow, his advice adds but little to what I last year put before your readers with respect to the excellence of Vegetable Marrow preserve. This delicious compound has been made in several ways in our household this autumn, in each case with success, the chief result being that all who taste it wish heartily that they had made a store of it, whilst it is impossible to feel other than regret that so many households are deprived of a cheap and wholesome jam solely through ignorance of its quality, and the method of producing it. The Gourd alluded to by your correspondent is probably the same as is sold in the seed trade under the name of the Ohio Squash; it is also well-known in the South as the Vegetable Cream Marrow. The flesh is thick, yellow, and of soft, marrowy texture; the fruit large and egg-shaped, and certainly the best of all kinds for cooking when ripe. It is, however, much less prolific than good kinds of the Vegetable Marrow, and for that reason, and also because it has such yellow flesh, it is not appreciated generally in gardens. The best Marrow in my judgment for preserving purposes is the long deep green kind known as the Cucumber Marrow. It has thick white flesh of great solidity free from the stringiness so common in the white Marrow, and these good qualities render it specially suitable for preserving purposes. It is not less a first-rate kind for ordinary table uses. The fruit are best for preserving when well matured, but prior to the rind becoming hard good fruit of this kind at this stage when cut up will yield from 8 to 9 lb. of fruit for boiling. The colour of this Marrow preserve is not so deep as is that made from the yellow kind, but colour in the case of an ordinary preserve is of little moment: it is enough that it is bright, clear, and pleasant. Two forms of preserve are made from the Marrow—one to represent preserved ginger, and to be used with the dessert; the other to be used as an ordinary domestic preserve. To make the first the Marrow flesh is cut into pieces about 1 inch by ½ inch, and the sugar, in the proportion of ¾ lb. to the pound of Marrow, is put in with the Marrow. This causes the pieces to become firm, and when boiled for about 1½ to 2 hours it is thoroughly done. To produce the illusion of mock ginger a considerable proportion of ground ginger is boiled in with it, and the rind of a Lemon or more, according to quantity, is sliced up thinly, and the juice pressed into the preserve, and this adds a delicious flavour. For ordinary preserve it is found best to cut the Marrow flesh up quite small and place it in a large jar, adding a sprinkling of moist sugar. When this has stood twenty-four hours it is found that a considerable portion of water has been extracted, and that the Marrow is much sweetened. To this is added about half-a-pound of sugar to the pound of fruit, the Marrow being boiled half-an-hour before the sugar is added. A slight flavouring of ground ginger and essence of lemon, both very inexpensive things, are all the additions necessary to produce a delicious wholesome preserve. Where Marrows are cultivated it is probable that this jam can be made for the small cost of about 2*d.* per lb., a fact that should force itself upon the attention of housewives in these days of dear butter. From Rhubarb, Apples, and even Carrots, really nice wholesome preserve can be made, but probably the cheapest and most available material is Vegetable Marrow, as it is a plant that can be induced to grow almost anywhere. *Alex Dean, Bedfont.*

Burning Clay.—I several years ago burnt a large quantity of clay, both to improve the tilth of my garden, which is a strong clay, and also in the fields, which I was preparing to be laid down to permanent grass. It is difficult to estimate the cost. Small cheap coals, with small cinders from the coke ovens, were used as fuel; the men had no practical training, and took advantage generally not to overwork themselves. I can't give an opinion of the effect upon the garden crops, as the land was just rich old grass broken up, and was therefore very productive; but upon a few acres of old tillage, which from previously having been renewable leasehold had been treated unjustly as to the supply of its fair share of manure, I found for years after the clay was burnt and worked into the top soil that the parts newly sown down to permanent grass not only showed in early spring the first growth of greenness, but generally presented to the eye an improved appearance to that portion of the crop adjoining; but my impression, and it is only a very superficial one, was that the process did not pay, or I should have more extensively pursued it. I obtained the clay by turning up to the surface a couple of inches or so of the clay with the plough, and then collecting it into good sized heaps with carts, and again, after being burnt, loading and spreading it over the land, where it was worked by plough and harrow among the top soil. The simple matter to be attended to is, that for this manuring and improvement of the condition of the land the clay must not be dry, or it will burn hard like a brick, and not swell, which it should do, so as to fall and moulder, to more perfectly mix with the soil. It must not be too much burnt. No doubt in my own case the magnesian lime, which considerably pervades my clay, not only as shown by the bluish separation in the clay, but also by small pieces of limestone mixed with it, and this, being by the heat converted into lime, would have some manurial value. We all know that yellow clay, from its want of lime, is of a very poor agricultural worth. To really arrive at the

benefit derivable from burning clay not only the expense but the discipline of clays are elements demanding special attention. To form new or repair existing farm roads the clay must be dried in suitable lumps before being burnt, and then the fire cannot be too rapidly forced to secure the full effect of the fuel; to keep a heap of dry lumps of clay smouldering for days without ever getting to the required degree of heat is like simmering a kettle, which will never thus boil, or like some men who will not follow up at a few days' interval dressing sheep's feet suffering from foot-root, or dressing sheep with scab at very short intervals, as the first dressing may kill all the acari but not destroy the eggs, which will soon hatch, and if not at once killed by a dressing form a new centre for the continuance of the disease. *W. A. Wooler.*

Scammony.—At p. 370 you call attention to the decreased supply and inferiority of the drug. The same remarks would generally apply to Jalap. It is well known in the medical profession and amongst drug manufacturers that it is almost impossible to get a sufficient supply of the pure drug, and thus several species of roots belonging to the nat. order Convolvulaceæ are imported as substitutes, but are very inferior to the true article, consequently, as is well known by most medical men, the action of those two drugs is very uncertain. I have long thought it possible that both those drugs could be profitably cultivated in this country, particularly in the warm sandy soils of Bedfordshire and elsewhere. Both the plants are perfectly hardy, of rapid growth, and would require but little care in their cultivation. Jalap is readily propagated by cuttings of the underground stem, or cutting up small tubers. It flowers freely late in autumn, but too late to produce seeds in quantity. The flowers are extremely beautiful, bright rosy purple. Scammony grows very freely, and produces its neat, creamy white flowers in the greatest abundance for several successive months, and matures its seed, from which young plants could be readily produced. The roots penetrate deeply into the ground, are somewhat in the way of the Parsnip but more branching, sometimes measuring as much as 18 inches or 2 feet long and 2½ inches in diameter. Last season the Scammony produced seed very freely, but I fear, owing to the rainy weather we have had so much of late, these will not be much good this season. Quite two-thirds of the drug Rhubarb is grown and manufactured in this country, and is equally efficacious as the best East Indian, and this led me to believe that Scammony and Jalap can be well and profitably grown in this country. *J. Tyerman.*

The Flora of St. Helena.—I have read with the greatest interest in the *Journal* of the Horticultural Society, Mr. Vernon Wollaston's admirable paper on the importance of preserving the almost extinct arborescent Compositæ of the Island of St. Helena. I sincerely trust that the hints he throws out may be taken, and his suggestions promptly and energetically carried out. I have just returned from a visit to my friend Mr. Dorrien Smith, at Tresco Abbey, in the Isles of Scilly. In his beautiful garden I saw Aster argyrophyllus and Eurybia myrsinoides growing with the greatest luxuriance, and making themselves as much at home as if in their native soil. I have no doubt that Aster Burchelli and gummiferus and all the other arborescent Compositæ of St. Helena would grow equally well in the gardens at Tresco Abbey, and I would suggest to Mr. Wollaston that he should at once if possible cause rooted cuttings to be forwarded to Mr. Dorrien Smith, by whom they would be cordially welcomed, and tended with the utmost care by his gardener, Mr. Vallance. Mr. Dorrien Smith is most anxious to receive from any part of the world such plants and bulbs as are likely to flourish in his most favourable climate and singularly interesting garden. *H. Harpur-Crewe.*

Orchids in Flower in Belgium.—The following Orchids are now in flower in M. Massange's collection, at the Château de Baillonville, near Liège, gardener M. Wilcke:—Cypripedium niveum, Ashburtoniæ, Dayanum, Pearcei, Roezli, Parishii, superbiens, barbatum, longifolium; Miltonia Moreliana, Lamarcheana, Clowesi; Odontoglossum vexillarium, blandum, grande, erubescens; Zygopetalum Gaultieri; Masdevallia ignea; Oncidium pelicanum, nodosum (Kramerianum), cucullatum, aurosum, Lanceanum, sarcodes; Lælia crispa; Mesospinidium vulcanicum; Cœlogyne assamica, speciosa; Epidendrum ciliare, vitellinum; Restrepia elegans, antennifera; Calanthe Masuca; Stanhopea Lindleyana; Vanda suavis (Veitch), tricolor, tricolor flavescens, cinnamomea and Schilleriana (which seem to be identical); Batemanni, Lowii, undulata; Aerides quinquevulnera; Phalænopsis rosea. The most beautiful plants are Lælia Pinelii, and a violet coloured variety of Cattleya Harrisonæ. The finest is a Vanda cœrulea, with eight flowers which measure nearly 5 inches across, larger than have been previously seen in Belgium. *E. M.*

Silk Culture in Great Britain.—The following are the temperatures, &c., concluded from p. 53. The first table gives the temperatures in my silkworm room, with observations for week ending July 2, 1877. It will be noticed that rainy weather greatly preponderated this season:—

	Minimum during Night.	7 A.M.	9 A.M.	12, noon.	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain.	Barometer.	Fire.	Observations.
June 26 ..	61°	62°	65°	66°	67°	66°	66°	—4½°	S.W., slight	Slight rain during day	30.$\frac{5}{10}$	None	
„ 27 ..	61	62	68	73	70	70	68	—5	S.W., slight	Slight during day	30.$\frac{8}{10}$	Fire lighted because of the rain and dulness of the day	
„ 28 ..	61	63	65	70	73	73	72	—4	N.W., slight	Fine	30.2$\frac{0}{10}$	None	
„ 29 ..	67	68	69	72	76	70	73	—3	W., slight	Fine	30.2$\frac{3}{10}$	None	
„ 30 ..	66	67	70	72	72	70	69	—2	N.E., slight	Fine	30.2$\frac{7}{10}$	None	
July 1 ..	66	67	68	68	67	67	72	—5	N.W., slight	Rain at mid-day	29.9$\frac{3}{10}$	Fire lighted in evening at 6 P.M.	Cool dull morning
„ 2 ..	63	64	68	70	70	68	72	—6	W., slight	Rain during day, sunshiny and moist	30.$\frac{0}{10}$	Fire lighted evening at 8.30 P.M.	

Vers zebres are large and handsome, commencing their fourth age, of a rich chocolate-brown colour, with lighter markings; the worms of my own stock are in their third age approaching their third moult, are fine and feeding well, and so far very healthy. In consequence of the showery weather the fire has occasionally been lit, to dry the air in the *magnanerie* and prevent the bed of the silkworms from being damp; the unconsumed food in which the worms repose being, if not thoroughly dried, a fruitful source of disease. We have to-day commenced the use of the leaf-cutting machine, which greatly economises labour in preparing the leaves as food for the worms. Owing to the showery weather the shoots on the Mulberry trees have grown much the past week.

	Minimum Temperature.	7 A.M.	9 A.M.	12, noon.	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain.	Barometer.	Fire.	Observations.
July 3 ..	66°	68°	71°	71°	71°	70°	72°	—5°	S.W., slight	Heavy rain in afternoon	29.9$\frac{0}{10}$	In day and night	
„ 4 ..	66	66	70	70	70	70	68	—4½	W., slight	None	29.9$\frac{3}{10}$	In morning only, and night	
„ 5 ..	63	64	66	68	70	68	70	—4	S.W., slight	Rain in afternoon and evening	29.9	In evening	
„ 6 ..	62	64	74	76	70	70	69	—4	S.W., slight	In night and day	29.7$\frac{5}{10}$	In night and day	Turned very cold in evening
„ 7 ..	61	62	68	74	70	67	70	—3	N.W., slight	Showery, with thunder in evening	30.$\frac{4}{10}$	Night and day	Cool in evening, with thunder-storm
„ 8 ..	62	62	69	70	72	69	70	—2½	N.W., slight	Showery	30.2$\frac{9}{10}$	Night and day	
„ 9 ..	63	64	70	72	72	70	75	—2½	S.W., slight	Fine showers	30.3$\frac{0}{10}$	Night and day	

Vers zebres have changed for their last time, and are very handsome. Brienza race feeding well, all fine; have changed for the third time; very healthy. Fire has been kept up, especially at night, during the change, as the weather was showery and cool, in order to dry up the bed and prevent exhalation. Leaves on the Black Mulberry are now large and full-grown; on the White Mulberry the shoots are 2 feet long, and the leaves about two-thirds their full size.

Summary for the Week in Silkworm Room.

	Minimum in night.	7 A.M.	9 A.M.	12, noon	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain.	Barometer.	Fire.	Observations.
July 10 ..	67°	68°	72°	74°	75°	75°	74°	—3°	S.W., slight	Fine	30.2$\frac{1}{10}$	Night and day	Sunshiny warm day
„ 11 ..	68	70	72	72	72	73	72	—3	S.W., breezy	Fine	30.$\frac{3}{10}$	Fire	Warm; no fire at night
„ 12 ..	66	66	68	70	73	72	70	—5	S.W.	Fine; warm	30.$\frac{1}{10}$	None	
„ 13 ..	66	66	68	70	72	70	74	—5½	S., slight	Fine	29.6$\frac{7}{10}$	Fire in evening only to dry beds	
„ 14 ..	70	70	74	73	72	72	74	—5½	S.W., breezy	Rain	29.4$\frac{7}{10}$	Fire lighted in morning	Slight showers in day; heavy rain in evening
„ 15 ..	70	70	75	76	76	71	74	—7	S.W., breezy	Rain heavy	28.8$\frac{8}{10}$	Fire	Steady rain during night; dull day, showers and windy
„ 16 ..	66	66	71	72	73	67	71	—6	S.S.W., breezy	Rain all day	29.1$\frac{1}{10}$	Fire	Moist and windy

Vers zebres are now beginning to wander about previous to cocooning. About six have begun their cocoons. They are not so healthy a race as the Brienza, a large proportion having died during these months from flaccidity, and a few from jaundice. The other worms continue very healthy, notwithstanding the rainy moist weather, to counteract which, and dry the beds thoroughly during their change, a fire has been lighted nearly every night. They have now mostly passed their last month and entered their fifth age, and are very voracious; all the small and weakly looking worms have been weeded out.

Temperatures of the Silkworm Room.

	Minimum	7 A.M.	9 A.M.	12, noon.	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain.	Barometer.	Fire.	Observations.
July 17 ..	66°	66°	74°	72°	70°	70°	71°	—6½°	Breezy, S.S.W.	Rain	29°	On these days and nights fire was kept in to dry the beds.	Rain in morning; dull, cool day; damp
„ 18 ..	65	66	71	72	74	70	71	—6	Slight, W.	Slight	29.7$\frac{3}{10}$		Sunshiny afternoon.
„ 19 ..	63	65	73	73	74	70	75	—4	Slight, S.W.	Slight	29.7$\frac{0}{10}$		Dull day; warm.
„ 20 ..	66	66	71	72	73	7	74	—5	N.W., slight	Showers	29.7$\frac{5}{10}$		Showers in early morning; fine.
„ 21 ..	64	64	69	76	74	72	71	—4	Slight, S.W.	Fine	30		
„ 22 ..	67	68	72	74	74	71	72	—5	Slight, S.	Fine	29.7$\frac{0}{10}$		
„ 23 ..	67	68	73	74	71	70	72	—6½	S., breezy	Showers; dull day	29.6$\frac{5}{10}$		
„ 24 ..	69	69	72	72	72	69	71	—8	Fresh, W.	Showers	29.4$\frac{9}{10}$		Dull day.
„ 25 ..	65	66	72	73	72	70	72	—6½	Slight, S.W.	Fine	29.8		Rain in night and in evening; fine day.
„ 26 ..	67	67	72	72	72	70	76	—6	Slight, N.W.	Heavy rain in night; fine day	29.6$\frac{0}{10}$		
„ 27 ..	66	66	70	72	74	70	70	—6½	W., slight	Fine	30.1$\frac{5}{10}$		Fine.
„ 28 ..	66	66	69	71	68	72	70	—6	W., slight	Fine morning; drizzling rain in afternoon	30.2$\frac{5}{10}$		
„ 29 ..	68	68	74	76	77	78	75	—4½	N.W., slight	Fine	30.2$\frac{5}{10}$	No fire.	Very sultry
„ 30 ..	69	69	70	73	76	77	75	—4	W., slight	Fine	30.3$\frac{5}{10}$		Very sultry
„ 31 ..	69	69	70	76	78	77	76	—5	S.W., slight	Fine	30.1		Very sultry

Observations.—The education has progressed very satisfactorily; fire was continued till the 29th, to dry the beds and create free ventilation as the worms approached the spinning-time. The bushes were put up for the worms to spin their cocoons in on the 22d, when the first worms went up to spin. The cocoons are now all finished with the exception of a few laggards, which will be disregarded. Health has continued excellent throughout till about the 23d, when showers became very frequent, the hygrometer went up to 8°, and the food came in damp. After that some jaundice was observed among the later worms, and some died soft (*mous*). *Deramage*, or the taking down of the cocoons and sorting them, was commenced August 1. The cocoons were much finer than those of last year.

	Night Temperature.	7 A.M.	9 A.M.	12, noon.	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain.	Barometer.	Fire.	Observations.
August 1 ..	70	70	71	72	72	70	69	—5	Slight, N.W.	Some rain	29.7 6/10	No fire	
„ 2 ..	64	64	65	68	68	68	67	—6	Slight, N.W.	Ditto	29.8 4/10		
„ 3 ..	61	61	63	65	66	65	70	—5½	N., slight	Ditto in afternoon	29.9 4/10	Fire lighted in evening	One *ver zebre* emerged
„ 4 ..	64	64	68	71	69	67	72	—6	Slight, W.	Fine	30	Fire kept in these three days	
„ 5 ..	67	67	71	75	73	72	69	—6	Slight, W.	Fine	30 6/10		
„ 6 ..	65	66	67	71	71	70	68	—5½	Slight, N.W.	Fine	30 2/10	No fire	Five *vers zebres* moths emerged from the cocoon.
„ 7 ..	68	68	70	72	70	75	75	—6	Brisk, S.W.	Rain in day	29.6 7/10	Fire these four days	*Vers zebres* emerging
„ 8 ..	67	67	68	70	70	73	71	—4	Breezy, S.W.	Ditto	29.3 6/10		Ditto
„ 9 ..	68	68	70	72	73	72	71	—5	Fresh, S.W.	Heavy ditto	29.4 5/10		First moth. Roland's race (bulk) emerged
„ 10 ..	68	68	69	71	68	69	70	—6	Slight, S.W.	Fine	29.6 1/10		
„ 11 ..	65	65	66	67	68	66	68	—5½	Slight, W.	Ditto	29.9 3/10		
„ 12 ..	64	64	65	67	68	67	66	—5	N.W.	Ditto	30.1		Roland's race began to emerge, with a great preponderance of females, up to the 18th, after which the males emerged in greater quantity than the females
„ 13 ..	66	66	66	67	67	67	66	—6	N.E.	Rain	29.9 1/10	No fire	
„ 14 ..	65	65	66	72	73	70	69	—5	S.W.	Fine	29.8 1/10		
„ 15 ..	66	65	68	69	69	69	69	—6	S.W.	Rain	29.9		A great burst of moths daily
„ 16 ..	66	66	67	70	70	70	72	—5	W.	Rain	29.9 5/10		
„ 17 ..	65	65	67	70	71	69	71	—5	W.	Fine	29.9		
„ 18 ..	64	64	66	71	72	69	69	—5	W.	Rain	30.0 1/10		
„ 19 ..	66	67	69	70	71	70	69	—4½	W.	Ditto	29.7 3/10		Not so many moths out. Last emerged on the 23d, after which time no fresh pairs were taken. Only 200 cocoons failed to produce moths
„ 20 ..	66	67	74	74	75	74	70	—6	W.	Ditto	29.8 6/10		
„ 21 ..	69	70	70	73	73	72	70	—5	W.	Ditto	29.7 4/10		

Life History of the Individual Silkworms of the Two Broods, giving the respective Dates of their Several Changes.

	"Vers zebres."	Roland's Brienza Race.
Hatched out	June 7—11	June 12—17
First moult	„ 14—18	„ 19—25
Second moult	„ 21—25	June 26—July 1
Third moult	June 28—July 2	July 3—10
Fourth moult	July 6—12	„ 11—18
Spinning	„ 16—23	„ 22—29
Emerged from cocoon ..	Aug. 3—10	Aug. 9—23

Observations.—On July 16 and 17, the *vers zebres* began to spin golden cocoons, very stout, of good quality, firm and fine. I obtained in all ninety-six cocoons, of these the first emerged on Aug. 3, and the bulk on the 7th, 8th, and 9th. The moths laid from 500 to 650 eggs each. On July 22d up to the 29th the bulk (Roland's race) began to spin cocoons of a pale buff colour. Bundles of Broom, freshly cut and dried, were placed round three sides of the trays, and in these the worms mounted and spun their cocoons—white at first, but changing in about three days to the deeper tint. During all this time a fire was necessary, not merely for the purpose of ventilation, and to dry the beds—which at that time are very moist with the last purgings of the worms—but also because a high temperature makes the worm discharge his thread more easily, a lower temperature chilling the gum. On August 15 moths began to emerge. About August 1 the *deramage* commenced, which consists in taking down the Broom bushes from the trays, picking out the cocoons, divesting them of the loose silk, and separating them into three classes. Class 1 consisted of the best-shaped and stoutest cocoons; of these there were 1500. Class 2 consisted of the remaining good, well-shaped cocoons; of these there were about 9500. Class 3 consisted of thin-pointed, badly-shaped cocoons, which were rejected as inferior, and unsuitable for breeding from. The trays were then thoroughly cleared of all loose silk, refuse material, and the cocoons again laid thereon on brown paper sheets, and on August 12 they began to emerge, and continued to do so in quantity till the 19th. The bulk were then out, and after the 23d only 200 remained without having produced moths—a very small proportion. The moths emerged mainly during the night. At first there were many more females than males, but this was reversed later on. The males began to emerge about 11 P.M., so that at 6 A.M. we found many moths already paired. This continued up to 9 A.M., after which only a few moths came out during the day. The coupled pairs were placed on newspapers in a quiet place during the day, and about 4 P.M. to 6 P.M. were placed on the cards (straw-boards, about 11 × 8 inches), to deposit their eggs. The males were removed later on in the evening and early the next morning. The females generally laid their eggs very quickly, and in large quantity—up to 300 or 400 each the first night, and from 100 to 200 more in succeeding nights. They would live a week were they not given to the chickens, who are very partial to them. It is desirable that each card should be covered with eggs in one night, *i.e.*, that uniformity as to time might be commenced with, and therefore it is well to crowd the board with as many females as possible, removing them to another tray as soon as sufficient eggs have been laid. The moths kept us very busy for about eight days, but after the 21st the work was well nigh finished. We obtained 5 oz. of loose eggs, and 36.22 grammes of eggs on card or straw-board; total, 41.22 oz., each ounce weighing 25 grammes. This education was very successful, notwithstanding a somewhat cool summer, with rain very frequently; our temperatures were kept very evenly from 65° to 75°, and the hygrometer low; the worms fed well; there were few laggards, no appearance of pebrine, and a much smaller number of jaundiced worms than in former seasons. They kept their time very evenly—about five days in hatching out from the eggs, and about eight days in cocooning and emerging as moths between the earliest and latest. There were very few cocoons that did not emerge, and the majority were well-formed, stout, and of good texture. Our labour consisted of myself and two boys of sixteen and seventeen, who were employed on an average, for half the time, half a day each, and for the remainder of the time a quarter of a day each; add to which the labour of two other boys, about a quarter of a day each, to gather the leaf. We stripped the foliage from six large Mulberry trees. Averaging the value of the eggs at 15*s.* per oz., the result would be a little over £30, plus the refuse material. Our White Mulberry trees have had a rest this season, and been well pruned; have since made good growth, many have shoots from 4 feet to 6 feet long, and promise well for next season. *Alex. Wallace, Colchester, September* 19.

Basket Vegetable Sellers.—All prudent housekeepers know the importance of keeping basket-women out of their houses, but still a singular scene, which I most unexpectedly saw going on at my own back door, may explain occasional mysterious disappearances. Having heard a ring, and the usual dismissal through the (unopened) glass garden door not being followed by the sound of retreating footsteps, I looked from an upper window to see what course the visitor might be proceeding on, and just below, screened from all known observation, stood a vegetable seller quietly inspecting something in her basket. This was all very well, but before I could go away she opened her apron, which was thrown, as it were, carelessly to one side, and showed that it was filled with cloths—dusters, or similar things. These she took out one by one, shook them, and tucked them into some kind of waistband, so that they all lay flat in front of her dress, and when they were safely fixed the large apron was put in its place, well patted down and pulled out at the sides, and she walked away. Just now, when autumn fruits and vegetables give an excuse for these intrusions, this very unpleasant observation may possibly be of some service. The fruit or vegetables make an excuse for admission into the kitchens of the unwary, and, once there, the basket or the apron apparently carelessly flung over the arm, are ready to receive anything within reach. Probably but for strict orders with regard to closed doors my unwelcome visitor would have also added some of my kitchen goods to her stores, and though where there was no positive proof of theft one might be excused in not drawing the attention of the police to the concealed goods, still a note of the method of concealment may be useful to some other *Suburban Resident.*

White Blackberries.—Can you or any of your large circle of correspondents inform me if they ever saw or heard of white Blackberries, or, in more common phraseology, white Bramble berries? A plant has been found here with beautiful white fruit, and the berries, which I tasted last night, had a delicious flavour. It would be a most desirable fruit for dessert purposes, and in my opinion is quite a novelty. *Wm. Bowman, Hylands Park, Chelmsford.*

How to Winter Begonia Tubers.—At p. 411 are some instructions about keeping tuberous Begonias through the winter, but allow me to say that those instructions are all wrong. Your correspondent says a dry greenhouse shelf would be a good place to keep them on; now this would on the contrary be a very bad place: these tubers through the winter require to be cool and comfortable, they keep very well in the pots in which they have been grown, stood upon a damp soil surface where the pots will absorb sufficient moisture to prevent them becoming dust-dry—just those conditions where the tubers and even some of the small rootlets would keep fresh and plump. Kept in this way they start strongly and naturally in the spring, and much earlier than when they have been kept dry. Many places would no doubt suggest themselves: a vault or cellar where frost was just excluded would be a capital place; the one thing they do not like is over drying, and it is from this cause alone that so many of the Continental bulbs are either slow to start or refuse altogether to grow. These are such beautiful plants, and really so little is generally known about their requirements, that I have been induced to write this. I have a house now with about 3000 plants all in flower, and of every imaginable shade of colour and style of growth, in fact it is quite safe to say that no more beautiful floral sight could be found. *T. Smith, Newry.*

Rose-coloured Mimulus.—Can any of your readers tell me what has become of an old favourite which I bought twenty years ago for sixpence at a country nursery garden under the name of Mimulus Reidi? Its foliage and habit resembled M. cardinalis, but the flower was of better form and substance, and of a cheerful light rose colour. I kept it for many years, and gave many to my friends, but it entirely disappeared from all our gardens in the hot and dry summer of 1868. When I had it I once saw it in a little garden in Praed Street, Paddington, but have never been able to hear of it anywhere since. *C. W. Dod, Eton.*

Tuberous Begonias.—Begonia octopetala did very well here this summer, and formed a pretty tuft on a raised bed, the soil light loam and peat, and a few stones added for drainage. B. Frœbelli never started at all with the same treatment, and B. boliviensis did well on the same bed. B. octopetala forms a nice tuft with its angular leaves, it bore one or two spikes of white flowers on transparent red stalks. The plants came from Mr. Ware at Tottenham, and were planted out the second week in June, and were not protected in the very cold weather, which came late in the season. They were well supplied with water, the raised bed in this soil being necessarily dry, and they also enjoyed the overflowings of the liquid manure given to the Maréchal Niel Rose, which forms the centre of the bed, this last about once a-week. *H. M. E., Newbold.*

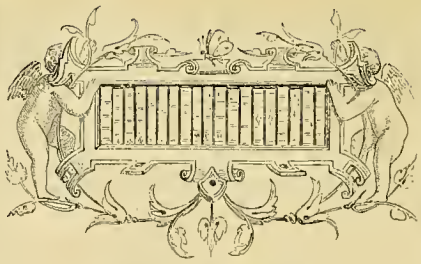
The Flow of the Sap.—In his remarks at page 339, on my communication (p. 309) on this subject, your correspondent "D.," whilst commenting on my views on the flow of the sap, has unfortunately overlooked my reasons for holding them, as for example

when he says that "he ("A.") assumes that the results of the ringing prove the ascent of the sap of no inconsiderable amount by the bark." He is correct in thus stating my view on this point, but at the same time he seems to throw some doubt on it by adding, "Now it is a curious fact, if such is the case, that that peculiar excrescence-like growth of bark which is seen at the bottom of the upper bark is not seen at the top of the lower bark, and the same is found in all cases of ringing." In my former remarks I drew attention to this particular result of ringing by stating "that from the sections of the stem (see cuts, p. 309) it will be observed that no growth took place upwards from the bottom of either ring, and that the bark from the bottom of these rings downwards to the next lateral branches, is quite dead; showing that no sap can ascend in the bark without the pumping action of the leaves." When the rings were cut, of course it is apparent to any one that the bark below to the next branches was deprived of the action of the leaves. Towards the end of his notes "D." further remarks: "It would appear that 'A.' deduces from the general diminution of growth above the ring in the bark during the three years his experiment was being tested, that it is proof of the partial ascent of the sap through the bark; but if such be the case, is it not marvellous that not only did the tree above exist, but also continue to make growth of any kind." In supposing that part of the sap does ascend by the bark, I was led to that conclusion; first, because of the decaying of the bark between the bottom of the rings made on the stem, and the next branches below, as already stated; and, secondly, on account of the decrease in the growth of the whole tree immediately observable after these rings were removed. The reason why the tree continued to live and make some growth after the cutting of the bark was, I believe, that the sap ascended by the internal portion of the stem. "D." asks if the supposition that "the sap-vessels above the ring become gradually choked, and thus the starved growth" could not be accepted as the cause of the diminished growth? If this explanation be correct, it would be interesting to know how the sap got above the choked vessels to keep the tree in life, and enable it to form a new layer of wood each year. *A.*

The Fruit Crops.—The sorts of Apples that are bearing well here this year, out of a large collection, are the Alfriston, Cellini, Devonshire, Buckland, Hoary Morning, Hawthornden, Macks' Codlin, and Yorkshire Greening. Of Pears the only sort bearing a good crop is Hessle, and a few Ne Plus Meuris. *Charles Clissold, Perry Hall, Birmingham.*

Ampelopsis Veitchii.—This is one of the most attractive plants imaginable at the present time, that is if the term can be applied to a plant at the time for shedding its leaves. It seems unnatural to be pleased in the appearance of the process of the fading of the leaf, but this subject may be quite distinctly placed amongst exceptions to that rule. The colours of the leaves of this climber just now are really beautiful. The soil is not over rich, consequently the leaves are not large, which is all the better, the wall being quite covered with nice small leaves. When the soil is rich the leaves of this plant will be as large, or nearly so, as the ordinary Virginian Vine. I saw such a plant with vigorous foliage in this neighbourhood, and I believe you made a note about one also being vigorous in the Temperate-house at Kew recently in your journal. If this Ampelopsis (Veitchii) was an evergreen it would be one of the very best of climbers for decorating walls and such places with, but being without leaves during the winter months is against its being planted largely. This I have proved by planting about a score of plants a few years ago. In summer, in a green state, it is a first-rate wall plant, in autumn it is at its best as a decorative plant, but in winter it shows its nakedness, and is far behind the Ivy and its varieties. I send you a few flowers of this plant, which may interest you. Pieces of wall are here densely covered with leaves, same as enclosed, and, excepting when first planted, they have had little or no attention as regards nailing. *Robert MacKellar.* [Nailing is not required, as it holds fast without. Eds.]

Strawberries.—I am getting a very fine lot of fruit from plants of Black Prince, which were forced in the spring. They were kept in pots all the summer, and three weeks ago, when showing abundance of flower, were put in a cold frame. My object in writing of this good old sort is to recommend it for autumn work, as producing a good supply. Of course I am aware that forced plants are generally planted out and a few gathered in a fine autumn, but not in such quantity and quality as when treated as I have described. British Queen, Keens' Seedling, and Vicomtesse Héricart de Thury were forced, but showed scarcely any flower. *Charles Clissold, Perry Hall, Birmingham.*



Notices of Books.

The Locust Plague, &c. By Charles V. Riley, M.A. Chicago: Rand, McNally & Co.

Dr. Riley has published in a collected form his papers on the locust plague of West America. The Rocky Mountain locust, or so-called grasshopper, occurs in some of the Western States of America in such abundance as to obscure the light of the sun, and is so ruinously destructive as to devour almost every green thing that grows. Their distribution in America, roughly speaking, is confined to the treeless plains between the Rocky Mountains and the Mississippi. Some idea of their numbers may be obtained by the fact that travellers by rail passed for the better part of two days through a perfect storm of these insects, which frequently impeded or stopped the train by their crushed bodies. Nothing can surpass the prophet Joel's account of the appearance and ravages of these insects.

"A day of darkness and of gloominess, a day of clouds and of thick darkness, as the morning spread upon the mountains: a great people and a strong: there hath not been ever the like, neither shall be any more after it, even to the years of many generations. A fire devoureth before them, and behind them a flame burneth: the land is as the garden of Eden before them, and behind them a desolate wilderness; yea, and nothing shall escape them. The appearance of them is as the appearance of horses; and as horsemen so shall they run. Like the noise of chariots on the tops of mountains shall they leap, like the noise of a flame of fire that devoureth the stubble, as a strong people set in battle array. Before their face the people shall be much pained; all faces shall gather blackness. They shall run like mighty men, they shall climb the wall like men of war; and they shall march every one on his ways, and they shall not break their ranks . . . They shall turn to and fro in the city; they shall run upon the wall, they shall climb up upon the houses; they shall enter in at the windows like a thief."

There is no evil without some compensating good. The destruction of food by the locusts brings about a scarcity of other insects in the following season, while the rich coating of manure left by the locusts causes the soil to be unusually productive.

One of the most curious phenomena observed in consequence of the invasion of locusts is a change in the nature of the vegetation.

"Plants that in ordinary seasons are scarcely noticed become," says Dr. Riley, "extremely prevalent. Amaranthus blitum spread at an unprecedented rate and grew in great luxuriance after an incursion of locusts; so also the common Purslane started everywhere, and usurped the place of many others species. The common Nettle, Solanum carolinense, and the Sand Burr, S. rostratum, spread in 1875 to an alarming degree, and the Pokeweed, Phytolacca decandra, was very abundant. All kinds of grasses grew very luxuriantly during the summer, a fact due to the wet and favourable weather, but some kinds that are rare in ordinary seasons got the start, and grew in great strength and endurance. Professor Broadhead mentions more particularly Aristida oligostachya, in ordinary seasons of rare occurrence in the locality, as reaching the unusual height of 2 feet, and being very abundant. Eragrostis pœoides, ordinarily recumbent and scarcely noticeable, grew in profusion 3½ feet high, looking like meadows ready to be mowed. Panicum sanguinale was luxuriant enough to be cut for hay. Among these grasses none are more notable than the sudden appearance very generally over the locust devastated region of what is usually called a new grass springing up wherever the Blue-grass gets killed out; it proves a godsend to the people, for while it is young and tender cattle like it and fatten upon it. This grass is the Vilfa vaginiiflora, an annual which is common from the Atlantic to the Rocky Mountains. Unnoticed during ordinary seasons the destruction of the Blue-grass and other plants by the too close gnawing of the locusts gives it the advantage in the struggle for existence, an advantage which is soon lost, however, as the normal relations between species are assumed again in a few years after the disturbing influence has ceased to be operative."

The best means of combating these locusts is to destroy the eggs, which are deposited just beneath the surface of the soil; ploughing and harrowing form the best means of destroying them. The quotations we have given will suffice to show the very great interest attaching to this little volume.

Introduction to Botanic Teachings at the Schools of Victoria, through References to Leading Native Plants. By Baron Ferdinand von Mueller. Melbourne: Ferres. 1877.

The industry and zeal of Baron von Mueller are beyond praise. Nothing damps his ardour. Adverse circumstances do but supply fresh fuel to his enthusiasm, and so we find him constantly engaged in some way or another in promoting scientific and practical botany, to the benefit of science and the welfare of his adopted country. The latest publication from his fertile pen which has reached us is that whose title stands at the head of this notice. Baron Mueller adopts the plan of describing in easy language several of the most prominent of the wild flowers of Victoria, beginning with the Gum trees (Eucalyptus), passing on to other members of the Myrtle family, such as the Melaleucas and Eugenias. Of these genera one or two species are taken as types, carefully but briefly described, their distinctive features contrasted, their place in the natural system indicated, their internal structure and useful properties pointed out. The Wattles, or Acacias, are similarly treated, then the She Oaks, or Casuarinas, and so on, through several natural orders, the author contriving to give in the short compass of 150 pages or so a general idea of the main features, so far as orders and leading genera go, of the flora of Victoria. Provided a little elementary knowledge of the parts of the flower be possessed to begin with, the little volume before us seems admirably adapted for the purpose for which it is intended. The woodcuts are numerous and characteristic, and, to our eyes, accustomed to European text-books, have the charm of freshness. With reference to the plan of the work, "an experience of nearly forty years has convinced the author that the use of a grammar-like publication for initiating into a study of plants is alike wearisome to the teacher and children, and that as a rule, subject to rare exceptions, the knowledge acquired from the ordinary first elementary works on botany is as quickly lost as gained. The only method of rendering such studies agreeable and lastingly fruitful consists in arousing an interest of the young scholars in the native plants of their locality, to afford them all possible facilities to recognise and discriminate all the various plants within reach, to lead them by observations thus started to comprehend the limits of specific forms of generic and ordinal groups, and to conduct them afterwards to the more difficult study of the special anatomy and physiology of plants."

We can endorse the Baron's opinion from our own experience. It is the huge mass of details and hard words that repel the beginner. If the subject be presented in a more attractive form, beginning with the simple and the common, and passing by degrees to the more complex and rare, greater progress and more lasting benefit is secured than by plunging at once into a lexicon of hard words and details whose significance and interdependence cannot be understood by the beginner. Moreover, to create an interest in structure and form their uses and adaptations must be explained. In fact, the habits and customs of plants require to be taught as well as their external forms, their resemblances and dissimilarities, and they add tenfold to the interest of the study.

Preventive Medicine and Public Health. By Dr. Alfred Carpenter. Simpkin, Marshall & Co.

Nothing is more characteristic of the medical practice of the present day than the advance of what the author calls preventive medicine. "Venienti occurrite morbo" has for ages been a medical axiom, and it was a good one all the time that the access of disease was considered to be a fatal necessity. Now-a-days, thanks especially to the doctors, it has been shown that in many cases disease is not a fell necessity, but that it is preventable if due precaution be taken. Instead of attacking the diseased body by pills and potions innumerable, the modern tendency is to place relatively little faith in physic. It

indeed has its uses—is sometimes a *sine quâ non*; it satisfies the patient, and still more eases the minds of sympathetic bystanders, naturally eager that "something should be done." But the doctors now know—subject of course to exceptions—that they have far more power to prevent than to cure disease; that is, when they are not thwarted by prejudice, ignorance, or self-interest. It is only necessary to look back to statistical records to show how the health of the population has steadily ameliorated of late years in this country. This lessened sickness and longer average duration of life have been the direct results of better drainage, sweeter homes, and greater attention to sanitary matters generally. In the little book before us Dr. Carpenter alludes to many of these points. He shows how prevention is better than cure; that cure, if it be possible at all by art, is clearly impossible if the natural history of disease is not fully known. Hence, our author touches lightly but suggestively on the mode of growth and propagation of fungi. He indicates the probability that many epidemic diseases are due to sudden waves of activity, if one may so speak, in certain germs, which, like the resting-spore of a fungus, may remain quiescent for a time till circumstances become propitious for their development.

Dr. Carpenter, it may be added, was one of the first to discover the resting-spore of the Potato fungus, though he did not follow up the subject, and at the time was scarcely, perhaps, aware of the importance of the discovery. Dr. Carpenter's views on sewage farms have been sharply contested. We do not intend to enter on the discussion of that subject now. It seems to us that, as usual, there is truth on both sides, and that a very great deal depends on the point of view of the respective controversialists. It is noteworthy, too, that Dr. Carpenter advocates a new theory of vegetable nutrition: plants according to him are not solely confined as to their diet to inorganic matter, but they can absorb and digest organic matter also. Dr. Carpenter's views of course receive support from the so-called carnivorous plants, as well as from the so-called "saprophytes," or plants that live on decaying animal matter. The root-hairs of Rye-grass have, according to Dr. Carpenter, the power of absorbing and digesting the organic matter of sewage. The facts as yet are not numerous enough to induce a physiologist to accept this view as proven, but at least it may be said that the tendency of the time is towards the belief that plant digestion is under certain circumstances essentially the same process as in animals, and in both cases connected with a process of fermentation or rapid change of constituents. Dr. Carpenter's book is rather loosely put together, and stands in need of some revision, but of its interest to the intelligent reader, apart from the medical students to whom it was originally addressed, there can be no question.

Publications Received.—Hamburger Garten Zeitung.—Bulletino della R. Societa Toscana di Orticultura.—The Forest and Chace of Malvern, with notices of the most remarkable old trees, by Edwin Lees.

Apiary.

The Cape, or Hood.—Our northern bee-keepers use many names which sound strange to the ears of people dwelling south of the Tweed, as, for example, the name we now are using would be called super by most apiarians. All well made straw hives should have a hole in the crown, about 2 inches in diameter; in the winter season this should be closed with a wooden plug, or, what is far better, with a bung. Directly the hive shows signs of being overcrowded—soon discovered by the bees clustering outside the entrance—the bung must be taken out, and the hood, or super, placed over the opening. The best form of super for cottagers is a small straw hood, made of lighter materials than an ordinary skep, as they are not intended for wintering purposes, but only as a temporary storage for the best honey of the season.

Our illustration, fig. 87, gives us a good form of cottage hood, in fact, we do not advise the use of square wooden boxes, for the simple reason we find the small straw supers when neatly filled with a well stored comb sell for a higher price than wooden boxes. It is far preferable to offer the super and comb entire for sale; never remove the comb, as it is often rendered unsaleable. A well stocked apiary should in good average honey years yield two or three dozens of these small straw supers, each having 3 lb. of honey, and this without having fewer swarms or less hive honey the following autumn.

Just about the time when honey is the most abundant the greater part of the hive is filled with brood, under these circumstances the bees, not possessing any cells for honey storing, are compelled, although doubtless against their wishes, to be idle, thus they cluster like a huge bunch of Grapes at the entrance. Now, instead of this enforced idleness, if the straw hoods are given them in time, they make the best of them by working hard whilst the harvest lasts, for in our variable climate the honey yield lasts a very short time.

Our chief object in bringing before the notice of our readers the Scotch cape, or hood, at this season is to persuade the working apiarian to make a few straw supers during the long winter evenings; then when they are filled next year, to induce some of the

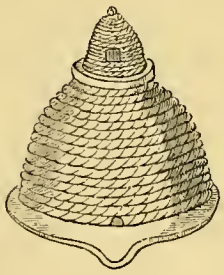


Fig. 87.—Cottage Hood.

neighbouring tradesmen to exhibit them in their windows for sale, and, if their experience resembles ours, they will not wait long for customers. *K.*

Reports of Societies.

Royal Horticultural: *October* 2.—Floral Committee.—G. F. Wilson, Esq., in the chair. The subjects exhibited to-day were more numerous, and certainly of a more interesting description, than those which appeared at the last meeting. By far the most valuable and most striking contribution was a magnificent group of Nepenthes from the nurseries of Messrs. James Veitch & Sons, and which was recommended to the Council for the award of a medal. This marvellously rich collection included large and remarkably fine examples of Nepenthes Rafflesiana × N. Chelsoni, a hybrid between N. Hookeriana and N. Dominii; the Bornean N. Hookeri, and a variety of the same named elongata, with longer and brighter coloured pitchers; and smaller specimens of N. rubro-maculata, a hybrid between an unnamed species and N. hybrida, to which a First-class Certificate was awarded. The pitchers are beautifully coloured at the mouth, and of medium size. × N. Courtii, a hybrid between a Bornean species and N. Dominii, with long club-shaped pitchers, to which a First-class Certificate was also awarded. Nepenthes hybrida maculata elongata, with long narrow pitchers, which gained a similar award. The parentage of this hybrid is the same as the last. N. hybrida, the result of a cross between N. distillatoria and N. species; N. lirata (× N. hybrida and N. Rafflesiana); N. ampullaria vittata from Singapore, N. distillatoria from Ceylon, N. albo marginata from Penang, N. phyllamphora, N. Sedeni (× N. distillatoria and N. species), N. intermedia (× N. Rafflesiana and N. species), N. ampullaria from Singapore, N. Kennedyana from North Australia, N. zeylanica rubra from Ceylon, &c. Fine examples of various Sarracenias, such as purpurea, a highly coloured species from North America; psittacina, and Chelsoni, the latter a hybrid between S. rubra and S. purpurea; together with a most charming assortment of miniature examples of insectivorous plants. From the Chairman came cut flowers of Escallonia pterocladon, a fine white-flowered species that had been grown against a fence. A choice and beautiful collection of seedling Gladioli came from Messrs. Kelway & Son, who received a First-class Certificate for G. Rhamnes, a smooth and highly refined flower, scarlet in colour, with beautifully purple-pencilled lower petals. Messrs. Bell & Son, The Nursery, Norwich, sent several examples of Adiantum Capillus-Veneris corymbiferum, and a number of brightly coloured seedling Begonias, obtained by crossing Pearcei and grandiflora. Messrs. William Paul & Son, Waltham Cross, received a vote of thanks for half-a-dozen boxes of cut Roses, an admirable display for the time of year; and including amongst others especially fine blooms of Souvenir de la Malmaison, Etienne Levet, Madame Clemence Joigneaux, Hippolyte Jamain, Saffrano, Charles Lefebvre, and Louis Van Houtte, &c. Mr. Turner, Slough, made a most liberal contribution of cut blooms of bouquet Dahlias, perpetual blooming Carnations, &c. The Dahlia blooms were shown in bunches set on a layer of moss, and, by reason of their exquisite forms and colours and great variety, were a source of great interest. To show the adaptability of these very showy flowers for indoor decoration, Mr. Turner exhibited a March stand, filled with blooms of these and sprays of Maidenhair Fern, which had a cheerful and pleasing appearance, and a vote of thanks was awarded, while the group received high commendation. The Tree Carnations were very brightly and freely bloomed, a new variety named Osman Pacha, in the style of Scarlet Defiance, but much darker in colour, was awarded a First-class Certificate. A similar award was also voted to Messrs. Rawlings Bros., Old Church, Romford, for Dahlias Mrs. Willing and Mrs. Shirley Hibberd, the latter a pretty flower of a primrose ground, shaded and tipped with pink and rosy purple. Mr. Turner showed a few show Dahlias, and Mr. Wheeler, Warminster, also sent a few new varieties. A small plant of the purple Norway Maple came from Messrs. Stewart & Sons, Dundee. A fine specimen of Eryngium serra, with it long deeply-serrated leaves, was contributed by Mr. Green, gr. to Sir George Macleay, Pendell Court, Bletchingley. A section of an old stem of Heliotropium peruvianum came from Lord Bridport's garden at Cricket, St. Thomas, Somerset. It grew for many years in the conservatory at that place, and so far back as 1837 covered 700 square feet of the back wall. From Burghley Mr. Gilbert sent several very fine seedling Primulas, and received First-class Certificates for Princess, blush white, specked and shaded with lilac; Mrs. Barron, a larger flower than the last, pink shaded and speckled with bright rose; and White Lady, a delicately pink-tinted white. They are all fine flowers, and a welcome addition to this charming class. Mr. Noble, Bagshot, again exhibited cut flowers of his new Rose, Queen of Bedders, which, as to its neat dwarf habit and wonderful freedom of bloom, proves to be all that its introducer claims for it. Sprays of Libocedrus decurrens, bearing numerous fruits, were sent by Mr. Miller, of Combe Abbey.

Fruit Committee.—H. Webb, Esq., in the chair. This was a specially interesting meeting, and much more extensive than usual. Mr. Jones, The Royal Gardens, Frogmore, exhibited three magnificent fruits of the Smooth Cayenne Pine, weighing respectively 9 lb. and two of them 9½ lb. each, and the committee recommended them for the award of a Silver Banksian Medal. A handsome Charlotte Rothschild Pine, weighing 8 lb., and stated to be not eleven months old, came from Mr. Jones, Bentley Priory Gardens, Stanmore; and Mr. Hutton, gr. to S. Swire, Esq., Crown House, Southport, sent two Providence Pines, weighing 8 lb. 12 oz. and 9 lb. respectively. Messrs. H. Lane & Son, Berkhampstead, sent a grand collection of Grapes, similar to others they have been showing this season, and the committee recommended the award of a Gilt Banksian Medal. Mr. Loney, gr. to George Dickson, Esq., Gothenburg, Sweden, sent a grand collection of Apples and Pears grown under glass, including twenty-three varieties of the former and seventeen of the latter. Amongst the Pears were very fine dishes of Beurré Bachelier, Beurré Superfin, Duchesse d'Angoulême, Beurré d'Anjou, Beurré Dumont, Huyshe's Bergamot, &c. The award of a Gold Medal was recommended. An interesting display of some three dozen varieties of Cob Nuts and Filberts came from the Society's garden, Chiswick; and from Mr. Bennett, Rabley, came a nicely-coloured dish of Garibaldi Strawberries. Mr. Bennett also sent several fruits of his new seedling Rabley Melon, a pretty cross between Munro's Little Heath and Read's Scarlet-flesh, that promises well for market work, as it is said to possess the free-bearing qualities of the former, and the quality of the latter. It was not in condition to-day. Mr. Lewis Killick, Mount Pleasant, Maidstone, showed examples of Stone's Apple, a fine variety sent to the last meeting, and which now gained a First-class Certificate. G. F. Wilson, Esq., sent the Early Ascot Frontignan from a cold orchard-house, of very good flavour. Mr. Allen, The Gardens, Gunton Park, sent three Royal Ascot Melons, not in first-rate condition; and a new Melon, named Cream Pine, a long-ribbed, thick-fleshed, scarlet variety, from Messrs. James Carter & Co., was not ripe, but very promising. Mr. Gilbert, Burghley, sent a dish of very fine Brussels Sprouts, and two splendidly grown bunches of Gros Colman Grapes, which were recommended for a bronze medal. Mr. Gilbert's variety of this Grape is no different to any other Gros Colman, but he has certainly grown it better this season than any we have seen yet. Messrs. Lane & Son had it very fine, but not like the Burghley sample. It requires very severe thinning. Mr. Turner sent

nice dishes of Early Bird, a handsome looking kidney Potato, White Wonder and Duneden, round and flattish round varieties. Mr. Allen, Gunton Park, sent examples of Williams' Magnum Bonum, and a seedling globular shaped Onion. Messrs. Kelway & Son, Langport, sent specimens of eighteen varieties of Cucumbers, many of them yellow, and all of them too large for useful table work. Mr. Harrison Weir, Weirleigh, Brenchly, showed some fine samples of Venn's Black Muscat and Muscat Champion Grapes, grown without any fire-heat, and the award of a small Silver Banksian Medal was recommended. To Mr. Shirley Hibberd the honour is due of having introduced something new in cultivation to the notice of the committee in the form of an admirable illustration of his system of cultivating Watercresses in pans, and which has already been described in our columns at p. 616, vol. iv. The varieties shown to-day were the well-known Springhead Brown Cress, the Stoke Newington Purple Cress, a free growing local variety with somewhat larger leaves than the Brown Cress, and, best of all, the Erfurt Sweet Cress, which Mr. Hibberd describes as the most tender and delicately flavoured variety. Mr. Hibberd's plan is to plant his cuttings in pans filled with loam, placed about 1 inch deep in water in another pan, and kept well watered. The first cutting will be ready in about six weeks, after which the process is "cut and come again" until they become exhausted, when a fresh plantation is made. By this means a supply can be kept up all through the summer by any one who will take the trouble to acquireit; and even all through the winter, by those who can give them the protection of glass. The award of a bronze medal to Mr. Hibberd was recommended by the committee. Messrs. James Carter & Co. contributed a particularly interesting assortment of Capsicums, which included several curious varieties which we had not previously seen. There were the scarlet and yellow Tomato-shaped varieties; the Sweet Spanish, the red and yellow square varieties, the large bell or bull's-nose form, the Sweet Mountain Purple, and the New Giant Emperor, an immense scarlet variety of an angular form, and of the size of a well-grown Early Nantes Horn Carrot. A large collection of Potatos came from Mr. Turner, which no doubt we shall see again at the Aquarium; and from Mr. Hepper, gr. to C. O. Ledward, Esq., The Elms, Acton, came a good dish of Tomatos. Last, but not least in its importance, we have to include in this notice a very considerable display of Apples made by Messrs. William Paul & Son, of Waltham Cross.

The International Potato Show: *Oct.* 3, 4, *and* 5.—In the exhibition which opened at the Royal Aquarium, Westminster, on Wednesday last, and closed last night, we had for the first time something like an international show, inasmuch as it included at least one foreign collection, and we had besides such a magnificent show of noble tubers as certainly has never been seen before. We do not mean to say that the preceding exhibitions of the kind were not larger, but for genuine quality this one proved a long step in advance of its predecessors, and the managers must certainly be complimented on the success which is attending their endeavours so far to improve the form of this valuable root, and as a consequence its culture also. When the first exhibition was held, at least three-fourths of the samples shown were of the old-fashioned deep-eyed type, rendered even more worthless by reason of their increased size; and it is a remarkable fact that, judged by what is exhibited only after a lapse of a few years in an exhibition of somewhat similar dimensions, the ugly wasteful roots have almost been swept into the limbo of obscurity. The prizes, as on previous occasions, were awarded by men who know the value of quality as distinguished from mere size, and the awards undoubtedly went to the best. The foreign collection previously alluded to was sent by Messrs. B. K. Bliss & Sons, of New York, perhaps the most extensive exporters of new varieties in the States; but we are constrained to say that if the samples sent are to be taken as the reflex of what obtains in America, our friends are a long way behind in their notions as judged by our standard. Their own pet varieties were numerously shown here in far better form and condition than they were exhibited by themselves—a circumstance of which our growers may well feel proud.

The luncheon in the afternoon was well attended by judges, members of the committee, and friends of the movement, and amongst much that could only be considered as "chaff" in the subsequent speeches there was enough of good corn to convince any one that the promoters of the exhibition are doing a good and most praiseworthy work. Replying to the toast of "The Visitors," Mr. Henry Vilmorin, of Paris, threw out the suggestion that a representative collection of Potatos should be sent to the Paris Exhibition next year, and the idea seems to us such an excellent one that we would fain hope it will be carried out, and under the management of the same committee, who could no doubt obtain the permission of exhibitors to impound the finest samples of each representative kind for so worthy an object.

The premier class was that for twenty-four distinct varieties, nine tubers of each, and there were no less than fifteen competitors. In all respects this class included a remarkable lot of Potatos, most of the samples being of fair size, very clean, and evenly grown. All the prizes in this class were given by the Royal Aquarium Company, and the 1st, the handsome sum of twelve guineas, was won by Mr. Peter McKinlay, Woodbine Cottage, Beckenham, who had exceedingly fine examples of Climax, rough skinned white round; King of Potatos, white pebble-shaped; Onwards, and Porter's Excelsior, white rounds; Brownell's Superior, red kidney; Breadfruit, white kidney; Purple Ashleaf, kidney; Early King, white pebble-shaped; International, white kidney; Early Rose, McKinlay's Pride, a handsome new white kidney; Grampian, red round; Schoolmaster, and Model, white rounds; Salmon Kidney, Rector of Woodstock, and Taylor's Seedling, white rounds; Blanchard, mottled round; Garibaldi, red kidney; Alexandra, white kidney; Late Rose, Snowflake, Emperor, red rounds; and the Ashtop Fluke. The 2d prize was taken by Mr. Finlay, gr. to Colonel North, Wroxton Abbey, Banbury, with a grand lot, including beautiful examples of the International, Salmon, Perfection, Myatt's Prolific, Snowflake, Magnum Bonum, Bresee's Prolific, and Edgcott Seedling, kidneys; White Emperor, Porter's Excelsior, Climax, and Schoolmaster, white rounds; Blanchard and Princess of Lorne, mottled rounds; and Walnut Kidney, Scotch Blue, &c. Mr. James Pink, gr. to Lord Sondes, Faversham, was placed 3d, with a capital lot, including many of the sorts above named and Waterloo Kidney, the Hundredfold Fluke, the Birmingham Prizetaker, Giant King, white round; Coldstream, Early Goodrich, and Ruby. Mr. William Ironside, Mains of Keith Hall, Inverurie, N.B., came in 4th, and Mr. R. Dean, Ealing, 5th; and a collection from Mr. Farquhar, of Fyvie, was highly commended, while commendations were bestowed upon collections from Mr. Turner, Slough, and Mr. Thomas Pickworth, of Loughborough, Leicestershire.

In the class for eighteen varieties, distinct, nine tubers of each, there were seventeen competitors, and, with one exception, their productions were of a very good and uniform quality, none being over large, but generally clean, smooth, and attractive in appearance. The 1st prize, a silver cup, value £10 10s., given by Messrs. Sutton & Sons, Reading, was won in capital style by Mr. William Porter, King Street, Old Meldrum, who put up remarkably handsome samples of Fenn's Bountiful, red kidney; Improved Ashtop Fluke, white kidney; Crimson Walnut-leaf, red kidney; International, white kidney; Napoleon, white kidney; Bresee's Prolific, white round; Blue Prince, blue round; Model, white pebble-shaped; Early Emperor, red round; Snowflake, white kidney; Porter's Excelsior, white round; Blanchard, mottled round; Albion Kidney, white; Blue Ashleaf, blue kidney; Climax, white round; Meldrum Conqueror, white kidney; Grampian, red round; and Rector of Woodstock, white round. The 2d prize, of six guineas, given by Mr. John Coutts, King Street, Covent Garden, also went to an Aberdeenshire grower, Mr. George Donaldson, of Inverurie, who staged admirable examples of Lye's Favourite, white round; Schoolmaster, white pebble-shaped; Purple Ashleaf Kidney, Webb's Imperial, white kidney; Early Handsworth, white round; Napoleon, red kidney; Turner's Union, white pebble-shaped; Carter's Main Crop, mottled round; Yorkshire Hero, white kidney; Grampian, Dalmahoy, white round; and Scotch Blue, blue round. Mr. James Crute's 3d prize went to Mr. G. Baguley, Syerston Lodge, Newark, who had a particularly clean and well grown lot, including amongst others very superior samples of Mona's Pride, Snowflake, Waterloo and International, white kidneys; Garibaldi and Early Vermont, red kidneys; and Early Don, Bresee's Peerless, and Early Market, white rounds; and a dish of Scotch Blue, blacker in colour than any that has come under our notice before. Mr. James Pink, gr. to Lord Sondes, Faversham, Kent, was 4th, with medium sized samples full of quality.

Seventeen exhibitors competed with a dozen dishes each, and the class included a great number of very superior samples, but as a whole they lacked the uniformity in quality which was so distinguishable a feature in the preceding classes. The whole of the prizes in this class were given by Messrs. James Carter & Co., of High Holborn, and the 1st, of six guineas, was taken by Mr. James Pink, who had medium-sized but cleanly and evenly grown specimens of Schoolmaster, Birmingham Prizetaker, Red Emperor, Coldstream, Early Rose, Bresee's Prolific, Early Goodrich, Ruby, Waterloo Kidney, Snowflake, Garibaldi, and Berkshire Kidney. Mr. Charles Ross, gr. to C. Eyre, Esq., Welford Park, Newbury, was a good 2d, Mr. William Finlay a good 3d, and Mr. Cornfoot, close up, 4th.

Class D. was for nine varieties; there were eighteen competitors, and the remarks we made upon the last class apply with equal force to this, which included an even greater number of coarse samples, though these were not many in number. The 1st prize of five guineas, given by the Lawson Seed and Nursery Company, Edinburgh, was won by Mr. R. Dean, Ealing, with splendid examples of King of Potatos, Purple Ashleaf, Extra Early Vermont, International Kidney, Excelsior Kidney, Grampian, Climax, Blanchard, and Salmon Kidney. Mr. Peter McKinlay was a remarkably good 2d with handsome samples of Select Round Blue, Snowflake, Crimson Walnut-leaf, Alexandra Kidney, Blanchard, King of Potatos, Model, Ruby, and McKinlay's Pride. Mr. William Ellington, Mildenhall, Soham, was 3d; and Messrs. Lott & Hart, Whitehill Nursery, Faversham, 4th.

In the six dishes class the competition was unusually strong, no less than twenty-three exhibitors competing. A remarkably good class it was too. Another silver cup, value five guineas, given by Messrs. Daniels Brothers, Norwich, was won by Mr. William Finlay, who put up Blanchard, Edgcott Seedling, Scotch Blue, Snowflake, Magnum Bonum, and Walnut Kidney, all of excellent table size and undeniable quality; 2d, Mr. W. Ellington, Mildenhall; 3d, Mr. W. Ironside, Inverurie; 4th, Mr. James Miller; and, highly commended, Mr. H. Minchin, The Nurseries, Hook Norton; commended, Mr. Gilbert, Burghley; Mr. James Pink, Mr. F. Jones, Boughton House, Kettering; and Mr. C. Osman, Sutton.

The class for four dishes was also a remarkably good one, and Mr. F. Miller, gr. to J. F. Friend, Esq., Margate, took Messrs. J. C. Wheeler & Son's prize, with large and very clean samples of Ashtop Fluke, Breadfruit, Blanchard, and Snowflake. The other awards went to Mr. J. Denyer, Penge Road, Beckenham; Mr. G. Donaldson, and Messrs. Lott & Hart. There were twenty-three lots.

Four dishes each of distinct new varieties not in commerce were shown by several exhibitors, and the awards went, in the following order—to Mr. James Pink, with Covent Garden Perfection, white kidney; Superior, a handsome red American kidney; Handsworth Superior, also a white kidney; and a red seedling round with white eyes. Mr. R. Dean, with Garibaldi, a red kidney; Bedfont Prolific and International, white kidneys; and Radstock Beauty, a mottled round. Messrs Lott & Hart, with Success, Centennial, red round; Lye's Favourite, and Prince Arthur. Mr. R. Farquhar, with Heather Bell, mottled kidney; Centennial Ice Cream, a handsome white kidney; and Sims' Telescope, a long, thin, red kidney. With two distinct varieties, one round and one kidney, Mr. R. Dean came in 1st, with Schoolmaster and International Kidney; 2d, Mr. F. Miller, with Schoolmaster and Jackson's Favourite Kidney; and 3d, Mr. C. W. Howard, Canterbury, with Magnum Bonum Kidney and Climax. A wonderfully beautiful dish of Rector of Woodstock, shown by Mr. R. Ironside, Ingliston, Inverurie, was 1st in the class for a single dish of any white round variety; and in the corresponding class for coloured rounds, Mr. James Pink took the lead with Red Emperor. Yorkshire Hero, shown by Mr. F. Miller, proved to be the best single dish of white kidneys; and Superior, shown by Mr. J. S. Evenden, Longfield, Dartford, the best coloured variety. The finest dish of Snowflakes came from Mr. Pink; of Ruby, from Mr. C. Ross; of Porter's Excelsior, from Mr. Pink; and of Schoolmaster, from Mr. J. Hall, Gillingham, Kent.

The committee last year adopted the practice of giving Certificates of Merit to seedling Potatos, taking as the basis of their award a clean, handsome shape and distinct appearance. It is done to stimulate raisers, at the same time the question of quality for table purposes is one that cannot be determined. It must be left to cultivators to discover that.

On this occasion First-class Certificates were awarded McKinlay's Pride, a very handsome early white kidney of great promise, shown by Mr. P. McKinlay; to Radstock Beauty, a very handsome round variety in the way of Lye's Favourite, but quite distinct from it, a second early variety, shown by Mr. Richard Dean; to Vicar of Laleham, a seedling from Emperor and Victoria, having the form of the latter with a purple skin and white flesh—really a purple Victoria, raised by the Rev. Mr. Peake; to Bedfont Prolific, an improved Onwards, an early white variety of good quality and a rare cropper, from Mr. R. Dean; to White Emperor, a very handsome white counterpart of this well-known variety, shown by Mr. Henry Minchin; to Early Bird (Boutell), an early white kidney, and very handsome, but not a seedling, being a good selection only from Veitch's Improved Ashleaf, shown by Mr. Charles Turner; to Ice Cream, a very handsome pale yellow early kidney, quite distinct in appearance, shown by Mr. R. Farquhar, Fyvie Castle Gardens; and to Trophy, an American variety, shown by Messrs. B. K. Bliss & Sons, New York—to all appearance a red Snowflake, and likely to be as useful as that popular variety. There were many new varieties, but the foregoing were regarded as the most distinct and promising. Messrs. Sutton & Sons, Reading, had a large lot of Magnum Bonum, which has this season proved an

excellent main crop Potato, and it was highly commended by the judges.

There were also large and varied collections of Potatos from Messrs. Carter & Co., Holborn; Messrs. Daniels Bros., Norwich; Mr. W. Porter, Old Meldrum; and Mr. C. Turner, Slough; all of which were highly commended.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Oct. 3, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Sept.	In.	In.	°	°	°	°	°				In.
27	30.19	+ 0.40	62.4	40.0	22.4	48.1	— 6.5	46.2	95	NNW.; N.N.E.	0.00
28	30.13	+ 0.40	63.0	38.9	21.1	48.7	— 5.8	45.5	89	NNE.; E.N.E.	0.00
29	30.01	+ 0.30	65.2	41.8	23.4	50.2	— 4.2	48.3	94	E.S.E.; N.	0.00
30	30.01	+ 0.30	64.2	39.2	25.0	50.0	— 4.3	47.9	93	N.	0.00
Oct.											
1	29.99	+ 0.29	61.4	43.0	18.4	52.7	— 3.7	45.2	82	N.E.; N.N.E.	0.00
2	29.85	+ 0.16	61.9	39.9	22.0	49.0	— 5.2	43.8	83	N.; N.N.E.	0.00
3	29.85	+ 0.16	59.8	37.2	22.6	46.6	— 7.3	41.0	82	S.E.; E.N.E.	0.00
Mean	30.00	+ 0.30	62.0	40.0	22.0	49.0	— 5.3	45.1	88	N.; N.E.	sum 0.00

Sept. 27.—Dull, with dense fog till 11 A.M. Fine and clear till 4 P.M. Cloudy till 7 P.M.; cloudless at night.
— 28.—A fine day, generally cloudy. Fog in morning and evening. Cloudless at night.
— 29.—A very fine day, cloudy till 11 A.M. Fog in morning. Cloudless at night.
— 30.—A fine, bright, clear day. A little mist in morning. Cloudless at night.
Oct. 1.—A fine day, partially cloudy.
— 2.—Very fine and clear throughout. Fog and mist till 10 A.M. Cloudless at night.
— 3.—A fine day, partially cloudy. Very cold. Foggy in morning.

London: *Barometer.*—During the week ending Saturday, September 29, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.97 inches at the beginning of the week to 29.92 inches by the morning of the 23d, increased to 30.25 inches by the morning of the 25th, decreased to 30.20 inches by the afternoon of the same day, increased to 30.41 inches by the morning of the 27th, and decreased to 30.21 inches by the end of the week. The mean reading for the week at sea level was 30.21 inches, being 0.14 inch above that of the preceding week, and 0.28 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 61½° on the 29th to 54¾° on the 25th; the mean value for the week was 60°. The lowest temperatures of the air ranged from 35° on the 25th to 44¼° on the 23d and 26th; the mean for the week was 41¼°. The mean daily range of temperature in the week was 18¾°, the greatest range in the day being 23½°, on the 29th, and the least 11°, on the 23d.

The mean daily temperatures of the air were as follows:—23d, 49°.7; 24th, 50°.6; 25th, 44°.1; 26th, 51°.3; 27th, 48°.1; 28th, 48°.7; 29th, 50°.2; and the departures in defect of their respective averages were 5°.5, 4°.4, 10°.7, 3°.4, 6°.5, 5°.8, 4°.2. The mean temperature of the air for the week was 49°, being 5°.8 below the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 124° on the 29th, 110° on the 27th, 109½° on the 24th, and 101° on the 26th; on the 25th the reading did not rise above 72½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 25½° on the 25th, 28¼° on the 29th, and 30° on the 28th. The mean of the seven low readings was 33½°.

Wind.—The direction of the wind was N., N.E., and N.W., and its strength gentle. The weather during the week was generally fine and dry but cold. Fog prevailed on the 27th, 28th, and 29th.

Rain fell on two days during the week; the amount measured was 0.05 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 66° at both Truro and Eccles, 65¾° at Cambridge, 65½° at both Leicester and Nottingham, and 65½° at Blackheath; the highest temperature at Portsmouth, Wolverhampton, and Leeds was 59¼°; the mean value from all stations was 62¾°. The lowest temperatures of the air observed by night were 31° at Cambridge, 33° at Hull, 33½° at Nottingham, and 35° at both Blackheath and Sheffield; the lowest temperature at Liverpool was 45¼°, and at Sunderland 44°; the general mean from all stations was 37¾°. The range of temperature in the week was the greatest at Cambridge, 34¾°, and the least at Portsmouth, 16¼°; the mean range from all stations was 25°.

The mean of the seven high day temperatures was the highest at Truro, 63½°, and Bristol, 61¾°, and the lowest at Bradford, 55½°; the mean value from all stations was 58¾°. The mean of the seven low night temperatures was the lowest at Cambridge and Nottingham, both 38½°, and the highest at Portsmouth, 48½°; the general mean from all stations was 42½°. The mean daily range of temperature in the week was the greatest at Bristol, 22°, and the least at Liverpool, 10°; the mean daily range from all stations was 16¼°.

The mean temperature of the air for the week from all stations was 49½°, being 5½° lower than the value for the corresponding week in 1876. The highest was 53°, at Truro, and the lowest 47°, at Wolverhampton and Hull.

Rain.—Scarcely any rain fell during the week. At Norwich 0.20 inch fell, at Sunderland 0.15 inch fell, at Brighton, Portsmouth, Plymouth, Truro, Wolverhampton, and Leeds no rain was measured; the average fall over the country was 0.04 inch only.

The weather during the week was generally fine, dry, and cold. Fog was prevalent at most places on the 27th, 28th, and 29th inst.

Scotland: *Temperature.*—The highest temperatures of the air observed by day varied from 66° at Dundee to 60° at Leith; the mean value from all stations was 62¼°. The lowest temperatures of the air observed by night ranged from 34° at Paisley to 42° at Greenock; the mean value from all stations was 38¾°. The mean range of temperature from all stations was 23½°.

The mean temperature of the air for the week from all stations was 51½°, being ¾° lower than the value for the corresponding week in 1876. The highest was 53°, at Glasgow, and the lowest 50¼°, at Paisley.

Rain.—The amount of rain measured at Aberdeen was 0.15 inch, at Edinburgh was 0.05 inch, and at Leith and Perth 0.03 inch. At Glasgow, Dundee, Greenock, and Paisley no rain was measured. The average fall over the country was 0.03 inch.

Dublin.—The highest temperature of the air was 67°, the lowest 33¼°, the range was 33¾°, and the mean was 51¾°. No rain fell.

Remarks on the Weather during September.—The mean reading of the barometer for the month was 29.88 inches, being 0.08 inch above the average of the preceding thirty-six years. The range of readings in the month amounted to 0.73 inch.

The maximum temperature of the air was 71°.6 on the 11th, and there are only two instances of so low a maximum back to 1841.

The minimum temperature of the air was 35°, being lower than any value since 1872.

The mean high day temperature of the air for the month was 62°.5, being 5°.2 below the average of the preceding thirty-six Septembers.

The mean low night temperature of the air for the month was 46°.4, being 2°.8 below the average of the preceding thirty-six Septembers.

The mean temperature of the air for the month was 53°.3, being 3°.3 and 4° lower than the averages of the preceding 106 years and thirty-six years respectively. Back to 1771 there are but six instances of so low a mean temperature for the month of September, viz.:—In 1771 it was 52°, in 1786 it was 51°.3, in 1793 it was 52°.8, in 1803 it was 52°.4, in 1807 it was 53°.1, and in 1829 it was 53°.2.

The mean temperature of the dew-point for the month was 47°.1.

The mean amount of cloud for the month was 6.2.

Rain fell on ten days, being two days less than the average number for September. The amount collected was 1.23 inch, being 1.20 inch below the average of the preceding sixty-two years.

The weather during the month was dull, cold, and dry. The month was remarkable for its low temperature and deficiency of rainfall. Fog prevailed on the 16th, 20th, 27th, 28th, and 29th.

JAMES GLAISHER.

Variorum.

"Ethnological Hints Afforded by the Stimulants of the Ancient and Modern Savages" (by Miss A. W. Buckland).—The study of primitive agriculture, which formed the subject of the memoir read by the author before the British Association last year, led naturally to that of the stimulants adopted by different races, because it was found that from a very early period in the history of mankind some sort of stimulant had been used almost universally. Among the lowest races this consisted now, as in ages past, only of some root or leaf chewed for its strengthening and invigorating properties, such as the Pitberry, recently discovered in use among nations in Central Australia, and the Cocoa leaf among the Indians of South America; but no sooner did the nations advance to the agricultural stage than they began to make fermented drinks from the roots or grains cultivated for food. Hence the beer of Egypt, which probably found its way with the Wheat and Barley of that land to the Swiss lake dwellings and over a great part of Europe, having been evidently known in Greece and Rome at a very early period, whilst a similar liquor still formed the chief beverage of all African nations, being now, as formerly in Egypt, fermented by means of plants. In China and Japan Rice was and is used to make wine or beer instead of Wheat or Barley or American Maize. In Bolivia this is chewed to produce fermentation, like the "kava" of the South Sea Islands—a practice which reappears among the inhabitants of Formosa, who use Rice instead of Maize. The sour milk or "koumis" of the pastoral tribes of Central Asia, and the mead of the ancient Scandinavians, both reappear among the Kaffirs of South Africa. Palm wine was used wherever Palms flourished, but wine of the juice of the Grape, although known in very ancient times, seemed to have been confined to the civilised races of Western Asia and Egypt, extending later to Greece and Rome. The multitude of wines described by Pliny were, however, in almost all cases flavoured with herbs or garden plants for medicinal purposes. The conclusions to be drawn from the history of fermented beverages, as recorded by travellers, were that the earliest stimulants were simply leaves and roots chosen by animal instinct, chewed, and found by experience to produce exhilaration and strength. With the dawn of civilisation, these roots and plants, still chewed, were mixed with water, and thus a kind of fermentation was induced, producing a mildly intoxicating drink, and when the agricultural stage was attained the cereals took the place of the earlier roots and leaves, and were also probably at first chewed to produce fermentation, as still in Formosa and South America, to be superseded in a higher degree of civilisation with the use of the Grape; yet even in this, as in the liquors made from grain, the roots and plants of an earlier age were retained for flavour, and to produce fermentation; and even the form and material of the earlier drinking cups were retained in civilised countries skilled in the manufacture, whilst the originally medicinal character of these beverages gave rise to many superstitions, to the deification of plants, and their dedication to various gods—to the birth of gods of wine, as well as to the universal custom of commencing every orgie with libations to the gods, and of proposing healths at feasts. The art of distillation, though probably known early in the Christian era, is comparatively modern, and was certainly unknown to savage races until "fire-water" was introduced, to their serious detriment, by Europeans.

Ivy Embroidery.—It has not yet occurred to the masters of decorative gardening that the Ivies are capable of furnishing most valuable material for certain kinds of embroidery planting, which probably would tell with best effect in a large garden wherein spring flowers play an important part in the annual colouring. There are not many varieties adapted to such work, but the few that are evidently best fitted for it are conspicuously appropriate. Thus amongst the climbers we have marginata grandis, which would probably be the best for forming bands of silver, and there are several others of the same section available where a weaker growth would be required, and in some soils the pretty marginata rubra would develope a fine tone of red in the winter. For yellow leafage there is no climbing variety good enough, but the well-known tree Ivy named aureum produces a brilliant growth of orange-coloured leafage, and in a poor soil is very constant. The little minima is distinctly purple in winter, and Hibberd's Emerald would be the most useful of the green class, as it is a better colour during winter than the Irish Ivy, which is both too dark and too coarse for the purpose, and from March to August it presents a rich and dense growth of golden green leafage. Others would come in of course, as nigra for a very dark green, and lucida for glossy bronze, tortuosa for a neat growth of very dark, highly-polished leaves. In any case, the surest to begin with are marginata grandis, aureum, and Emerald. With these to form the more distinctive outline, it would be no difficult matter to fill up with a selection of a dozen or so of the neat growers with both green and variegated leaves, because for certain parts of a pattern the silver tree Ivies would come in well. A garden boldly framed in Ivy embroidery would have a charming appearance all the winter, and if a good assortment of spring flowers appeared amongst the Ivies from March to May, the Ivies would afford in their interest a strong, definite, and rich foundation, or setting, and quite a new and characteristic style of gardening would result. As this is a note of "observation," as well as of

speculation, I must remark that I have, in a way, carried out my idea of Ivy embroidery, but for the full development of it greater space is required than I can spare for such a feature. *S. H., in the "Gardeners' Magazine."*

Answers to Correspondents.

Apples : *E. H. B.* Send two or three fair samples of each, under numbers, in a box or basket, carriage paid, and we will do the best we can to name them for you.

Books : *T. D. M.* You can get both from Mr. B. S. Williams, Victoria Nursery, Holloway, N.—*Professional.* Baltet's *The Art of Grafting* and Robinson's *Hardy Flowers* are the only two in your list that would be of any real service to the youth, and he would find Sutherland's *Hardy Herbaceous and Alpine Plants* a much more useful book than the latter. If he cannot go much over the price you name, let him have Mrs. Loudon's *Amateur Gardeners' Calendar.* You had better by far get him a copy of Paxton's *Botanical Dictionary* and Thompson's *Gardeners' Assistant.*

Geranium pratense : *W. A. W.* The production of leaf-scales in place of flowers is not very rare, but we do not remember to have seen it in this plant before.

Grapes in Water : *Davie.* A little charcoal. Consult some of the many letters on the subject that have been published in our columns.

Grapes Shanking : *Subscriber.* Yours is a bad case of shanking, arising probably from some defect of the border or of the roots, but the exact cause of which cannot be indicated without personal inspection.

Ground Cos Lettuce. By an error, this Lettuce was called the Grand instead of the Ground Cos. It is a nice dwarf compact variety, and Mr. Judd would be glad to get some seed of it.

Insects : *Cricketfield.* The pest is the well-known Crane-fly, or Daddy-longlegs (Tipula oleracea). At

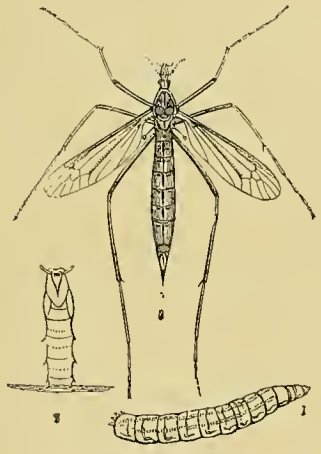


Fig. 88—the crane-fly.
(1, the grub ; 2, the pupa ; 3, the perfect insect.)

the present time all you can do is to kill as many of them as you possibly can. The grass should be swept frequently with a bag-net made of muslin, and later on perhaps the larva can be got rid of by dressing the grass at night with a mixture of lime and gas-water, which will destroy them when they come to the surface to feed. Probably a frequent rolling of the ground at night might answer the same purpose. They are exceedingly abundant this year.—*T. C. H.* Pygæra bucephala (the Buff-tip), gregarious ; feeds on the Oak-nut and Sallow, and frequently strips all the foliage from the branches on which they feed.

Irises : *J. O. C. M.* The present is an excellent time to divide the roots.

Mealy Bug on Vines : *Seventeen Years' Subscriber.* Take the Vines after close pruning from the rafters, wash them with diluted paraffin, whitewash all the brickwork, dress the Vines with diluted methylated spirits, and then clear out all the surface-soil, and put on a layer of fresh. If the dressing is done carefully, this should effectually get rid of them.

Messrs. Kelway's Gladioli.—Mr. J. Clarke writes to say that he made an error in the number of Gladioli which he stated in our last issue were grown by Messrs. Kelway. Instead of 270 named sorts they have 2700, and the number of seedlings is 200,000, and not 20,000.

Names of Fruit : *J. Dimmick.* We have failed to identify your Apple.

Names of Plants : *W. D. F.* Mesembryanthemum acinaciforme.—*A Subscriber, Chesterfield.* We do not undertake to name florists' flowers, or garden varieties of plants. There are too many of them, and they run too near alike for us to deal with.—*W. Hockin.* Abies Smithiana, a native of the Himalayas. —*W. K.* Clematis Jackmanni. We have not received any former similar communication.—*S. G., Greenock.* 1, Gymnogramma Mertensii ; 2, Peristrophe aureo-variegata ; 3, Pteris cretica.—*J. P. A.* Acer campestris, the common Maple.—*T. S. P.* Cratægus coccinea.—*D. M.* Parnassia palustris.—*J. S., Edinburgh.* Jasminum azoricum.—*J. C. Hepburn.* Struthiopteris germanica.—*J. C. G.* Probably Helichrysum vestitum.

Nuts : *A. Smith.* Pack them with the husks on them, after they have been dried, in a barrel, and keep it in some uniformly cool dry place. An old flour barrel answers well, and a barn or loft will be found a suitable position for it. If you sprinkle a little salt amongst them as you are putting them in the cask it will prevent the growth of mildew on them.

Out-of-door Grapes. We have received several communications with reference to the statement, on p. 304, as to the relative absence of mildew on these, and we have been favoured with samples covered with mildew. We never denied the occurrence, far from it. We only described our experience during the present year. Since that note was written, we have seen a large farmhouse, together with its outbuildings, wholly covered with Grapes, but no vestige of mildew.

Potatos Within Potatos: *W. M.* Cases of this kind have been frequently figured in our columns.

Seedling Verbena : *Veritas.* The solitary flower was a shrivelled scrap when it reached us.

Shelter for Roses : *A. H. H.* The one year seedling Hollies, even if they do well, will probably take ten to a dozen years before they will yield the shelter required : they are very slow growers. You should plant a Privet hedge of the best broad-leaved variety—that will answer every purpose in two or three years at the outside.

Tobacco : *Thomas Lloyd.* Cut the leaves off, and hang them up in a dry shed until they become moderately dry ; then pack them in regular layers in a box, and place a heavy weight upon the top, to cause fermentation. It is the fermenting process which is essentially necessary for the formation of nicotine, without which the leaves would be valueless, but of the exact amount of fermentation which should be allowed to take place you can only learn by experience.

Wellingtonia : *W. K.* These trees are very subject to have portions of their branches die off, usually owing to unfavourable root conditions. They are particularly liable to suffer from fungus at the root if leaf-soil has been used in planting them. We should advise you to have the roots of your tree examined, and if fungus is found, the old soil affected with mycelium or spawn should be carefully got out, and good fresh, pure soil put in its place.

☞ Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received.—J. B. A. Deleuil (Rue Paradis, Marseilles), List of Amaryllis, Tuberous Begonias, Yuccas, &c.—Joseph Schwartz (Rue de Repos, 43, Lyons, France), Catalogue of Roses.—Messrs. W. Drummond & Sons (Stirling, N.B.), Descriptive Catalogue of Dutch Flower Roots.

Communications Received.—H. C.—J. W. (with thanks).—G. S. (with thanks).—W. A. W.—J. Veitch & Sons.—Nepenthes (with thanks : next week).—W. S.—J. C.—T. C. H.—Mr. Croxton.—R. McM.—J. R.—A. Price.—C. S.—J. C. & Co.—A. K.—Comjee.—R. F.—W. E. G.

Markets.

COVENT GARDEN, October 4.

Our market remains much the same, large consignments of foreign goods still reaching us, and trade being brisk at reduced prices. Kent Cobs sell freely, quotations being same as last week. *James Webber, Wholesale Apple Market.*

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Herbs, per bunch	0 2– 0 4
Asparagus, Spruc, per bundle	1 6– ..	Horse Radish, p. bun.	4 0– ..
Aubergines, p. doz.	2 0– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per bushel	10 0– ..	Lettuces, per score	2 0– ..
— Scarlet Runners, per bushel	6 0– ..	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Brussels Sprouts, p. bush.	8 0– ..	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos : — Essex Regents, 90s. to 110s. ; Kent Regents, 100s. to 140s. ; Kent Kidneys, 140s. to 160s. Large importations are being received from Germany, selling at from 3s. 6d. to 6s. per bag. Onions are also coming from the same place, fetching 4s. to 4s. 6d. per bag.

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 3 6	Oranges, per 100	12 0–20 0
Grapes, per lb.	0 9– 6 0	Peaches, per doz.	6 0–15 0
Lemons, per 100	8 0–12 0	Pears, per doz.	1 0– 3 0
Melons, each	2 0– 5 0	Pine-apples, per lb.	4 0– 8 0
Nuts, Cobs, per lb.	0 4– 0 6	Figs, green, doz.	1 0– 3 0

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Asters, 12 bun.	3 0– 9 0	Pelargoniums, 12 spr.	1 0– 3 0
Bouvardias, per bun.	1 0– 4 0	— zonal, 12 sprays	0 6– 1 6
Calceolaria, p bun.	0 6– 1 0	Primula, double, per bunch	1 0– 2 0
Chrysanthem. 12 bun.	4 0– 9 0	Pyrethrum	0 6– 1 0
Cornflower, 12 bun.	3 0– 9 0	Roses (outdr.), 12 bun.	6 0–12 0
Dahlias, 12 bun.	3 0– 9 0	— (indoor), per doz.	1 6–12 0
Eschscholtzia, dozen bunches	2 0– 6 0	Stephanotis, 12 spr.	4 0–12 0
Eucharis, per doz.	4 0–12 0	Stocks, 12 bunches	4 0– 8 0
Gardenia, per doz.	5 0–12 0	Sunflower, 12 bun.	2 0– 6 0
Heartsease, 12 bun.	1 6– 6 0	Sweet Peas, 12 bun.	6 0– 9 0
Heliotropes, 12 spr.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 4 0
Jasmine, per bunch	1 0– 2 0	Violets, 12 bunches	1 0– 2 0
Mignonette, 12 bun.	2 0– 9 0		

Plants in Pots.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	6 0–12 0	Ferns, in var., p. doz.	4 0–18 0
Bouvardias, do.	12 0–24 0	Ficus elastica, each	2 6–15 0
China Asters, dozen	5 0–12 0	Fuchsias, per dozen	4 0–12 0
Chrysanth., per doz.	5 0–12 0	Heliotrope, per doz.	4 0–12 0
Clematis	6 0–24 0	Liliums in var., each	1 6– 6 0
Coleus, per dozen	3 0– 9 0	Mignonette, per doz.	6 0– 9 0
Cyclamen, per doz.	18 0–24 0	Myrtles, do.	3 0– 9 0
Cyperus, do.	4 0–12 0	Palms in variety, each	3 6–21 0
Oracæna terminalis	30 0–60 0	Pelargon., scarlet, p. dozen	2 0– 9 0
— viridis, per doz.	18 0–24 0	Solanums	9 0–24 0
Euonymus, in var., per doz.	6 0–24 0	Valotta purpur., doz.	9 0–18 0

CORN.

At Mark Lane on Monday, even for the better qualities of Wheat, the demand ruled inactive at fairly late prices, while for inferior produce the trade was dull and irregular, and the quotations had a downward tendency. Prices were considered, on the average, to be 2s. per quarter lower than on Monday last. For foreign Wheat great difficulty was experienced in obtaining previous quotations. In that market a reduction of 1s. to 2s. per quarter was quoted. Good and fine qualities of Barley were scarce, and realised full terms. Inferior produce sold at a reduction of 1s. to 2s. per quarter. Malt of good and fine quality was firm, and realised extreme rates. Indian Corn was dull at a reduction of 1s. to 2s. per quarter. In Oats, sound corn was steady in value ; inferior qualities had a downward tendency. For Beans and Peas the quotations ruled firm. The flour trade was quiet, at barely late rates.—On Wednesday there was no recovery from Monday's decline in the quotations for Wheat. Choice Barley was held for full prices, but other kinds were a dull inquiry. For Indian Corn buyers were cautious, and endeavoured to effect advantageous purchases. Beans and Peas were steady in value. The flour trade was quiet.—Average prices of corn for the week ending September 29 :—Wheat, 56s. 5d. ; Barley, 43s. 11d. ; Oats, 25s. 3d. For the corresponding week last year :—Wheat, 47s. 1d. ; Barley, 39s. 11d. ; Oats, 25s. 9d.

CATTLE.

At Copenhagen Fields on Monday trade in beasts was dull, consequently prices were lower. The sheep trade was dull ; there was a demand for choicest qualities, otherwise but little was doing. The few calves on offer sold about as of late. Quotations :—Beasts, 4s. 4d., to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 6s. ; sheep, 5s. 4d. to 5s. 10d., and 6s. 4d. to 7s. ; pigs, 4s. to 5s.—Thursday's business was characterised by dulness. Both beasts and sheep were difficult to move at prices lower than on Monday. Calves were a dragging sale.

HAY.

The Whitechapel report for Tuesday says there was a moderate supply of fodder at market, but trade was rather slow ; prices, however, were without material change. Prime old Clover was quoted at 100s. to 144s. ; inferior, 85s. to 95s. ; good new, 100s. to 135s. ; prime meadow hay, 90s. to 120s.; inferior, 70s. to 85s. ; and straw, 44s. to 57s. per load —There was a large supply of fodder on offer at Thursday's market, but trade was dull, and for hay prices gave way 3s. on Monday's top price. — Cumberland Market quotations : —Superior meadow hay, 112s. to 120s. ; inferior, 75s. to 95s. ; superior Clover, 132s. to 140s. ; inferior, 90s. to 117s. and straw, 50s. to 60s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that a moderate supply of Potatos was on sale at these markets, and the demand ruled steady at the following prices :—Kent Regents, 120s. to 140s. per ton ; Essex ditto, 100s. to 130s. ; rocks, 90s. to 100s. ; kidneys, 110s. to 130s. ; Victorias, 120s. to 140s. ; American late, 100s. to 120s. — The imports into London last week comprised 10,210 bags 174 packages from Hamburg, 8123 bags Bremen, 3350 Antwerp, 3286 Boulogne, 1750 bags 756 sacks Dunkirk, 410 bags Harlingen, 201 Havre, and 10 Rotterdam.

COALS.

In the market on Monday there was a firm demand for house coals at previous quotations, but on Wednesday these realised an advance of 6d. per ton. Quotations :—Walls End—Hetton, 21s. 6d.; Hetton Lyons, 18s. 9d.; Lambton, 21s.; Original Hartlepool, 21s. 6d.; South Hartlepool, 19s. 3d. Tees, 21s. 3d.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plans, or Designs prepared and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, 3*d*.
HEREMAN AND MORTON, 2, Gloucester Street, Regent's Park, London, N.W.

Greenhouses.

H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantial made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. Estimates given in wood or iron.

Metallic Hothouse Builder to Her Majesty.

HENRY HOPE
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HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER,
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5*s*. each.
☞ The Extensive Ranges of Metallic Hothouses n the Royal Gardens, Windsor and Osborne, were executed this Establishment.

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Established over a Quarter of a Century.

Is in use over many thousand miles,
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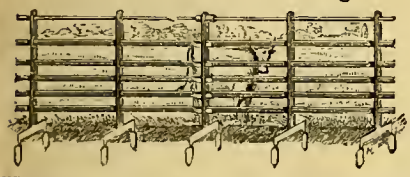
It is constructed with
POWERFUL WINDING STRAINING PILLARS,
RIGID INTERMEDIATE IRON POSTS,
STRONG and DURABLE WIRE CABLE STRANDS.
Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



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IRON ENTRANCE and FIELD GATES,
IN WROUGHT AND CAST IRON,
Designed for the Mansion, Villa, or Farm,
WICKET AND GARDEN GATES,
In Great Variety of Patterns.
Iron Hurdles, Railing, Tree Guards,
FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.
☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.*

IMPROVED LIGHTNING CONDUCTORS,
With fittings complete, simple in construction, and easily erected by a careful mechanic.

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BAYLISS, JONES & BAYLISS,
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Iron Hurdles, Strained Wire Fencing,
Field and Entrance Gates, Tree Guards, &c.,
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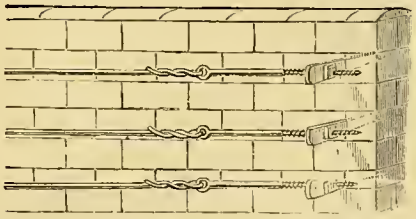
THOMAS'S
FITTINGS for WIRING WALLS.
NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall:—	20 yds.		40 yds.		60 yds.		80 yds.		100 yds.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
No. 14 Gauge Wire	1	0	1	7	2	1	2	7	3	1
No. 13 ,, ,,	1	3	1	10	2	5	3	0	3	7

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.
Five per cent. discount allowed for prompt cash on Orders amounting to 20*s*. and upwards.
Special quotations for larger quantities.

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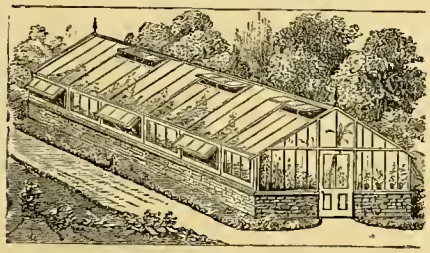
W. H. LASCELLES, HORTICULTURAL BUILDER, Finsbury Steam Joinery Works, 121, Bunhill Row, London, E.C.



Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.	Each. *s.*	*d.*
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	35	0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65	0
LIGHTS ONLY.		
3 feet by 4 feet Light, not painted nor glazed	3	6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10	0
6 feet by 4 feet, not painted nor glazed	6	0
Ditto glazed and painted four coats	16	6

JOHN BOWMAN.
GREENHOUSES—every description, VINERIES—all the latest improvements, GLASSHOUSES—perfect ventilation, } From £10 to £1000.
HORTICULTURAL BUILDER and TIMBER MERCHANT,
West End Steam Joinery, Newcastle.

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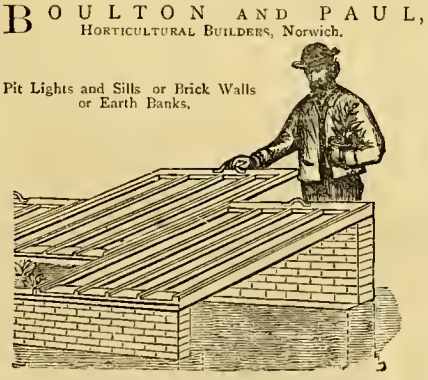
Pit Lights and Sills or Brick Walls or Earth Banks.



PIT LIGHTS and FRAMES complete for fixing on Brickwork, made in two sizes of Lights to work 6 ft. by 4 ft. 2 in. thick, 7 ft. 6 in. by 4 ft. 2½ in. thick, Lights glazed with 21 oz. British sheet glass, painted four times, sills 4½ in. by 3 in., with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.
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STEAM PLOUGHING MACHINERY,
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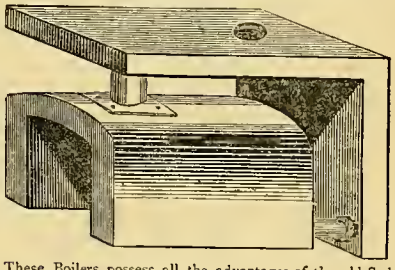
AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

JONES'S PATENT "DOUBLE L"
SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes. High.	Wide.	Long.	To heat of 4-in. Pipe. Feet.	Price. *£*	*s.*	*d.*
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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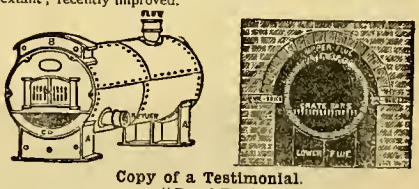
TRENTHAM GREENHOUSE BOILER,
After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Copy of a Testimonial.

"Royal Exotic Nursery, King's Road, Chelsea, S.W.—Aug. 8, 1877.
"Messrs. SILVESTER.
"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.
"For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hothouses during the cold winter months as we do now.
"We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.
"We are, Gentlemen, yours faithfully,
"JAMES VEITCH AND SONS."
For Illustrations, with full particulars, apply to the Sole Makers,
F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.
☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations

THE GARDENERS' CHRONICLE.

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4 Lines	£0	3	0	15 Lines	£0	8	6
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6 ,,	0	4	0	17 ,,	0	9	6
7 ,,	0	4	6	18 ,,	0	10	0
8 ,,	0	5	0	19 ,,	0	10	6
9 ,,	0	5	6	20 ,,	0	11	0
10 ,,	0	6	0	21 ,,	0	11	6
11 ,,	0	6	6	22 ,,	0	12	0
12 ,,	0	7	0	23 ,,	0	12	6
13 ,,	0	7	6	24 ,,	0	13	0
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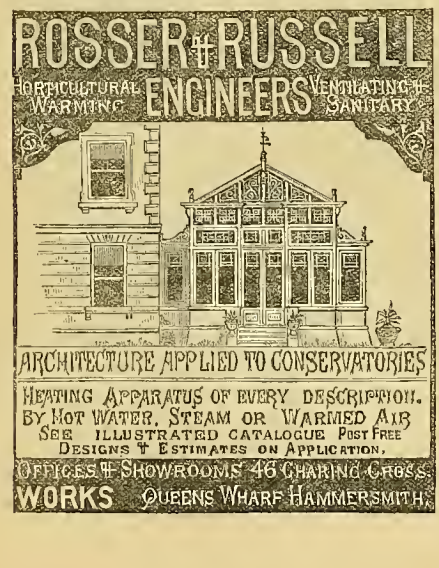

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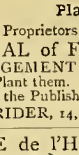

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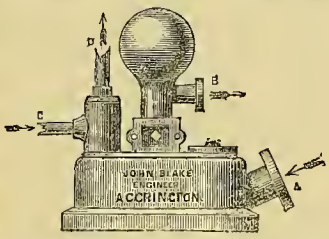


This Ram will raise a part of the same water that works it, or will raise pure water from a well whilst it is worked by a stream of impure water.

TESTIMONIALS.

From the Right Hon. T. Sothern Estcourt, *Estcourt Park, Gloucestershire, September* 6, 1875.

"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful."

(The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

From Captain Townshend, *Wineham, February* 10, 1877.

"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000."

From John Barnes, Esq., *Contractor, Chatburn and Hellifield Railway, Contractor's Office, March*, 1877.

"Dear Sir,—I have the pleasure to inform you that the three Hydraulic Rams you erected for me on this contract about two years ago, have continued to work very satisfactorily, without requiring any repairing. With a fall of 5 feet sufficient water has been raised daily by each Ram to supply two of my locomotive engines: they have fully answered my expectations and all that has been said of them."

Deanwater, Wilmslow, November 20, 1873.

"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house aboout 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required, namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—I am, yours truly, L. Hanmer."

From Mr. Thomas Mason, *Alkincoates Hall, Colne, September* 30, 1871.

"Sir,—Your self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours to a height of 104 feet."

From John Pennington, Esq., *Emmott Hall, near Colne, December* 21, 1868.

"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water wheel and force pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

JOHN BLAKE,
ENGINEER, ACCRINGTON.

Free by Post, 3s. 6d.,

THE ORCHARDIST.

ALL FRUIT GROWERS SHOULD OBTAIN A COPY BEFORE ORDERING THEIR TREES.

Apply to J. SCOTT, The Royal Nurseries, Merriott, Somerset,

Whose Collection is the finest in the Kingdom—2000 sorts of PEAR, 1500 sorts of APPLE, 150 sorts of PLUM, with other kinds in proportion, being grown. The great bulk of these are described in the "*ORCHARDIST*," the best work on Fruit Trees in the English language.

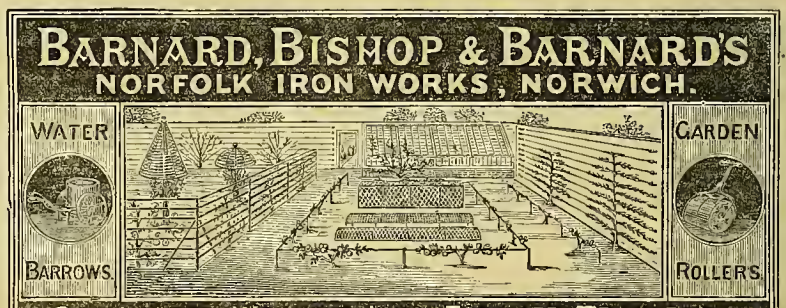
The Advertiser has numbers of Letters from Britain, America, Australia, France, Belgium, &c., all eulogising the work as the best the writers have seen.

☞ **The Trees are this season in fine health. Price Lists forwarded.**

Copies to be had at

37, SOUTHAMPTON STREET, COVENT GARDEN, W.C.

Reduced List just published.



Will be sent free on application.

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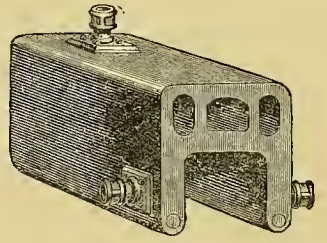
OLD BARGE WHARF,

UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



PRICE LIST on application, or Six Stamps for Descriptive CATALOGUE (Seventh Edition).

"GOLD MEDAL" BOILER.

This Boiler is used by Mr. B. S. Williams *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872).
PATENT "EXCELSIOR" BOILER (1871).
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PATENT PAXTON INDEPENDENT BOILER.
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Editorial Communications should be addressed to "The Editor;" Advertisemeots and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Gardeo, London, W.C.
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Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 198.—Vol. VIII. { New Series. } SATURDAY, OCTOBER 13, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, 5½d.

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With the Number for SATURDAY NEXT, October 20, will be presented a beautifully COLOURED PLATE of Mushrooms, entitled "TRUE and FALSE MUSHROOMS."

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

NOTICE.—In consequence of the very small competition (3 bunches), and the bad condition in which Golden Queen was shown at the Crystal Palace, the Judges withheld the Prizes offered. We propose therefore to offer the same Prizes of £5, £2 and £1 for the best single bunch of Golden Queen; also, the same amount for the best single bunch of Mrs. Pearson, at one of the autumn shows next year, probably during September, due notice of which will be given in these columns. J. R. PEARSON, Chilwell, Notts.

WM. LEWIS GOAD (Messrs. Fraser, Goad & Co.) respectfully informs his numerous Friends that he has resumed Business on his own account, as a WHOLESALE and RETAIL SEED MERCHANT, at 7, Borough Market, London, S.E., and trusts that the kind support given to him for so many years will be extended to him in the future, as it will be his constant endeavour to merit a renewal of the confidence hitherto reposed in him.

LILY OF THE VALLEY.—I beg to inform all my numerous Customers, buyers of the above, that the Roots are unusually fine this year, and that I can furnish extra strong flowering roots at 45s. per 1000, carriage free to London. Orders are requested as early as possible.
ROBERT NEWMANN, Nurseries, Erfurt, Prussia.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to
S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

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F. AND A. SMITH have a large stock of the above fit for immediate use, being well berried and coloured. Prices, which are low, on application.
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NERTERA DEPRESSA, good stuff, in single pots, 4s. per dozen, 30s. per 100.
MENTHA PULEGIUM GIBRALTARICUM, good clumps, in single pots, 16s. per 100
These are the greatest acquisitions for Carpet Bedding yet introduced.
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JASMINUM NUDIFLORUM, 5 feet, splendid stuff, in 48's, 50s. per 100.
JASMINE, common White, splendid, in 48's, 50s. per 100.
IVY, Irish, extra fine stuff, in 32's, 100s. per 100.
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HYACINTHS in POTS.—Pots made expressly for Hyacinths can be supplied by J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List Free.

SUTTON'S FLOWER ROOTS for Early Forcing.
EARLY ROMAN HYACINTHS,
DOUBLE SNOWDROPS,
SINGLE SNOWDROPS,
NARCISSUS, of sorts.
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English Yews, English Yews.

ENGLISH YEWS, 3½ to 4 feet, 12s. per doz., 80s. per 100; 4 to 4½ feet, 18s. per doz., 100s. per 100. All recently transplanted. Every plant a perfect specimen.
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JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers AZALEA INDICA, MOLLIS and PONTICA, CAMELLIAS, SPIRÆA JAPONICA, PALMS and DRACÆNAS. CATALOGUES free on application.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.
Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

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J. SCOTT has to offer a large quantity of BULBS, exceedingly cheap. Priced descriptive CATALOGUE free on application to
JOHN SCOTT, The Royal Seed Stores, Yeovil.

Notice to the Trade.

JAMES FARRAR AND CO. beg to announce the arrival, in excellent condition, of their First Consignment of DUTCH BULBS. Wholesale CATALOGUE forwarded on application.
Seed Warehouse, 86, Golden Lane, Barbican, London, E.C.

Hyacinths, Tulips, Crocus, Gladioli, &c.

OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.
ANT. ROOZEN AND SON, Overveen, near Haarlem, Holland.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
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WANTED, Cuttings of the following PELARGONIUMS — Jealousy, Sir H. Stanhope, Master Christine, Pioneer and Mulberry. Apply,
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R. AND F. ALLUM, Nurserymen, &c., Tamworth.

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EDWIN COOLING, Derby.

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WANTED, 10,000 yards of good Dutch BOX EDGING. Sample and price to
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R. W. PROCTOR, Ashgate Road Nurseries, Chesterfield

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Special Culture of Fruit Trees and Roses.

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Roses, Fruit Trees, &c.

WILLIAM FLETCHER'S CATALOGUE for the present season is now ready, and may be had on application. The stock is very large and most healthy.
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SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16s. per 100, £7 per 1000, or £60 per 10,000.
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VINES.—Magnificent Canes, splendidly ripened, short jointed, all leading kinds, for Fruiting or Planting. Cannot be surpassed. Warranted clean. Inspection invited. The Trade supplied. Priced LIST on application to
FRANCIS & ARTHUR DICKSON & SONS, The "Upton" Nurseries, Chester.

Vines for Fruiting and Planting.

JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

Rollisson's Telegraph Cucumber Seed
(WARRANTED TRUE).
C. E. WATERS, Derby Villas Nursery, Dartmouth Road, Forest Hill, S.E., has a large quantity of the above. Fine sample; no other kind grown. 6s. per 100. Trade price per ounce on application.

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H. J. HARDY begs to offer fine strong Plants of—
ROBINSON'S DRUMHEAD, ENFIELD MARKET, } 3s. per 1000.
CARTER'S HEARTWELL, 5s. per 1000.
Carriage and package free. Terms cash.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

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CABBAGE PLANTS. — Gee's Superior Early Enfield Market, Drumhead, and Thousand-headed, all at 3s. per 1000; Purple Sprouting BROCCOLI, and BRUSSELS SPROUTS, 5s. per 100; Winter LETTUCE PLANTS, Brown Cos and Hardy Green, at 7s. 6d. per 1000. Terms cash with order. Gee's noted stocks of Winter ONIONS, CAULIFLOWER, CABBAGE, and all other kinds of Seeds and Plants for present use, of best quality. CATALOGUES on application to FREDK. GEE, Seed and Plant Grower, Nurseryman, &c., Biggleswade, Beds.

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Unreserved Sale of a Large Consignment of Choice HYACINTHS, TULIPS, CROCUS, POLYANTHUS, NARCISSUS, LILIES, GLADIOLI, &c., containing many large Trade Lots.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, E.C., near the Bank, on MONDAY NEXT, at half-past 11 o'Clock to the minute.

On view the Saturday prior and morning of Sale.

Hale Farm Nurseries, Tottenham.

IMPORTANT SALE of beautifully-grown NURSERY STOCK, including 600 Standard Planes, 7 to 11 feet, fine Limes and other Ornamental Trees, thousands of young and thriving Shrubs, a considerable number of Fruit Trees of all kinds, unequalled for growth and quality; 2000 remarkably fine Standard Roses, a fine Collection of Bulbous and choice Alpine and Herbaceous Plants, Climbers, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Thomas Ware to SELL the above Stock by AUCTION, on the Premises, on TUESDAY, October 16, at 11 for 12 o'Clock precisely. One month allowed for clearing the Stock.

May at any time be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Exeter Nurseries, Exeter.

GREAT UNRESERVED SALE of a considerable quantity of young and thriving NURSERY STOCK, in fine variety, consisting of thousands of choice and useful Evergreens and Coniferæ, a capital assortment of selected Fruit Trees of every description, STANDARD ROSES, together with several thousands of unrivalled Specimens for Ornamental Planting, in excellent condition for removal, the whole having been carefully prepared.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Messrs. Lucombe, Pince & Co., to SELL this beautiful Stock by AUCTION, on the Premises, on TUESDAY, October 16, and three successive days, at 11 o'Clock precisely each day.

Now on view. Catalogues may be had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Heatherside Nursery, Bagshot, Surrey.

(3 miles from Farnborough Station.)

THREE DAYS' CLEARANCE SALE of valuable NURSERY STOCK, arranged in large lots to suit the Trade and Others engaged in making extensive Plantations; also the whole of the Glass Erections and Fittings thereto.

MESSRS. PROTHEROE AND MORRIS are instructed by the Proprietor to SELL by AUCTION, without reserve, on the Premises as above, on WEDNESDAY, October 17, and two following days, at 11 for 12 o'Clock precisely each day, a considerable quantity of valuable NURSERY STOCK, comprising, in addition to a large assortment of handsome Specimen Coniferæ and Evergreens, many thousands of Border Shrubs in endless variety, also Forest and Ornamental Trees covering several acres, likewise many thousands of Fruit Trees; 1500 Camellias, large and small; Azaleas, and a few other Greenhouse Plants; together with 18 GREENHOUSES and PITS, containing about 8000 feet super, 3000 feet of Hot-water Piping, 3 and 4-inch, and a capital SADDLE BOILER, 6 feet by 2 feet.

May be viewed any day prior to the Sale. Catalogues may be had of Mr. SHEPHERD, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Tooting, S.W.

IMPORTANT SALE of THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on MONDAY and TUESDAY, October 22 and 23, at 12 o'Clock each day, several thousands of NURSERY STOCK, remarkably well grown, and in excellent condition for removal, comprising choice Evergreen and Coniferæ Shrubs, in specimen borders, admirably adapted for effective planting; a large quantity of handsome specimen Coniferæ, a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees in bearing condition, Ivies, Clematis, Virginian Creepers, Lily of the Valley, &c.

May be viewed at any time previous to the Sale. Catalogues are now ready, and may be obtained on the Premises or of the Auctioneers.

East Dulwich Road, S.W.,

Close to Peckham Rye and Goose Green.

CLEARANCE SALE, the land being required for building purposes.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, at the rear of Malmesbury House, East Dulwich Road, S.W., on FRIDAY, October 26, at 12 for 1 o'Clock precisely, 100 fine old TIMBER TREES (Ash and Chestnut), Standard FRUIT TREES, large quantities of BOX EDGING, and other PLANTS and SHRUBS, together with two GREENHOUSES, HOT-WATER PIPING, a Weeks' Tubular BOILER, two SUMMER HOUSES, quantity of IRON HURDLES, 10,000 TURF, &c.

May be viewed. Catalogues had on the Premises, and of Estate Agents.

Godalming, Surrey.

GREAT UNRESERVED SALE of first-class NURSERY STOCK, worthy the attention of the Trade and others largely engaged in Planting.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Milford Nurseries, near Godalming, Surrey, on MONDAY, October 29, and four following days, at 12 o'Clock to the minute each day, by order of Mr. Maurice Young, in order to clear for alterations, an unusually large quantity of well-grown NURSERY STOCK, comprising thousands of handsomely grown specimen Coniferæ and Evergreen Shrubs of all sizes, in fine condition for removal and transplanting; also 12,000 choice named Hybrid and other Rhododendrons, 1 to 6 feet; 5000 Retinosporas, 2500 Portugal Laurels, 3500 Variegated Hollies, 10,000 English Yews, 5500 Thujas, of sorts; 2000 Cedrus Deodara, 1000 Young's New Golden Chinese Junipers, 1000 Golden Yews, &c. Ornamental and Fruit Trees, and others too numerous to mention.

Goods may be transmitted to any part of England, Scotland, or Wales without change of truck.

May be viewed prior to the Sale. Catalogues had on the Premises and of the Auctioneers.

The Park, Leytonstone, E.

MESSRS. PROTHEROE AND MORRIS are instructed by the Proprietor, who is leaving the neighbourhood, to SELL by AUCTION, on the Premises, as above, on SATURDAY, October 20, at 1 o'Clock precisely, the whole of the GREENHOUSE PLANTS, including some fine specimen Azalea indica, 100 young Camellias, Tea and other Roses, &c.; also 100 head of POULTRY, A 1 Light-box, &c.

View day prior to Sale. Catalogues had of the Auctioneers.

Moulsham Nurseries, Chelmsford.

CLEARANCE SALE of well-grown NURSERY STOCK, a portion of the land having been sold for building purposes

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Saltmarsh & Son to SELL by AUCTION, without reserve, on the Premises, on THURSDAY, November 1, at 11 for 12 o'Clock precisely, a large quantity of valuable NURSERY STOCK, consisting of a fine assortment of handsome specimen Coniferæ and Evergreens; also a considerable quantity of smaller stock; a fine collection of clean-grown Fruit Trees, likewise a quantity of Ornamental Trees, together with a choice assortment of Standard and Dwarf Roses.

The Stock may be valued at any time. Catalogues may be had on the Premises.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during October, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Stove and Greenhouse Plants, Orchids, &c.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, on the Premises, Clapham Common, S.W., on THURSDAY, October 18, at half-past 12 o'Clock precisely, the entire COLLECTION of STOVE and GREENHOUSE PLANTS of the late J. P. Gassiot, Esq., consisting of Orchids, Azaleas, Camellias, Eucharis, Ferns, &c.

On view the day prior and morning of sale. Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, October 19, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED and IMPORTED ORCHIDS, comprising many choice varieties, such as Vanda insignis multiflora, Y. Cathcartii, Oncidium Marshallianum, Cypripedium Roezlii, Oncidium sarcodes, Phalænopsis Schilleriana, P. amabilis, Masdevallia Harryana cœrulescens, &c. Also many choice Stove and Greenhouse and Fine-foliaged Plants, Ferns, &c., including Lapageria alba, Anthurium Williamsii, Dipladenia Brearleyana, Medinilla amabilis, Cocos Weddelliana, fine plant; Croton Disraeli, Artocarpus Cannoni, Aralia elegantissima, Phormium Colensoi variety, P. tenax Veitchii, Macrozamia plumosa, Dicksonia antarctica, Platycerium grande, Todea superba, &c. Also another choice collection of Established Orchids in fine health, an importation of Broughtonia sanguinea, a collection of Established Orchids, including fine specimens and many of them in flower; also an importation of Dendrobium bigibbum superbum starting freely into growth, and a quantity of other choice plants.

On view morning of Sale, and Catalogues had.

Clapham Park, S.W.

IMPORTANT SALE of SPECIMEN STOVE and GREENHOUSE PLANTS.

MR. J. C. STEVENS has been favoured with instructions from S. Ralli, Esq., to SELL by AUCTION, on the Premises, Clevelaod House, Clapham Park, S.W., on TUESDAY, October 30, at half-past 12 o'Clock precisely, the whole of the COLLECTION of EXHIBITION PLANTS, comprising Crotons, Nepenthes, Dracænas, Palms, Ixoras, Dipladenias, Allamandas, Heaths, Azaleas, &c., which have won such high hooours at the chief Metropolitan Shows, and sold in coosequence of Mr. G. Legg being about to terminate his engagement with Mr. Ralli; also the well-made EXHIBITION VAN.

On view the day prior and morning of Sale, and Catalogues had of Mr. LEGG, on the Premises; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Mayfield, Falkirk.

HIGHLY IMPORTANT PLANT SALE.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER, has been favoured with instructions from John Russell, Esq., of Mayfield, to DISPOSE OF by AUCTION, on TUESDAY, October 16, at 11 o'Clock, owing to extensive alterations in the Conservatories, the whole of the magnificent Collection of FINE-FOLIAGE PLANTS, TREE FERNS, PALMS, CYCADS, ZAMIAS, YUCCAS, AGAVES, &c. The Mayfield Collection is well-known to be one of the finest in the country.

Catalogues may be had from the Auctioneer, 6, Comely Bank, Edinburgh; or Mr. THOMAS SORLEY, Gardener, Mayfield, Falkirk.

Hare Hill Nursery, near Addleston, Surrey.

One mile from the Addleston Station, South-Western Railway.

POSITIVE CLEARANCE SALE of NURSERY STOCK.

MR. W. ABRAHAM is instructed by the Proprietor to SELL by AUCTION, without the least reserve, on the Premises as above, on MONDAY and TUESDAY, October 22 and 23, at 12 o'Clock each day punctually, the whole of the NURSERY STOCK on 5 acres of land, consisting of common and Portugal Laurel, Scotch and Austrian Fir, large quantities of English Yew, Green Holly, Poplars of sorts, Horse and Spanish Chestnuts, Limes, Norway Maples, Birch, Mountain Ash, Mussel, Pear, Crab, Cherry, and other Stocks, Fruit Trees, various; Cupressus Lawsoniana, fine Pampas Grass, Yucca gloriosa, Retinosporas, Aucuba japonica, Laurustinus, a quantity of Standard and Dwarf Roses, also Two strong Spring Carts, a Set of Harness, &c., all of which will be enumerated in

Catalogues to be obtained on the Premises, or post-free of the Auctioneer, Goldworth Nurseries, Woking, Surrey.

N.B.—The Auctioneer begs to state that this is a *bonâ fide* Clearance Sale, and well worth the attention of the Trade and Gentlemen Planting.

Trucks can be loaded at the Addleston Station, and forwarded to any part of the country without change.

Important Sale.—Solihull Nurseries,

Close to the Railway Station, Solihull.

MESSRS. LUDLOW, DANIELL, AND ROBERTS will SELL by AUCTION, on MONDAY and WEDNESDAY, October 15 and 17, commencing each day punctually at 11 o'Clock, a valuable assortment of PLANTS, SHRUBS, and TREES, the property of Mr. Thomas Hewitt, consisting of fine specimens of Picea nobilis, Pinsapo, and lasiocarpa; Cupressus Lawsoniana, Chinese Juniper, common and Irish Yews, Thuja Lobbii, gigantea and aurea; Wellingtonias, Araucarias and Thujopsis; Standard Weeping and Ornamental Trees, Hollies, &c. Also, extra fine and splendid exhibition specimen STOVE and GREENHOUSE PLANTS, removed from Elmdon Hall for convenience of Sale, including all the leading sorts of Dracænas, from 4 feet to 7 feet high; also Crotons, finest sorts, such as Veitchii, Weismanni, and others, 5 by 4 and 7 by 5; Cocos Weddelliana, 4 by 4; Anthurium Scherzerianum, also ten ditto Williamsii (new white); Azaleas, 6 by 4; Pandanus Veitchii, 7 by 7; large Camellias, such as double white Donckelaarii, Countess of Ellesmere, and others.

☞ All the Shrubs and Trees have been recently lifted, and for convenience of purchasers they can remain in the Nurseries a month, but the Pot Plants must be cleared forthwith.

NOTE—The Specimen and other Pot Plants, from Elmdon Hall, will be Sold on Wednesday, October 17.

Catalogues may be obtained at the Nurseries, Solihull; or at the offices of the Auctioneers, 18, New Street, Birmingham.

Bowdon Nurseries, Bowdon, near Manchester.

GREAT SALE of VALUABLE NURSERY STOCK, lease expiring December 21.—7000 Gold, Silver, and Green Hollies and Yews; 5000 choice Coniferæ, including noble specimens 6 to 12 feet; 5000 fine Rhododendrons and Laurels, 8000 Aucubas and other Evergreens, 12,000 Forest Trees, Flowering Shrubs, Roses, Climbers, &c.; 12,000 fine well-grown Fruit Trees, Plants, GREENHOUSES, FRAMES, &c.

MR. J. WALTON, instructed by Mr. R. Thornhill, will SELL by AUCTION, October 17, 18, 19, and 20, the whole of the stock as above.

Catalogues at the Nurseries.

Barrett Grove, Stoke Newington Road, N.

To FLORISTS, CUCUMBER GROWERS, and OTHERS.

MR. J. D. BOAG has received instructions to SUBMIT by AUCTION, on THURSDAY, October 18, at 2 o'Clock, a PATENT GAS APPARATUS, consisting of Double Furnace, Cast-iron Retorts, and all the Appliances for Manufacturing Gas at the cost of 4*d.* per 1000 feet. Also a few lots of BUILDING MATERIALS, HORSES, PHÆTONS, and SETS of HARNESS, &c., which will be enumerated in Catalogues, to be obtained of the Auctioneers, Shacklewell, N.E.

Hereford.

GREAT SALE of NURSERY STOCK, at the Barr's Court Nursery, Hereford.

MR. O. SHELLARD is instructed by Messrs. G. Davison & Co. to SELL by AUCTION, on TUESDAY and WEDNESDAY, October 23 and 24, at 12 o'Clock each day (in consequence of the land being required for the erection of the Middle Class College), the whole of the VALUABLE STOCK, including many thousands of strong Apple Stocks of superior quality; strong Hawthorn Quick aod transplanted Ash; large quantities of Spruce and Austrian Firs; other Shrubs and Trees in great variety; several thousands of dwarf Roses and fine Christmas Trees.

Full particulars in Catalogues, on application to the Auctioneer, 13, King Street, Hereford.

London, North-west District (4297).

TO BE SOLD, on advantageous terms, a small FLORIST'S BUSINESS, excellent position, 3 miles from Covent Garden, adjoins a railway station. Comprises 2 acres of very productive LAND, Lease 18 years unexpired. Rent £40 per annum. Incoming moderate. Stock and glass by valuation: no reasonable offer refused.

For further particulars, apply to Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

In the Midland Counties (4317).

To NURSERYMEN, MARKET GARDENERS, FLORISTS, and SEEDSMEN.

TO BE DISPOSED OF, a CAPITAL BUSINESS, in a large and busy Market Town, with excellent railway facilities. Satisfactory reasons given. Comprises 8½ acres of deep rich Nursery and Market Garden Land, convenient Dwelling-house and Seed-shop, 13 Greenhouses, ample Out-buildings. Manure and Sewage ready to hand for nothing. Lease nine years unexpired. Rent very moderate. Price required for business and stock may be obtained of

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

TO BE DISPOSED OF, TWO ACRES of LAND, planted with choice Fruit Trees, in full bearing; also covered with Nursery Stock in fine condition. It is under a Nobleman, in the county of Nottingham, within a small distance of three Markets. A good opening for a working man with a little capital. The Valuation about £150. More Land could be obtained if required at reasonable rent. For particulars, G. F., *Gardeners' Chronicle* Office, W.C.

TO BE DISPOSED OF, with Immediate Possession, a FLORIST, FRUITERER, and SEEDSMAN'S BUSINESS, in a Market Town in Suffolk. To an energetic, industrious man this is an opportunity which rarely occurs. In addition to the branches named a good Jobbing Gardening Connection may be made. A small capital only required.

Apply, by letter only, to A. M., Messrs. Carter & Co., 237, High Holborn, London, W.C.

TO BE SOLD or LET, a FREEHOLD NURSERY, containing 4000 feet of Glass, nearly new. Apply, E. P., Mr. Cullens, Hign Road, Leytonstone, E.

TO BE SOLD, the LEASE of a good NURSERY, 2¼ acres; Two Houses, 52 by 10½ feet, one do., 26 by 16 feet; Three Seven-Light Frames, Eight-roomed Dwelling House, w.c., Stable, Cart-shed, Pig-sty, Cow-house, and Salting-shed. Seventeen years and a-half to run. Water laid on to Nursery. Apply to

Messrs. TAYLOR AND FORGE, Teddington, S.W.

TO BE LET, from Michaelmas, a FARM of 186 Acres, 14 miles from London, and near a Station. It is equally suitable for Corn, Roots, Market Garden, or Dairy purposes. About 40 Acres in Grass. Comfortable old-fashioned house.

Messrs. DEBENHAM, TEWSON, AND FARMER, 80, Cheapside, E.C.—(24,758.)

BY HER MAJESTY'S ROYAL LETTERS PATENT.

WAGSTAFF'S TUBULAR SADDLE BOILER.

SIMPLE—ECONOMICAL—EFFICIENT.

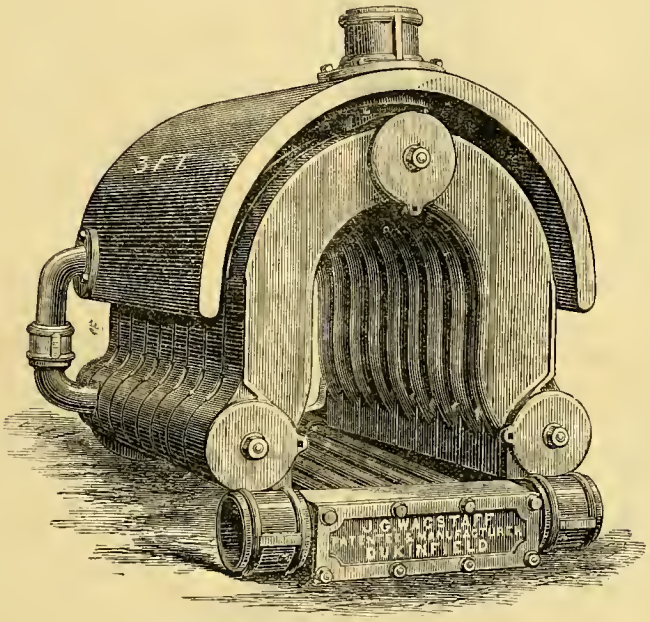
SILVER MEDALS AWARDED:

MIDDLETON, STALYBRIDGE, ROCHDALE, ALTRINCHAM.

MEDAL—SOCIETY FOR PROMOTING SCIENTIFIC INDUSTRY, MANCHESTER, 1875.

Awarded Special Medal at the Great Nottingham Rose Show, July, 1876.

FOR HEATING CHURCHES, CHAPELS, SCHOOLS, MANSIONS, HOSPITALS, WORKHOUSES, WAREHOUSES, OFFICES, &c., &c.



BOILER, CLASS B, WITH TUBULAR BARS.

FOR HEATING CONSERVATORIES, GREENHOUSES, FORCING PITS, VINERIES, ORCHARD HOUSES, PINERIES, &c., &c.

From E. G. HENDERSON AND SON, Nurserymen and Seedsmen, Pine-apple Nursery, Maida Vale, London, W.

"April 24, 1877.

"DEAR SIRS,—We are in receipt of yours, and beg to inform you that the two Boilers you supplied us with answer very well, and we are so far very well satisfied with them, and have no doubt but they will continue to do their work well."

"Towerville, Helensburgh, near Glasgow,
"September 22, 1876.

"DEAR SIRS,—Visiting the Exhibition at Manchester, in 1875, I saw the separate portions of your Boiler lying on the floor. On examination it appeared to me so happy an arrangement of surfaces, and so well calculated to utilise the heat of the furnace that I decided to have one should I ever be in need of a new Boiler. Since then I have substituted one of yours in place of a large Tubular Boiler, and the saving in fuel and labour is rapidly repaying the expense, and now I wish you to send me one of your No. 7, Class A, for heating my dwelling-house and hot-houses.—Yours truly,

"THOMAS WRIGHT."

From L. E. FLETCHER, Chief Engineer, The Manchester Steam Users' Association.

"Manchester, May 15, 1877.

"Mr. J. G. Wagstaff fixed one of his Patent Water Heating Boilers at the Schoolrooms attached to Rusholme Road Chapel, Upper Brook Street, Manchester, at the commencement of last winter. During the six months the Boiler has been at work it has given satisfaction, and heated the rooms well. It is very compact, and occupies but very little space.

"Oaklands, St. Albans, May 9, 1877.

"DEAR SIRS,—I find your Boiler, a No. 2, Class B, heating about 2000 feet of 4-inch pipes, that you supplied and set here last year, does its work with ease, and so long as the flues are kept clean and free from soot, it is most regular and easy of management. Your arrangement of the pipes is most satisfactory in heating all or disconnecting any of the six houses through which they pass.—Yours' obediently,

"C. DVMOKE GREEN."

"The Rectory, Droylsden, June 15, 1875.

"On the part of the Building Committee of St. Mary's Church Schools, Droylsden, I have much pleasure in stating that the Heating Apparatus fitted up in our new schools by you has given the fullest satisfaction. It has been tested by us during the severe season of '74 and '75, and has fully heated our large schoolroom, with ten class-rooms, so far proving quite satisfactory.—Signed on part of the Committee,

"SAMUEL MILLS, *Rector.*

From JOHN RIGG, ESQ., Superintendent, Locomotive Department, Crewe Works, London and North-Western Railway Company.

"Albert House, Crewe, April 24, 1877.

"DEAR SIRS,—I have your note of the 16th instant, and can with pleasure testify to the suitability of the Hot-water Boiler supplied by your firm to me, in respect of its efficiency and economy, and the little attention needed to keep up a regular heat."

From J. PEED, Roupell Park Nurseries, Norwood Road, London, S.E.

"May 3, 1877.

"DEAR SIRS,—I have had your Boiler at work here now about six months. In comparing it with the Top Flued Saddle I have here at work, I find it more powerful and economical, heating about double the quantity of pipe with the same quantity of fuel; namely, one chaldron of coke per week each.

"Yours very truly, "J. PEED."

"Holcombe, Lancashire, May 12, 1876.

"Mr. J. G. WAGSTAFF.—The Churchwardens of Holcombe Church have great pleasure in testifying to the merits of your Patent Hot-water Apparatus. It has now been in use here sufficiently long to thoroughly test its qualities, and they have no hesitation in stating that they are perfectly well satisfied with it. The heat diffused through the body of the church is such that it is quite comfortable even in the depth of winter—a result never before obtained here. The cost of fuel compared with that of the Boiler lately in use is slightly less, the difference in effect very material.

"JAMES MEADOWCROFT, "JAMES RENSHAW, } *Churchwardens.*"

Plans, Estimates, and Specifications for Work in any part of the Kingdom gratis, and Efficiency "guaranteed."

Price Lists, Prospectus, and Testimonials free on application to

THOMAS WOLSTENCROFT & COMPANY,

46, LUDGATE HILL, LONDON, E.C.

J. G. WAGSTAFF, Patentee, Albert Ironworks, DUKINFIELD.

White Cross Nurseries, Hereford.
IMPORTANT to NURSERYMEN, SEEDSMEN, FLORISTS, and Others.

TO BE SOLD, by Private Treaty, as a going concern, in consequence of a Dissolution of Partnership, the whole of the valuable STOCK-IN-TRADE, with 8 Greenhouses, Propagating Houses, 2 Vineries, and 4 Ranges, about 500 feet in length, of Pits, fully stocked, and in good repair; Horse, Van, Spring and Heavy Carts, Tools, Implements, Utensils, and Plant, upon and belonging to the White Cross Nurseries, situated on the confines of the City of Hereford, together with the Stock of Agricultural and Garden Seeds, Fixtures and Effects at the Seed Warehouse, occupied in connection with the Nurseries, and situated in Library Buildings, Hereford, adjoining.

The Nurseries (with the Cottages and Buildings thereon) cover an area of about 23 acres, are well stocked with the choicest variety of every kind of Fruit, Standard and Dwarf Roses, and other Trees, Ornamental and other Shrubs, Plants, &c., are well and pleasantly situated, close to the City of Hereford, and within a few minutes' walk of the Barton Railway Station.

The Nurseries, together with about 12 acres of Pasture Land, are held under a Lease, of which about 4 years are unexpired, and will be included in the purchase.

To view, apply to Mr. CHARLES WHITING, the Foreman at the Nurseries. Any further particulars which may be required may be obtained on application to H. C. BEDDOE, Esq., Hereford; or, Messrs. DEWES, SON AND WILKS, of Coventry, Joint Solicitors.

Sealed Tenders (marked "Tender for White Cross Nurseries") to be forwarded to Mr. HENRY MERRICK, of Earl Street, Coventry, Public Accountant, not later than October 25 next. The Vendors do not bind themselves to accept the highest or any Tender.

To Nurserymen and Market Gardeners.

TO BE LET, with Immediate Possession, on Lease, a large and productive GARDEN, Tithe free. Situated in the heart of the improving town of Colchester, Essex. With or without Dwelling-house. Apply to A. C. B., *Essex Standard* Office, Colchester.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

NOTICE is hereby given that an Addition to the LIST of PENSIONERS of this Institution will be made in January next. All persons desirous of becoming Candidates are required to send in their applications to the Committee, on or before November 5 next, after which day they will not be received. Preference will be given to those Applicants who have been Subscribers for fifteen years and upwards. Should there not be sufficient Applicants of that class then the claims of those who have not subscribed so long, or not at all, will be considered.

By order, EDWARD R. CUTLER, Secretary.

14, Tavistock Row, W.C.—October 5, 1877.

Printed Forms of Application may be obtained from the Secretary.

THE
IMPROVEMENT OF LANDED ESTATES,
By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.
(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81a, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

NOTICE.—The Business of the late Mr. JOHN MORSE, who died on September 18th inst., will be CARRIED ON AS USUAL by the Widow and Son, Mr. E. G. Morse (who has managed the concern for many years), under the style or designation of "JOHN MORSE AND SON"; and all Debts due by and to the said John Morse will be Paid and Received by the Firm.

The Nurseries, Dursley.—September 25, 1877.

STRAWBERRY PLANTS—Dr. Hogg and Sir Charles Napier. Several thousand plants of the above splendid varieties, 2s. 6d. per 100, 20s. per 1000.

ASPARAGUS PLANTS, extra strong, for forcing, 3s. 6d. per 100.

T. CHITTY, 7, Warwick Road, Stoke Newington, London, N.

For Sale.

TELEGRAPH CUCUMBER PLANTS (True).—Seeds of the same kind 1s. per packet, or 8s. per 100 seeds.

STRAWBERRY PLANTS, £1 per 1000.

Dwarf MOSS and CABBAGE ROSES, 25s. per 100.

G. WALKLING, College Park Nursery, Lewisham, S.E.

BEAUTIFUL FLOWERS FOR WINTER & SPRING
WEBBS'
CHOICE COLLECTIONS
OF
HYACINTHS, CROCUS, TULIPS, NARCISSUS, &c.,
CONTAIN A

Superb assortment of the best varieties.

For Growing in Glasses Pots, Vases, &c.
10s. 6d., 21s., and 42s. each.

For Outdoor Cultivation.
10s. 6d., 21s., and 42s. each.

For Greenhouse or Window Boxes.
10s. 6d., 21s., and 42s. each.

All Goods 20s. value Carriage Free.

Five per cent. discount for Cash.

Webb's Autumn Catalogue of Dutch Flower Roots, &c.,
Contains Original and Complete Cultural Instructions.
GRATIS AND POST-FREE ON APPLICATION.

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

TO THE TRADE.
JAMES & ROBERT THYNE
are now offering—

ABUTILONS, in variety, in 3-inch pots, 9s. per dozen.
ADIANTUM GRACILLIMUM, in 4-inch pots, 9s. to 12s. per dozen.
ARDISIA CRENULATA, in 3-inch pots, 9s. per dozen.
ARECA AUREA, in 3-inch pots, 70s. per 100.
ARECA RUBRA, in 3-inch pots, 70s. per 100.
CHAMÆROPS EXCELSA, in 3-inch pots, 30s. per 100.
CICCA DISTICHA, in 4-inch pots, 12s. per dozen.
CYRTODEIRA FULGIDA, in 3-inch pots, 18s. per dozen.
COCOS WEDDELLIANA, in thumb pots, 30s. per dozen.
CROTONS, in variety, in 4-inch pots, 12s. to 18s. per dozen.
CYATHEA DREGEI, recently imported and making magnificent heads, 6 feet stems, 12 guineas each; 5 feet stems, 10 guineas each; 3 feet 6 inches stems, 8 guineas each; 2 feet stems, 6 guineas each.
CYPERUS LAXAS, in 4-inch pots, 6s. per dozen.
DIEFFENBACHIAS, in variety, in 4-inch pots, 18s. per doz.
DRACÆNAS, in variety, in 4-inch pots, 100s. per 100.
IXORAS, in variety, in 3-inch pots, 12s. per dozen.
LOMARIA DALGAIRNSIÆ, 10s. 6d. to 21s. each.
PAULINIA THALICTRIFOLIA, in 3-inch pots, 12s. per doz.
PHŒNIX RECLINATA, in 3-inch pots, 40s. per 100.
,, TENUIS, in 3-inch pots, 30s. per 100.
PILLEA MUSCOSA, in 3-inch pots, 6s. per dozen.
POINSETTIA PULCHERRIMA, in 5-inch pots, 9s. to 12s. per dozen.
SEAFORTHIA ELEGANS, in 3-inch pots, 30s. per 100.
SONERILLA HENDERSONI, in 4-inch pots, 18s. per doz.
TACSONIA VAN VOLXEMII, in 5-inch pots, 6s. per dozen.

GREAT WESTERN NURSERIES,
Kelvinside, Glasgow.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.

The New CATALOGUE, just issued, sent to applicants.

New Exhibition and Decorative Fuchsias.

JAMES LYE, Clyffe Hall, Market Lavington, Wilts, has the pleasure to offer the following fine new varieties of his own raising, unrivalled for their high-class qualities, excellent habits, and free-flowering properties:—

DARK VARIETIES.

Charming.	James Lye.
Gem of the West.	Royal Standard.
Mr. James Huntley.	Elegance.

LIGHT VARIETIES.

Beauty of Wilts.	Mrs. Huntley.
Letty Lye.	Delicata.
Blushing Bride.	Miss Lye.

The above fine varieties have been most favourably reported on in the *Gardeners' Chronicle* for June 9, and the *Gardeners' Magazine* for June 23. A coloured illustration of Mr. James Huntley, Letty Lye, Mrs. Huntley, and Royal Standard, appeared in the *Floral Magazine* for October.

A Descriptive List can be had on application. Plants are now ready, and Orders will be executed as received.

Price the set of twelve varieties, £1 10s.; per plant, 3s. Post-office Orders payable to

JAMES LYE, Market Lavington Office.

Alnwick Seedling Grape Vine.

D. P. BELL begs to offer young plants of the above Vine, the true variety as grown at Clive House, from which the only exhibit has been made, and for which he received the First-Class Certificate from the Fruit Committee of the Royal Horticultural Society, December 6, 1876, regarding which the report of the Committee, as given by the *Journal of Horticulture*, is as follows:—"The bunch is large and heavily shouldered, with a stout stalk. The berry stalks are stout, and the berries large and roundish oval, frequently with sutural furrows; skin quite black and membranous, covered with a fine bloom; flesh firm, tender, very juicy, and sweet. It was unanimously awarded a First-class Certificate. This is a far superior fruit to Alicante, and will no doubt prove to be a late-keeping variety of great value."

It is important that the public should know that this, the only certificated variety (and therefore the original), has been exclusively raised at Clive House, and cannot be had elsewhere.

Plants 15s. each.

The fruit now hanging on the parent Vine may be seen on application.

To the Trade.

JOHN PERKINS AND SON beg to offer the following, the whole of which have been recently removed, and are fine healthy plants:—

ABIES DOUGLASII, 4 to 5 feet, 18s. per dozen.
ACER NEGUNDO, var., Pyramids, 40s. per 100.
ABIES MENZIESI, 4 to 5 feet, 18s. per dozen.
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They have also a great variety of PALMS and other plants suitable for decoration; also of ADIANTUM and many other FERNS, besides a varied stock of STOVE and GREEN-HOUSE PLANTS and GRAPE VINES.

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ARECA ALBA, in thumb pots, 75s. and 100s. per 100.
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B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each. For Detailed List see BULB CATALOGUE.

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Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.

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VICTORIA REGINA, large single Violet, very fine.
WHITE CZAR, the best white.
BLANDYANUM, large double Violet.
KING OF VIOLETS, large double Violet.
REINE DES VIOLETS, large double white.
NEAPOLITAN, double lavender.
" single lavender.

Strong clumps of the above 6s. per dozen, 40s. per 100, suitable for potting in 48-inch pots, or forming beds and masses in flower gardens. Now is the time to plant to ensure flowers all winter and spring.

BELLE DE CHATENAY, new double white, 1s. 6d. each.
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One small plant of the ten varieties free by post 5s. 6d. Trade price on application.

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ISAAC MATTHEWS AND SON have to offer the following RHODODENDRONS—100,000 fine bushy plants, thinly grown and well rooted, nice round plants:—

RHODODENDRON SPLENDIDUM, white, 1 to 1½ foot, 37s. 6d. per 100; 1½ to 2 feet, 50s. per 100; 2 feet, 60s. per 100.
" CAUCASICUM PICTUM, scarlet, 1 to 1½ foot, 50s. per 100; 1½ to 2 feet, 60s. per 100.
" JACKSONII, scarlet, 1 foot, 50s. per 100; 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, 75s. per 100.
" WOOLLERII, scarlet, 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, £5 per 100.
" HYBRIDS, from all choicest named varieties, 1 foot, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100; 2 to 2½ feet, 60s. per 100.
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CURRANTS, Black, very strong, 10s. per 100.
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IN CONSEQUENCE OF EXTENSIVE BUILDING OPERATIONS,

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COMPRISING

CAMELLIAS, AZALEAS, ERICAS, PALMS, CHOICE FERNS,

Including magnificent plants of TODEA SUPERBA, &c. Also

EVERGREEN TREES AND SHRUBS,

All in fine condition for removal with safety, comprising:

SPECIMEN and other sizes of ARAUCARIAS,

CEDRUS DEODARA, CEDRUS ATLANTICA, CUPRESSUS LAWSONIANA, PICEA NOBILIS,

And a large Assortment of the finest Ornamental Plants of other descriptions.

Particulars will be given in future Advertisements, meanwhile Catalogues are being prepared, and the Stock to be Sold may be seen at

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Estd. 1844.

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CATALOGUE

OF

DUTCH FLOWER ROOTS

FOR

Autumn, 1877,

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Our 21s. Collection (No. 7),

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25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 " double white
6 Campernelle Jonquils
25 Anemones, fine double
25 " fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 " Cottage Maid
12 " Yellow Prince
25 " double, mixed
12 " Rex Rubrorum
12 " late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

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From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

From R. PRONYCE, Esq., *Bathgate, N.B. February* 7, 1877.

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THE QUEEN'S SEEDSMEN, NORWICH

TO THE TRADE.

Dick Radclyffe & Co.'s

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Price, 5, 7, and 10 Guineas each, according to size.

BOWENIA SPECTABILIS SERRULATA.

This is a most distinct and remarkable plant, Bowenia being the only known Cycad having bipinnate fronds. It has a short thick caudex, from the crowns of which are developed its large and singularly handsome leaves. The petioles are long, slender, roundish, and of a dark green colour; the lamina is bipinnatisect and spreading, the pinnules are firm in texture, obliquely falcato-lanceolate with an acuminate point, differing materially from the normal and only other known Bowenia in having their margins distinctly and prettily toothed or serrated. Any description must fail to give an adequate idea of the distinct and striking character of this ornamental Australian plant.

Price, 2 Guineas each.

Mr. WILLIAM BULL has much pleasure in offering the above Plants, which are two most remarkable introductions, and from their sterling merit two of the greatest acquisitions he has ever had the pleasure to announce.

WILLIAM BULL, F.L.S.,

Is also offering the following NEW PLANTS:—

ARALIA FILICIFOLIA
COLEUS PICTUS
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CROTON REX
CURMERIA WALLISII
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HIBISCUS (ROSA-SINENSIS) COLLERII
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PANAX LACINIATUM
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SIX NEW DRACÆNAS
TWENTY NEW DOUBLE-FLOWERED IVY-LEAVED PELARGONIUMS
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For Descriptions and Prices of the above, and various other New Plants, see Mr. W. B.'s Illustrated Catalogue, price 1s.

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HORTICULTURAL BUILDERS,

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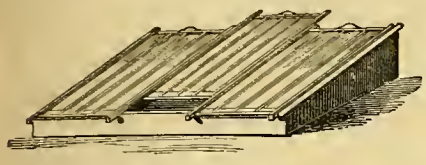
These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen; 24 in. high at the back, 13 in. high in front; painted three coats of good oil colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in with putty—the best method of glazing known, and adopted by the most eminent Builders and leading Nurserymen (see *The Garden* for January 13, 1877, p. 30). Iron handles to each light, and an iron strengthening bar across. Each light is 6 ft. by 4 ft., and 2 in. thick.



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	Length.	Width.	£ s. d.
1-light frame	4 feet ..	6 feet	1 17 6
2 " "	8 feet ..	6 feet	3 5 0
3 " "	12 feet ..	6 feet	4 17 6
4 " "	16 feet ..	6 feet	6 7 6
5 " "	20 feet ..	6 feet	7 17 6
6 " "	24 feet ..	6 feet	9 7 6

Special Notice.—Carriage paid to any Railway Station in England. Also to Dublin, Glasgow, and Edinburgh, on Orders of 40s. and upwards.

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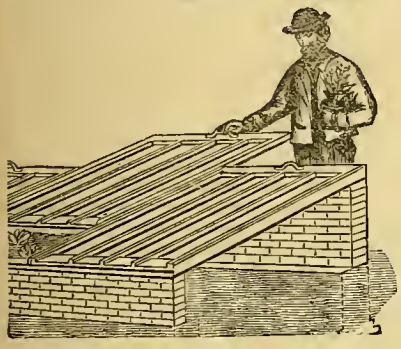

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Complete for fixing on Brickwork, made in two sizes of lights to work 6 feet by 4 feet 2 inches thick, 7 feet 6 inches by 4 feet 2½ inches thick, lights glazed with 21-oz. British sheet glass, painted four times, sills 4½ inches by 3 inches, with bearers and parting pieces complete, with screws, wrought-iron handle to each light, and strengthening bar across.

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SILLS or FRAMES.

	£ s. d.
With 2 lights, 6 feet by 4 feet, 8 feet long by 6 feet wide	2 16 0
With 3 lights, 6 feet by 4 feet, 12 feet long by 6 feet wide	4 3 0
With 4 lights, 6 feet by 4 feet, 16 feet long by 6 feet wide	5 10 0
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Longer lengths at cheaper rates.

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SUTTON'S

COMPLETE COLLECTIONS OF

HYACINTHS, TULIPS, CROCUS, &c.

FOR OPEN GROUND CULTIVATION

42s.*	21s.*	10/6	5s.

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42s.*	21s.*	10 6

**Carriage free to any Railway Station in England.*

THESE COLLECTIONS CONTAIN ALL THE BEST VARIETIES, AND WILL PRODUCE A BEAUTIFUL AND CONTINUOUS DISPLAY OF FLOWERS.

6 PER CENT. DISCOUNT FOR CASH.

Complete Cultural Instructions and Descriptive Catalogues gratis.

N.B.—By personal examination of the crops during the blooming period Messrs. SUTTON have been able to secure the finest bulbs grown in Holland this year.

How to Grow Flower Roots succes sfully, see

One of the most Practical Works on the Cultivation of

HYACINTHS, TULIPS, CROCUS, LILIES, NARCISSUS, &c.,

YET PUBLISHED.

PROFUSELY ILLUSTRATED.

Price 6d. post-free, or gratis to Customers.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

SATURDAY, OCTOBER 13, 1877.

FINDERNE'S FLOWERS.

"Time, Time his withering hand hath laid
On battlement and tower,
And where rich banners were displayed,
Now only waves a flower."

ONE of the greatest charms of an old country lies in its buried history. Sir Bernard Burke informs us, in his *Vicissitudes of Families*, that in the course of his researches a village legend or peasant tale have frequently supplied the clue that guided him in an intricate path of genealogical discovery. In Ireland particularly, the local memories of the people are wonderfully vivid and correct. The details may be exaggerated, confused, and inconsistent, but they are true in the main, and this local sentiment attaching to every inch of earth in our mother country may in part atone for her limited number of acres, compared with those of her colonial possessions, where the ground, rich as it may be, is not endowed with any charm of life, and where no departed breath of predecessors sighs in the wind, or whispers in the shaken leaf.

As a rule, families have not retained their estates and names for many centuries. Mr. M. A. Lower mentions, in the *Worthies of Sussex*, that only three families in that county have retained their hereditary property and their names for a period of 350 years. A common calamity which overtakes them is, that they become extinct; or, they terminate in daughters whose offspring, as a rule, bear another surname. An acorn sown and protected in a Sussex park may, therefore, be expected to shelter three families of owners. In the hamlet of Finderne and parish of Mickleover, four miles from Derby, a patch of "garden flowers grown wild" in a field, have outlived the family whose garden they adorned.

For nine generations the distinguished Findernes resided at the hamlet which retains their name. They fought in the Crusades, at Cressy, and at Agincourt, and their territorial possessions were large. Few families were held in higher estimation than the Findernes; their mansion had been rendered by restoration one of the quaintest and largest in the Midlands; they had been frequently High Sheriffs, and sometimes Rangers of Needwood Forest and custodians of Tutbury Castle. They had matched with the best families, and within the church, which still stands, and which was once the family chapel, their dust lay thick, their memorials were numerous upon the walls, while for centuries each epitaph and monumental brass within the sacred building was in honour of a Finderne.

In 1850, Sir Bernard Burke, searching for a pedigree, visited the village. He sought for the hall, not a stone remained! He entered the church, not a record of a Finderne could be distinguished! The sons of this race were brave, their daughters fair, but the frequent fate of families had overtaken them. The male line having failed in the sixteenth century, the last heiress had married a Harpur, and oblivion had fallen upon the family name.

On the occasion of Sir Bernard Burke's visit, "Finderne's Flowers" were the only mementos of the ancient family that still remained. In the twelfth century Sir Geoffrey Finderne had joined a crusade, bringing from the Mediter-

ranean, as many English gentlemen did, some knowledge of agriculture and gardening, and some seeds and floral specimens—including no doubt Lilies, which were dedicated—as indeed all flowers were—to the Virgin. And in a field near the church, in 1850, an old man pointed out the faint traces of terraces and foundations, and there, said he, pointing to a bank, "are the Finderne's flowers, brought by Sir Geoffrey from the Holy Land, and do what we will they will never die!" That there is poetry in such prose, and language in flowers, as well as beauty, we need not urge. *H. Evershed.*

New Garden Plants.

Pescatorea Backhousiana, *n. sp.**

We had till now only two Pescatoreas with coarse, warty asperities on the lip's blade standing in front of the crescent-shaped lamellar callus of the base. One is the well-known P. cerina, the other the very rare P. coronaria, known in Europe now by two dry flowers, sent in spirits by Mr. Wallis. The first is of a waxy ochre colour and has its sepals much cuneate at base, much dilated before the apex, and an angular keel at the very base of the lip. The second one is unknown in its colour, but may be immediately recognised by the most surprising feature that the lip blade has not only the rough warts of P. cerina, but very numerous hairs. It is quite unique. It may be No. 196 of Mr. Wallis' itinerary notes, and if so it is coloured purplish with greenish apices to the sepals and petals, and it has a lip whose general colour is that of the human skin (viz., North European I hope), with the callus ring of the darkest carmine. Our new species is very distinct from both. It has no hairs on the lip, hence it is not P. coronaria; it has a totally different shape of lateral sepals (tapering gradually from the base to the apex) and no angular callus at the lip base, and, let me add, the colours are totally different. Hence it is new, as far as human certainty reaches. The flower is rather large, equal to that of a good, well-fed P. cerina. The ground colour is whitish or cream coloured. All the anterior parts of the sepals and petals are of a purplish violet that is not so warm as in the best varieties of Mr. Day's unrivalled Pescatorea, though it may also appear by-the-by in this one. The lip is cream coloured too, with a deep yellow hippocrepic callus of nineteen ribs running out in angles, having brownish middle lines to the keels. The warted part is sulphur coloured, the exterior light purplish. The column is purplish behind, and its front-side is yellowish-white, covered with innumerable small purplish drops excepting an area at the base that is nearly free of them. There is the usual apiculus on the foot of the column. It is a splendid thing. I know nothing of the origin, yet I suspect it may come from Ecuador. It is dedicated to the lucky possessor, Mr. J. Backhouse, who preserves a warm love for Orchids, and appears unusually successful with Pescatoreas and Bolleas. *H. G. Rchb. f.*

Cypripedium patens (Cypripedium barbatum × Hookeræ).†

Once more one of Mr. Seden's hybrids, raised at the Royal Exotic Nursery of Messrs. Veitch, by applying the pollen of C. barbatum to Cypripedium Hookeræ. The leaves are just intermediate between those of the two species, being not so brilliant as in C. Hookeræ, nor so indifferent as in C. barbatum. The long peduncle of C. Hookeræ is rather kept, but its value is not increased by the flower itself being rather large, and its colour not being so dark as in the just-named species. The green ovary very much exceeds the very short bract. The upper sepal is rather semi-ovate acute, green in its disk, white on the borders. The internal veins are green, the external ones green at the base and purplish violet above. The inferior sepal is triangular, whitish, with dark veins, and quite covered by the lip. The petals are far more like those of C. barbatum, since they are not so much dilated at the top, not wavy before the base. Their colour is purplish violet, that is by no means so warm as in C. Hookeræ. The base is greenish in part, and much more so in the inferior half. The lip is dark brownish violet. The staminode semi-lunar, with two coloured inflexed half-circular teeth at the side and a little apiculus in the sinus, brownish at edges, with green nerves in the disk, covered with small hairs. *H. G. Rchb. f.*

Nephrodium (Eunephrodium) lucidum, *Baker, n. sp.**

During the last three or four years a great deal has been accomplished in the exploration of the Ferns of Madagascar. By Mr. William Pool and Miss Helen Gilpin 150 species have now been gathered in the elevated district of the interior of the island, and of these about one in three prove to be new species, the other 100 being identical with previously known Mascarene or cosmopolitan subtropical or temperate types. The present plant, which was given by Mr. Pool to the Kew collection in 1876, and which Mr. Smith has just grown up to the fruiting condition, is a fourth new species of Nephrodium, in addition to three which I have already described in the 15th volume of the *Journal of the Linnean Society*, in a paper commencing at p. 411. In general habit it closely resembles the Japanese N. sophoroides, Desv., from which it may be known by its glabrous fronds of a bright green colour and narrow pinnæ with segments containing much fewer veins in a group. It is to be hoped that this is only the first of a long series of novelties to be added to our stock of cultivated species from the island, now that it is being explored and its inhabitants gradually civilised. There is no part of the world at the present time that offers a more promising field for a botanical collection.

Rhizome short-creeping. Basal scales few, small, brown, lanceolate, membranous. Stipes contiguous, 1—3 inches long, slender, bright green, with a few small deciduous adpressed membranous scales. Lamina oblong-lanceolate, bipinnatifid, moderately firm in texture, bright green on both surfaces, glabrous throughout, reaching 12—15 inches in length, 5—6 inches broad at the middle, narrowed gradually from the middle to the base. Pinnæ in 12—20 pairs below the pinnatifid apex, spreading, sessile, linear, the largest central ones 2½—3 inches long, ¼—⅓ inch broad at the middle, cut down to the rachis into oblong-quadrate contiguous erecto-patent secondary segments ⅛ inch broad, of which the lowest anterior one is uniformly much larger than the others; veins 2—3-jugate in the ordinary secondary segments, 4—5-jugate in the enlarged lowest anterior segment of the pinnæ, pellucid, only the lowest pair anastomosing. Sori small, apical on the veins, so that those of neighbouring groups touch one another. Involucre small, glabrous, membranous, evanescent. *J. G. Baker.*

Cotyledon (Umbilicus) Pestalozzæ† = Umbilicus Pestalozzæ, Boissier, *Flora Orientalis*, ii., p. 771.

We received a flower-panicle of this fine hardy succulent plant from Mr. Maw, of Broseley, a month or two since, under the name of Sedum sempervivoides (?). The query was certainly justified, as the plant is very clearly a Cotyledon, of which Umbilicus is now made a section; and on comparison with specimens collected by Balansa (705) in Cilicia it became evident that Mr. Maw's plant was the same as described by M. Boissier under the above name.

It is more than probable that this plant is a mere variety of C. (U.) Libanoticus, from which it differs mainly in the stem-leaves being rather broader towards their free ends. In any case, we have here an attractive plant sure to find favour with lovers of succulent and rock plants. Mr. Smith's figure (fig. 89, p. 457) is so faithful that no lengthened description is necessary, the botanical details cited in the foot-note being sufficient to establish its identity. Here, then, it need only be said that the plant is covered with glandular hairs of a reddish colour, and that the flowers are of a pink hue. *M. T. M.*

* *Pescatorea Backhousiana*, n. sp.—(Asperilingues.) Sepalis oblongis obtuse acutis, sepalis lateralibus a basi æqualiter apicem versus angustatis; sepalo summo ac tepalis apice angulato; labello energetice trilobo, lobis lateralibus erectis obtusangulis, lobo antico transverso trilobulo, lateribus reflexo, convexo; callo hippocreppico ex lamellis angulatis unde viginti; disco anteposito papulis apice verruciferis multis seriatis onusto angulo exexsiliente in basi labelli nullo.—*Zygopetalum Backhousianum. H. G. Rchb. f.*

† *Cypripedium patens*, n. hybr. (*Cypripedium barbatum* × *Hookeræ.*) — Foliis tessellatis; pedunculo bene villoso longe exserto; bractea ovario villoso multo breviori; sepalo superiori semiovato triangulo, sepalo inferiori anguste triangulo; tepalis ligulatis obtuse acutis vix apice dilatatis; labelli ore retuso; cornubus utrinque parvulis vix prominulis; staminodio transverso semilunari; utrinque antice semilunato forcipato apiculo in sinu.—In horto Veitchiano a dom. Seden artificialiter obtentum. *H. G. Rchb. f.*

* *Nephrodium* (*Eunephrodium*) *lucidum*, Baker, n. sp.—Rhizomate breviter reptante, paleis paucis parvis brunneis lanceolatis; stipite brevi parce paleaceo; fronde oblongo-lanceolato bipinnatifido utrinque glabro lucide viridulo; pinnis sessilibus linearibus, segmentis secundariis oblongo-quadratis erecto-patentibus contiguis integris, inferiori anteriori reliquis majori, venis simpliciter pinnatis, venulis 2—3 vel in pinnulam anteriorem basalem 4—5 jugis infimis solum anastomosantibus; soris parvis quoad venas apicalibus, involucro parvo glabro membranaceo.

† *Umbilicus Pestalozzæ*, Boissier, Flora Orient. 2, p. 771.—"Glaucus plus minus pubescenti-glandulosus; foliis radicalibus, spathulatis obtusis basi cuneato-attenuatis margine obsolete denticulatis; caulinis obovato-oblongis; paniculæ glanduloso hirto racemosæ; floribus sub secundis; corollæ pallide roseæ calyce 2½-plo longioris ad medium fissæ laciniis lanceolatis acuminatis ♃.—Hab in Caria, Syria, Cappadocia, &c. Valde affinis U. Libanotico a quo glaucedine præsertim differt; folia caulina preterea latiora magis spatulata. An tamen hujus varietas?"—Xylogr. nost., fig. 89, p. 457.

THE NEW TUBEROUS-ROOTED BEGONIAS OF 1877.

Having during the summer and autumn now drawing to a close continued my trials and comparisons of all the new varieties of the above-named highly ornamental and continuous-blooming genus and, having bedded out over eighty named varieties, I have now to report as to the respective merits and demerits of the thirty-one new varieties sent to me from various sources (principally Continental). I have grown the whole of these in the open air, and carefully compared them with the fine introductions of previous years, concerning which I had somewhat to say at the end of the outdoor blooming season of 1875 and 1876 in the leading horticultural newspapers. My remarks, I may venture to hope, have been of some use in guiding amateurs in the selection of a good assortment of these beautiful flowers, which, in the opinion of all who have seen them here this summer, are quite unequalled by those of any other plant for affording an unbroken continuance of brilliant bloom from the middle of June till the middle of September in the open ground, and for a further month or six weeks after being lifted into pots for the greenhouse, before they finally go to rest for the winter towards the middle of November. Of the twenty-six novelties above mentioned eight came to me from Van Houtte, of Ghent, being all seedlings raised in the establishment from which we have already received so many fine varieties. This year's lot, however, was of very unequal merit, three only out of the eight being of first-rate excellence, one other, with large and sometimes semi-double male blooms of a pleasing and uncommon deep blush colour, having faults in habit of growth of considerable gravity; the other four were either insignificant or otherwise comparatively worthless. Seven varieties, three of them double flowered and four single, came to me from M. Victor Lemoine, of Nancy; all of these, with the exception of one of the doubles, were very good, as might be expected from the source from whence they came. From Messrs. Thibaut & Keteleer, of Sceaux, came six varieties, all of them raised by the gardener of a neighbouring private gentleman, Fontaine by name, and all of them were of first-rate excellence, two of them indeed being in my opinion the most beautiful varieties yet obtained by any raiser; these are named Lælia and Exposition de Sceaux—the latter variety, however, is I believe not yet in commerce. Another of this set is curiously enough identical with a very fine variety sent out by M. Van Houtte in 1875. From M. Deleuil, of Marseilles, came four varieties of very fair merit indeed. From Mr. Vincent, of Bougival, came one very fine variety. From Messrs. Veitch, of Chelsea, came one variety which did not bloom at all. I shall now proceed to describe these new varieties *seriatim* in the above-named order, as briefly as possible, from notes taken down as each arrived at its full development, and carefully corrected afterwards when any point previously noted was found to need correction.

Van Houtte's Varieties.

1. *James Backhouse.*—A most beautiful variety, with full-sized light scarlet blooms, which when fully expanded are perfectly flat. The habit of growth is low and spreading, and the flowers, which are produced in great abundance, are well raised above the foliage. This is a really first-class variety, and should be in every choice collection.

2. *Laurent Descours.*—A most lovely variety of low and spreading habit of growth, with large and handsome foliage, and producing with great freedom on slender footstalks, well elevated above the foliage, an abundance of large and perfectly formed flowers of a clear bright rose colour, the males of which when fully expanded are also perfectly flat. A variety of first-rate excellence.

3. *La Baronne Hruby.*—A light foliaged, compact-habited variety, producing full-sized, well shaped cupped blooms of a lovely deep shade of crimson, borne on slender footstalks and apparently not over freely produced. This is considered by its raiser one of his finest varieties.

4. *Notaire Beaucarne.*—This is supposed to be a semi-double variety, and the male blooms usually have from three to five extra petals. The flowers are of large size and good substance, of a deep blush colour, produced on long and pendulous footstalks. This variety, though by no means perfect as a florist's flower, yet from its size of bloom and somewhat uncommon shade of colour is likely to find many admirers.

5. *La Baronne Léon Legay.*—A strong, vigorous habited, upright growing variety, with medium-sized

blooms of a whitish colour when they first show themselves, but which ultimately turn into a good clear pink colour. This, however, cannot be considered as more than a good second-rate variety, with which one of the choice unnamed seedling sent me by M. Lemoine is identical.

6. *Madame Meyer.* — A low-growing, branching-habited, free-blooming variety, with small and inconspicuous flowers of a pale blush colour. It is of not more than third-rate merit, and hardly worth a place in a collection, save for its dwarf habit of growth and freedom of flowering, which may perhaps recommend it to some growers as an edging to a large bed, with taller growing varieties in the centre.

7. *F. M. Dos Santos Viana.*—A variety with pointed dark green marbled foliage, in the way of Pearcei, with medium-sized blooms, of a dull red outside and of a deep orange inside, which, however, soon tarnish on exposure to the sun, as do other inferior varieties. It can be considered as a variety of second-rate merit only.

8. *James Duncan.*—An utterly worthless variety, of a dull and washy yellow colour. How it came to be named at all I am altogether at a loss to understand.

M. Lemoine's Varieties.

1. *Louis Van Houtte* (double).—This is of dwarf compact habit of growth, the male blooms fully and evenly double, and of a deep shade of salmon colour; a beautiful variety.

2. *W. E. Gumbleton* (double) is of dwarf and compact habit of growth, with fully and evenly double male blooms of a paler salmon shade than the last-named variety, borne on rather slight footstalks well raised above the foliage. The blooms are about medium-size.

Fig. 89.—Cotyledon pestalozzæ, with section of flower, pollen-grains, and glandular hairs.

3. *Argus* (double) is a light red variety, with an unevenly duplicated centre to the male blooms; a variety of only third-rate merit.

4. *Incendie.*—A pleasing variety, of low and tufted habit of growth, producing medium-sized blooms of good form and substance, and of a dazzling light orange-scarlet shade of colour, which, however, unfortunately burns and tarnishes when exposed to the sun, which completely spoils the beauty of the blooms after they are a day or two expanded. This variety may not be thus affected when grown in pots for the greenhouse, where its great brilliancy of colour should make it an acquisition.

5. *Jules Janin.*—A really beautiful variety, with large and perfectly formed blooms, both male and female of a deep clear rose colour, resembling somewhat those of Diamant, sent out by the same raiser last year, but much deeper in shade and more perfect in shape. The foliage is of a peculiar glaucous metallic hue. This variety should be in every choice collection.

6. *Abondance.*—A compact-growing variety, producing medium-sized cup-shaped blooms of a dark claret colour, borne on slender perpendicular footstalks, well elevated above the foliage, and of about medium size.

7. *W. E. Gumbleton* (single) is an exceedingly fine variety, of stout and upright habit of growth, producing plentifully, on strong footstalks well raised above the foliage, most beautifully cupped blooms of the most brilliant shade of scarlet, somewhat resembling those of a small Tulip in shape. This is considered by M. Lemoine as the most distinct and beautiful variety he has yet sent out. During the latter part of the season all the blooms are male.

M. Fontaine's Six Varieties.

1. *Monsieur Bienaimé* is an upright growing variety, of exceedingly vigorous habit of growth, producing an abundance of fully sized handsome blooms, of the same colour as the old variety Intermedia, but of a deeper shade and larger size, and much greater substance. The female blooms, also, are unusually fine and perfect in form. Were it not that this fine variety unfortunately drops about half its male blooms in an unopened bud state during the earlier half of the season, it would be of quite first-class merit.

2. *Adolphine Fontaine.*—This is a very fine variety, but is curiously enough identical in every way save a slight variation in the foliage with Van Houtte's fine variety of 1875, Paul Masurel, and therefore need not be added to any collection already possessing that variety.

3. *Monsieur Pigny* is of compact and rather hard and stiff habit of growth, with dark hairy foliage, resembling that of Lemoine's Oriflame. Its flowers are of good size and substance, resembling in colour, but being a decided improvement in shape on, those of Lemoine's C. Glijm. They are somewhat sparingly produced.

4. *Exposition de Sceaux* is a most beautiful variety of erect growing and free blooming habit, producing extra large and most beautifully cupped male blooms of a lovely shade of deep and intense rose colour, closely resembling Van Houtte's fine variety of 1874, Charles Raes, in shade, but of infinitely finer form and substance. The female blooms, also, are quite exceptionally fine. This is unquestionably one of the finest Begonias that has yet been raised, and when distributed should be in every choice collection.

5. *Lælia* is also an exceedingly beautiful variety, in habit of growth and fine form and substance of its male blooms somewhat resembling the last-named variety, though the blooms are not quite so fully cupped in shape. The colour is a most lovely deep shade of crimson, somewhat resembling Veitch's Kallista, but of infinitely finer form and substance. It is also an exceedingly free bloomer, and should be in every choice collection.

6. *Hebé.*—This variety is considered by its raiser to be one of his finest hybrids, but unfortunately it did not make any healthy growth till late in the season, so that I was unable adequately to form an opinion as to the real merits of the variety. The blooms, as far as I could judge, are light red, resembling Vesuvius in shade, and of excellent shape and substance.

M. J. B. A. Deleuil's Four Varieties.

1. *Carnicolor* is a variety of close-growing tufty habit, with most distinct and ornamental foliage, scimitar-shaped, and curiously crimped at the edges, and producing blooms which are almost white when they first appear, but which afterwards turn to a deep nankin outside, and a clear flesh colour within; the male blooms are of large size, but rather thin in substance. This variety is only suited for pot culture in the house, for when grown in the open air all the male blooms drop in an unopened bud state, which does not happen when grown under glass. This is an exceedingly distinct variety, being, with the exception of Van Houtte's President Schlachter, the only one yet sent out of this peculiar shade of colour.

2. *Violetta* is a variety of medium height, and somewhat glaucous foliage, producing on tall and somewhat weak footstalks fairly-sized blooms, rather thin in substance and poor in form, but of a pleasing and novel shade of rosy violet; a variety of about second-class merit.

3. *Cléopatre.*—A variety of spreading and branching habit of growth, with large flowers of a light red colour, of good shape, but not much substance. The female blooms of this variety are a good deal above average merit.

4. *Bayard.*—A fine variety of medium height of growth, producing large and well-formed blooms on rather pendulous footstalks, the exterior of which in shade resembles that of Veitch's fine variety Acme, the interior

being of a lighter orange shade. The female blooms are also good.

M. J. Vincent's One Variety.

Reine de Bougival. — An exceedingly floriferous variety, of quite a novel and most acceptable shade of colour, the blossoms, which are of an oblong cupped shape, being clear cream colour within, the outer middle petals being of a light red. This is admirably suited for the centre of a bed from its upright habit of growth, and the fine contrast it forms to nearly all other varieties. *W. E. Gumbleton.*

TOMATO AND CUCUMBER PRESERVES.

It being an acknowledged fact that our stock of hardy fruits is very small this season, housewives who are old-fashioned enough to prefer home-made preserves are getting anxious as to the possibility of filling up the shelves of the store closet with something approximating to the ordinary quantity of *confitures*. Pumpkin and Vegetable Marrow have been already strongly recommended in the columns of the *Gardeners' Chronicle*, as forming the foundation of a cheap and wholesome jam, and, in the view of the dearth of hardy fruits and superabundance of certain kitchen garden crops, we suggest two other vegetables, which make excellent preserve—Cucumbers and green Tomatos. Although we cannot extol these preparations to the extent of comparing them to confections of rich luscious Plums, or ripe juicy Apples, they are wholesome and palatable, and an excellent and economical substitute, in seasons of scarcity.

Without entering into a discussion as to the merits or demerits of the British, as compared to the Continental *cuisine*, it will, we think, be readily admitted that we are somewhat restricted in our ideas as to the value of various preparations of cheap and homely dainties in the way of vegetable diet, and, once having exhausted the commonly received and well known recipes for boiling or pickling ordinary kitchen garden crops, it is but seldom, even though blessed with a superfluity of two or three sorts, that any novel methods of utilising or preparing them are considered. Thus, while other nations, more especially the French, waste nothing, we throw aside as refuse vast quantities of food which might, by artistic preparation, become dainty dishes. This autumn, which has given us such large quantities of Vegetable Marrows in the London market, has also supplied us with a superabundance of small Cucumbers; when remarkably low in price, as they have been this year, these fruits cut up and pickled are often substituted for the more delicately flavoured and more expensive Gherkin, as well as making an excellent pickle, they may be prepared as a pleasant sweetmeat, being not only grateful to the palate but exceedingly pretty as a dessert dish.

Cucumbers as jam might be preserved in a manner similar to that advised for a Vegetable Marrow in a recent number of this journal, save that moist sugar imparts a coarse rough taste; pounded loaf sugar should always be employed in preserves—the very trifling extra expense is fully repaid by the superiority of flavour.

The following method of preparation is excellent although somewhat elaborate; it is as applicable to Melons as to Gherkins or Cucumbers. Take green fresh Cucumbers, free from seed, place them in a jar of strong salt and water, with Vine leaves on the top, set them by the fireside until they are yellow, then wash and place the Cucumbers in a pan of water in which a little alum has been dissolved, cover with Vine leaves, boil until tender. When taken off the fire they must be allowed to stand in the liquor until cold; they should then be quartered or cut in rounds about an inch in thickness, all the seeds being scooped out. The Cucumbers should then be placed in cold spring water for twenty-four hours, changing the water twice. The syrup in which the Cucumbers are to be boiled should be prepared in the following manner:—To each pound of loaf-sugar half an ounce of bruised ginger, with as much water as will wet it; boil, and when free from scum, but still boiling, put in the rind and juice of a lemon. When quite cold, pour the syrup over the Cucumbers, having previously drained the latter from the cold water. A spoonful of rum gives the West India flavour, and when the fruit is to be served at the dessert-table the best crystallised white sugar should be powdered over the fruit in the dish. One ounce of powdered alum is sufficient for a dozen Melons or Cucumbers. The Vine leaves may be used or not according to taste.

The present has, we fear, been a disastrous season for outdoor crops of Tomatos, and there are no doubt a far greater number of half-grown green fruits than of full-sized ripe ones, in the majority of kitchen gardens. Under these circumstances many persons will be glad to learn that green Tomatos make very good jam, so good indeed that we heard it extolled as equal to Green Gage. Without saying quite so much in its favour, we may truly vouch that it is a very tasty preserve, more distinctive in flavour, more wholesome and more economical than the manufacturers' jams, now so commonly used.

The Tomatos should be gathered when quite dry, and placed in the preserving pan with an equal quantity, weight for weight, of pounded loaf-sugar; sufficient lemon-juice must be added to give piquancy to the flavour, as the Tomatos alone would be flat. Ginger may also be added, and some blanched kernels of Plums or Peaches not forgotten; these latter add much to the palatableness of the jam, and give it the appearance, as well as the flavour, of Green Gages. *J. F.*

OAK GALLS.

Having had opportunity during the last year of observing the different galls on the Oaks in the neighbourhood of Isleworth a note of the species found there (within 9 miles of London, and in some degree within the influence of its smoke), compared with those of West Gloucestershire, near Chepstow, may possibly be of some interest to those fond of the study of gall localities and peculiarities of growth. As the synonyms are sometimes numerous, and there may sometimes be doubt which name is commonly adopted, I have endeavoured to give a short description as well as the English name where possible, that there might be no uncertainty as to the species intended.

Round Isleworth the common round marble gall of Aphilothrix lignicola appeared plentifully with great variety of size; the Artichoke gall of A. gemmæ was moderately plentiful, but not healthily developed. This gall is easily distinguishable by its overlapping leaf-like growth, giving it an almost exact resemblance to a miniature Artichoke growing in the axils of the leaves, and in all the specimens I have seen last year the oval central cell containing the future insect has been only partially developed or else absent, that is, never formed.

Of the root-gall of A. radicis I have only seen a few specimens. Where this gall thrives it may be found as an irregularly shaped, spongy, or woody mass (according to its age), formed inside of an aggregation of cells, and growing at the ground level on the rough bark of Oak roots, often close to the tree, and attaining the size of a large Walnut in its husk, or more, but the specimens growing here have been all small and stunted.

The "woolly gall" (Andricus ramuli), which catches the eye from its resemblance to a little bunch of cotton-wool or sheep's-wool, fixed in the axil of a leaf, has appeared sparingly, but Andricus curvator has been plentiful. In this case the gall appears externally merely as a portion of the leaf-vein swelled out of all shape, whilst inside is a cavity containing a very small brown oval cell, adhering only by a slight attachment at one point to the side of the hollow chamber, and enclosing within it the future insect. There were also a very few specimens of Andricus quadrilineatus, a small green oval gall, longitudinally lobed, sparingly distributed on the hanging inflorescence.

The Currant-gall, Spathegaster baccarum, has been fairly plentiful and finely developed, but more so in the variety affecting the leaves than that of the elegant and brightly coloured Currant-like bunches on the pendent inflorescence, from which it takes its name.

The common Oak-apple (Teras terminalis) has also been moderately plentiful and well grown.

Of Cynips longiventris there have been a very few galls, whilst the rare kind of C. ferruginea (a small form, somewhat resembling a hardened and pointed leaf-bud) has only been represented by two or three specimens, as well as C. noduli, an external cell formed in the spray, of which the external indications are so slight as almost to require the aid of a glass to discover them.

Cynips Burgundus, or a species affecting the terminal buds almost similarly, with distorted form of mixed buds and stipule-like growths, afforded a good many specimens in one locality from some felled trees.

Dryophanta divisa (?) gave a few of its roundish leaf-galls, and of Neuroterus there was a good supply of the species N. Malpighii, producing the common "leaf spangle." Of N. ostreus, producing the small round gall from the leaf-veins, protected in its early stages by a scale or two, bearing a fanciful resemblance to an oyster-shell, there were only a very few stunted and unhealthy specimens of growths on one or two leaves.

Taken together these give fifteen species, to which possibly a few might be added (still undetermined from peculiarities of development, or requiring the insect also to distinguish them from others resembling them in form); probably, also, there are several other species not observed yet which another season's observation may show, as several of the common kinds are missing from the list, and more especially some of those requiring the damp surroundings chiefly to be found in the thick woods either not existing, or practically closed for research in such near neighbourhoods to London.

In the Gloucestershire district, on the contrary, the moisture of the air between the Severn and Wye near their confluence, with the peculiarly thick undergrowths of the Oak woods of those parts (where Hazel and coppice, mixed with Bramble and climbing plants, often form a mass impenetrable without the help of a bill-hook) and also the quantity of herbage which in completely rural districts may be left untouched in nooks and stray patches (very differently from what must necessarily be the case in the vicinity of London), are all favourable to the growth of moisture-loving galls. Of the species present near Isleworth only the galls of Cynips ferruginea, nodule, and Burgundus (all of them affecting parts of the tree well-exposed to the air) were absent in Gloucestershire, whilst on the other hand the galls of Andricus inflator, Biorhyza aptera, Trigonaspis megaptera, Spathegaster tricolor, and the large (frequently found) rosy or green round gall of Cynips folii, found on the leaves in autumn, all (as far as this season's observations go) missing near Isleworth, were well represented in the district near Chepstow.

Of these the gall of A. inflator (which appears merely like a shoot whose growth has been stunted into a sort of barrel-shaped lump beset with buds), is to be found only, as far as I am aware, on the upper shoots of the Oak, and the B. aptera (of irregular shaped knobs of various sizes), being subterranean in its growth on the root fibres, can only occasionally be met with, but the round pink or light coloured leaf gall of Spathegaster tricolor, noticeable from the long feeble hairs scattered over the surface, only occurred in damp coppices or on spray overhanging ditches; and the rosy-tinted gall of T. megaptera might be found year after year half buried in moss, growing almost at the ground level on the bark of Oaks by a wood-road often almost an impassable slough.

Other galls appeared also especially to flourish in damp situations; the marble galls grew with a luxuriance I have never seen equalled except in a locality where the bush bearing them was immediately above a stream, the galls covered by leaves; and the A. radicis also throve remarkably and attained a good size on the Oak roots spreading amongst grass or in damp stagnant situations. The single-celled form of gall of this insect (A. radicis) was still more plentiful in the district, sometimes appearing with the compound one on the rough bark of the roots just free of the ground but chiefly in any new growth of bark. Where an arm had been lopped or bark injured by accident these single-celled galls might be found (looking like a tooth with convex top and a single fang) well buried in the soft growths, and in older bark the perforations on the surface showing the broken top of the cells after the escape of the insect) were innumerable, sometimes extending for several feet along an injured bough or the bark of an exposed root.

Of what I believe to be the rare gall of the Aphilothrix corticis I once found a few specimens growing on the bark of an Oak just above the ground level, but the insect not being procurable I could only judge by the peculiar form of the gall itself.

A few other species of galls also existed in the district, and several peculiar growths which (from subsequent observation) might, I believe, have proved in the hands of those well versed in the subject to be galls of some of the rarer species, but from the limited means of ascertaining the names of the various kinds

that I then possessed some of these escaped me, and the most interesting still remain to be determined, if possible, by rearing from a similar gall found in the neighbourhood of Isleworth. *O.*

LOVE'S MOSS DRAINER.

A public trial of Love's Moss Draining Machine took place a few days ago on Chat Moss, in the presence of a large number of gentlemen especially interested in the draining of bog and moss land. The weather was extremely favourable for the trial. The following is a description of the work performed:—The length of drains excavated was 150 yards each, which was performed in seven and a-half minutes, and the raising up, running back idle, and lowering again into work took four and a-half minutes, making a total of twelve minutes for excavating a drain 150 yards long, being at the rate of 3 miles per day of eight working hours. The drains were cut out at 32 inches below the surface. The bore or tunnel was intended to be 8 inches in diameter, but was only a little above 5 inches, owing to the fact of the excavating auger being driven at too low a speed for the progress of the machine, and which can be deepened as the speed is increased. The material excavated is forced up through the body of the machine in a continuous stream of fine pulp 2 inches deep and 13 inches wide, and the slit made by the machine closes in so neatly that the line of drain could scarcely be traced were it not for the line of pulp left along the surface. Specimens of the pulp dried into fuel, that were cast in a mould 8 by 5 by 3 inches, equal to 120 cubic inches, when quite air-dried were only $4\frac{7}{8}$ by $2\frac{3}{8}$ by $1\frac{1}{4}$ inches, equal to $14\frac{1}{2}$ cubic inches, showing a shrinkage of $87\frac{1}{2}$ per cent. The loss in weight by the evaporation of water was 85 per cent. This dense peat weighs 57 lb. per cubic foot, and is as hard as coal. This fact would demonstrate that the 32 feet in depth, which this part of Chat Moss is, would yield 4 feet deep of this dense fuel, or above 4350 tons per acre. This moss when dried in its normal state shrinks only 36 per cent., and weighs 13 lb. per cubic foot of peat. During the operations attention was directed to the decrease occasionally caused by the slipping of the driving rope, not having grip enough, through the pulley being only 2 feet in diameter. Wherever these slips occur the tunnel is imperfect. A drain was opened to show the defects arising from these slips of the driving rope, and from the auger running too slow for the progress of the machine. The present speed is 850 revolutions per minute. This will be increased to 1500, and the progress of the machine reduced so as to double the present excavating power. The power used was Hornsby's 8-horse power portable engine, 1500 yards of Manilla rope, and two windlasses, with 300 yards each of $\frac{1}{2}$-inch diameter steel wire rope. The distance from the engine when the machine was at the starting point was 900 yards, and the pressure of steam was never above 60 lb. The difference caused by increased depth is only about half-a-horse power per foot; the excavatings having to be raised the same height whether the depth be $4\frac{1}{2}$ feet or any less depth, the power required to drive the excavating and elevating gear are always the same. The principle of the machine was pronounced a success, which the rearrangement of some of its details would render complete.

THE CULTIVATION OF THE ROSE.*

(*Concluded from p. 427.*)

Soil and Situation.

It is generally agreed by growers that a strong, stiff loam is the most suitable for successful Rose cultivation. Such a soil, resting on a well-drained foundation, the Rose perfectly luxuriates in, if other essential wants are at the same time supplied, the chief requirement being a genial situation—that is, a sunny opening, if possible, sloping gently to the south, protected from winds and draughts from all quarters—in short, neither windy nor shaded, neither dry above nor damp below. A proper situation is of more importance than manures, soil, or anything else required. To prove this assertion, I may mention what I have been a witness to in various parts of the country. First, the old favourite Rose Cloth of Gold is well-known to be difficult to flower satisfactorily, even where other tender Roses do very well. Some years ago I saw Cloth of Gold hiding a large portion of a south wall with its glorious massive blossoms, in a garden called Clotfolach, in Strath Tay; such a sight I never saw before or since produced by this noble Rose. The soil all along Strath Tay is remarkably light, consisting of rotten rock in the main, showing alluvial deposit to some extent, and a large proportion of sand, intermixed with shining mica. Contrasting with the inland situation of this strath, and very much in its climate, I shall next instance Sutherlandshire. At Golspie, near Dunrobin Castle, the Rose prospers amazingly. Here, with the sea close at hand, may be found the most splendid examples of our popular H.P. and Teas in particular. Every nook and corner about Golspie has its Rose blossoms in profusion. One plant in particular I noted—a Gloire de Dijon, trained on a house-front measuring 21 feet by 20, a space completely covered by well trained growths, which were one mass of most magnificent blossoms from top to bottom. There must have been many hundreds of open and half-open blossoms on it when I saw it. In the gardens of Dunrobin the Roses were almost as beautiful as the fountain basins of Nymphæa alba, which leave their impression on the memory of every visitor when seen in flower. The soil in this district is of a comparatively light nature, being much mixed up with sand and large particles of grey granite.

Preparation of the Ground.

Supposing one is about to prepare a bed or border for Roses where the soil happens to be "stiffish loam," we think it would be bad judgment to apply as manure any compound of an adhesive description; for such soil the manure ought to have a contrary tendency, and at the same time unite the necessary stimulating element — such substances as stable-manure, sand, leaf-mould, and lime rubbish incorporated, and allowed to remain for some months before using. On the other hand, for soil naturally poor and light, the compound may be compose of cow-dung, old night-soil, and fresh stiff loam containing as much fibre as possible. These, with a liberal supply of urine laid in a heap for a time, make a splendid manure for Roses when grown on light ground. In any soil the Rose is a greedy feeder, and demands annual manuring.

In making a Rose garden, if the subsoil be at all stiff and retentive of water, it ought first to be properly drained, conveying the water to some distance by a main drain. Should the subsoil be sandy and gravelly, and drainage already exist—unless, as sometimes happen, springs exist which require to be drawn off artificially, and thus prevented from over-sopping the soil, in which case after draining and allowing time to draw off the superfluous damp—the ground may be well trenched, depositing at the bottom of the trench a good store of prepared compost, besides mixing the overlying body of soil with goodly portions of the same material; as the trenching process goes on, heap the surface into deep rough ridges, and leave it in that state all the winter, that it may be properly pulverised by the united action of frost, wind, and rain. Again, in March previous to planting let the ground be partially trenched, after a top-dressing of wood-ashes or burned clay should it be adhesive. Top-dress the light soil with the compost recommended as a suitable manure for its kind. The ground is now in readiness to receive the plants. Planting may be proceeded with; and as to the distance to place one plant from the other in the rows that depends much upon the vigour or delicate nature of the respective kinds—some require 15 or less inches between, others as much as 3 feet. The habit of the plant should be understood as nearly as possible before its situation in the bed is fixed.

Pruning.

I believe most of us have much to learn as regards pruning Roses, scarcely a dozen kinds are alike in vigour or require the same amount of pruning. Out of a collection some are improved by close pruning, others flourish best with scarcely any. The rule ought to be to cut weak growers more closely back than vigorous ones; for instance, Tea Roses, Bourbons, Chinese, and Noisettes, all suffer by too close pruning; and, on the other hand, many of the Hybrid Perpetuals are improved by close pruning. By practice alone we can judge how best to use the knife; however, this ought at all times to be conducted with an eye to the regularity of form and the natural habit of the variety acted upon.

The proper time to prune is rather a disputed subject. Some prefer the autumn, but I think the majority—and rightly, too—advocate spring pruning. In ordinary seasons I consider the beginning of March quite soon enough, and, indeed, too soon in such a season as this. The Rose suffers much by late spring frosts, and even the blighting winds of early spring when there is no frost. Further, regarding late pruning, a number of years ago, when I was in the Highlands, I had in charge a number of very old, large, and fine standard Roses studding the flower garden. Unfortunately, the season of Roses was always past before the family came there to reside. Those standards were pruned back somewhat in early March along with the early Roses, and all commenced an early and rapid growth, which induced me to experiment a bit. With the object of having those standards come into bloom in the middle of August, instead of July, I had them all pruned back to dormant eyes in the hard wood in the latter end of April. For some time succeeding they looked very scrubby beside those at their feet covered with promising shoots, but, ultimately, I was well repaid for my experiment, for we had quantities of grand Roses in August and September that year from these giant standard heads.

Disbudding.

This is most important if pursued systematically both in the blooms and wood-buds, which in the latter in no small degree obviates the removal of what would subsequently form hurtful growth. Disbudding ought to be conducted with an eye to a symmetrical outline in the plant, thinning out all that are likely to prove useless, and preventing the free action of air and light throughout the body of the plant, which is essential to health, cleanliness, and proper ripening of the wood. Very rank growths ought to be removed when first discovered amongst others, seeing their tendency is to rob them of their share of sap, making them thin and weak, if not worthless, besides spoiling order and regularity of plant.

Pegging down the shoots of dwarf Roses, more especially when growing on their own roots, is a vast improvement to the usual mode of conducting growth. This I experienced some years ago. For the sake of experiment I had a large bed, which centred a portion of a flower garden, planted with sixty of our most popular H.P.'s and some of the hardiest Tea Roses. This bed was trenched 4 feet deep early in March, and highly enriched by turf and stable manure; indeed, in a similar way to that in which one would prepare soil for bench potting. The Roses were then and there planted partially on their sides, the more to facilitate the layering; very little was taken from the length of the previous year's growth, a mulching of short horse manure was spread over the bed, and the shoots were pegged down over the dressing, distributing the growths in such a way as to insure the most regularity over the bed. In all respects this resulted in a perfect success, the Roses were both abundant and good, indeed some of them prize-winners, and the bed was entirely covered with young growth. In the March following the required shoots were layered, and what were not wanted were cut clean away without attempting spurring on that bed.

Insects and Mildew.

These are very destructive, at times defying all our efforts to exterminate them without sacrificing the plants also. Soapsuds form, perhaps, the best remedy against insects and mildew. I have found a constant application of soft-soap dissolved in water (at the rate of a piece of soap the size of a hen's egg to a 3-gallon can of water) act effectually and prove beneficial to the growth of the plants. This I have experienced with pot Roses in particular.

In monstrous growths in Roses, the pistils are developed into leaves in some instances, and in others Rose petals, along with imperfect buds of Roses clustered into a confused mass. The stamens invariably retain their natural character, or are transformed into flower-petals. This is the effect or result of some influence difficult to understand, which it should be our purpose to discover, and, if possible, prevent. In my opinion, the cause of those monstrosities is attributable to the roots being placed on a cold, damp bottom. The plant is excited into growth by the returning heat in the atmosphere after a lengthened state of inactivity; therefore, its tendency is to grow, but the absence of sufficient sunlight and heat prevents the perfect elaboration of its sap.

* Read at a Meeting of the Scottish Horticultural Association, by Mr. A. Kerr.

I am informed by a gentleman, Mr. Scott, of Philadelphia, who has been an extensive cultivator of the Rose, both in and out-doors, for the Philadelphia market for the past thirty years, that he never once saw a green-centred Rose in America during all those years; and he was astonished, on visiting this country this summer, to witness so many existing amongst the very Roses he has been accustomed to grow in America. One thing I feel convinced of—that is, although America is subject to rigorous frosts and long winters, that country has likewise the advantage in heat over a great portion of the year, the effect of which on the Rose will be to ripen root and branch to perfection prior to the occurrence of frost. Further, an American spring is very different to ours—no periods of alternate warmth and biting winds and rains. Spring opens there with sharp frosts at night, but the days are bright and warm, and thus spring grows into summer without alternate checks to vegetation.

I have already entered at some length into the mode of striking cuttings from ripe shoots; let us note what may be accomplished by means of cuttings while they are yet green. These are in a more active state of growth, and when properly handled root quickly, but they must be put into bottom-heat and kept rather moist at the root. These half-ripened shoots are prepared for insertion in a similar manner to other Rose cuttings. Pans or pots should be used to root them in, and the soil may be composed of two parts light loam, two parts sand, and one part leaf-mould, not too much reduced by age. The cuttings are inserted at regular distances around the edge of the pots, then the central portion filled with the tallest of the cuttings. After pressing the soil firmly to them the operation is completed by scattering a handful of sand amongst the cuttings. Store them away in a shaded corner in a cool house, placing a bell-glass over each pot to prevent the waste of moisture from the soil, and at the same time to exclude air. Allow them to continue thus situated for about three weeks, by which time they will be in a proper state to be put into heat to root.

I have practised another method with fair success. This applies to prunings taken from old forced Roses in November. These prunings were treated exactly similar to those last described; but, instead of being put under glasses, they were shelved into an intermediate house used for bulb forcing, and stood facing the sun until the succeeding spring, when that aspect became too hot for them, and necessitated their removal to cooler quarters. A number of these cuttings bore moderately large blossoms in the latter end of the succeeding summer, so well did that plan succeed.

NOTES ON SOUTH-EAST AFRICAN VEGETATION.*

When travelling in a strange country, totally free from the biassing opinions of fellow beings, and dwelling continually with Nature herself, we have the opportunity of comparing the country as it really exists, with the imaginary one brought into existence through the perusal of works by descriptive writers, travellers, &c. Without intending to cast a slur on any fellow wanderer, there is not the least doubt that travellers, after having left the country of their sojourn, and returned to the land of their birth, often fall into the error of improving the bright side of what they beheld, and lessening the drawbacks and difficulties of the country through which they travelled. No doubt this is owing to the natural buoyancy of men's minds, and to the fact that whilst past pleasures increase in brightness, bygone troubles lose nearly all their terrors. As a rule, with few exceptions, I have been disappointed in my preconceived ideas of countries, and, judging from fellow travellers with whom I have come in contact in this country, I am not the only victim to lofty imaginations. The luxuriantly clad island of Ceylon, the teeming valleys of Sikkim, the majestic snow-clad peaks of the Himalayas, the island-studded and extensive harbour of Port Jackson, the Fern valleys of Illawara and a few other places, not only came up to my preconceived notions, but far surpassed all expectations. Still, on the whole, disappointment has been my lot, and especially with Natal and the Transvaal.

On looking at an enlarged map of S.E. Africa, and taking into consideration the numerous rivers and mountains, the latitude and altitude, the mind would at once, independently of descriptive books, picture in imagination a country with the valleys and river banks clad with forest and bush, and the grassy plains inhabited more or less by all sorts of African game—a country exceedingly fertile, not possessing the impenetrable jungle and forest of India and South America, but resembling to a certain extent Australia, with its grassy plains and continual belts of timber. But, alas! in spite of the glorious accounts given of Natal and the Transvaal, it is not so. After leaving the coast land it is possible to travel on to Leydenburg, a distance of over 500 miles, without seeing a plant worthy of the name "tree;" and from the frontier of Natal to Leydenburg it is possible not to see a bush. Of course a few introduced plants, as Eucalyptus globulus, fruit trees, &c., are not included in these remarks. And as for game, the whole distance can be travelled without seeing a four-footed beast, except at Lake Chrissie, in New Scotland. Undulating hills and extensive plains, covered with coarse grass, and made beautiful with the gorgeous blossoms of innumerable bulbs, often relieved by lovely herbaceous and diminutive plants, are the natural features of the highlands of S.E. Africa; forest and bush, which nearly always consists of Acacia, being the exception. The fact that the Transvaal, Free State, and Natal (except the coast lands), are devoid, as a rule, of arborescent and fruticose growth, is to me perplexing and unaccountable. The alluvial is rich and often deep, water is plentiful, altitude various, latitude suitable; in fact, all that is required, as far as my present knowledge goes, to develope and sustain the higher organisms of the vegetable kingdom.

The country from Durban to Newcastle, as seen from the main road, consists of a series of undulations, varied here and there by small and picturesque plateaux of slight elevation, which give to various parts a broken and rough aspect. The plateaux and hillsides are for the most part covered with a superficial conglomerate layer, often containing immense boulders, which although useful for building cattle kraals, walls and houses, greatly add to the drawbacks of agriculture. Fuel is scarce, and dried cowdung is generally used as a substitute. Rivers are numerous, and the whole country well supplied with water. In the uplands of Natal these rivers can be profitably utilised for irrigation purposes by bringing them over races and shoots, as they are very rapid, and have considerable fall. At Newcastle a vast amount of coal has been discovered, but owing to the difficulties of transport and want of railways it is of but little utility at present. The coal is wonderfully light, and produces a very white ash; it does not seem to possess sufficient body in it to be used for locomotive purposes.

In crossing the Drakensberg mountains from Newcastle to the Sandiprint River in the Transvaal, the country is indeed rough, with plenty of beautiful mountain scenery, but destitute of that which gives a charm to all scenes—forest and bush. To the weary traveller any change is welcome, and so it was with us. After the treeless and bushless hills of Natal we felt a slight relief in winding our weary way across the broken and grassy plains of the Transvaal, anxiously looking out for vegetation, but always disappointed. A rolling plain, a precipitous plateau, and winding rivers, with uninterrupted views, certainly possess an amount of beauty, but when the same class of scenery is traversed for hundreds of miles without a bush to enliven the prospect, it becomes monotonous and gloomy to the lover of forest shade. After leaving the rising town of Leydenburg and moving to the North, the welcome sight of trees broke on our view. At first they were small, scraggy, and scattered, afterwards, as we journeyed to the northwards, they became larger, and then we beheld the ravines and gullies teeming with innumerable shrubs, climbers, and Ferns. The scenery on these mountains, known here as the Hooge Veld Range, is truly grand and imposing, possessing all that is requisite for the location of man, and the production of European crops and fruits. The altitude of several peaks is over 7000 feet above the level of the sea, the sides sloping down into deep ravines and broad fertile valleys, all traversed by well supplied creeks and rivers. The Speckboom, Blyde, Crocodile, and Sabia Rivers, are the principal watercourses in this district, all which eventually empty into the Indian Ocean at Delagoa Bay, which is S.E. from here.

The Transvaal is undoubtedly a valuable acquisition to the British Empire, especially as regards its mineral wealth; but as a colony for the settlement of agriculturists I should certainly rank it as one of the last places in the British colonies. The difficulties of exporting produce, in possessing no seaboard and no means of inland transport, the scarcity of timber, want of fuel, uncertainty of demand, horse sickness, cattle disease, and extreme climatic tendencies, all tend to the non-development of agriculture in the Transvaal. In some districts it is certain death to horses during the summer months. Losing three horses myself through this horrible sickness, I took an interest in finding out the why and wherefore of the disease. Every night, and especially towards morning, a dense mist, combined with an obnoxious miasma arising from the ground, covers the hillsides and fills the valleys; this mist literally soaks the scanty vegetation, so much so that it takes several hours of the sun's absorbing rays to restore it to its proper nature. I was given to understand by old and experienced travellers that if I prevented the horses from partaking of this dew-besodden herbage in all probability they would escape the fatal sickness; I therefore took the precaution to fasten them to the wheels of my cart every night on camping, and not to allow them to feed until the sun had banished the dew from the grass; but alas! all was in vain, for one by one they all fell victims to the disease. Through this I came to the conclusion that the disease was generated by inhaling the obnoxious miasma, and not through eating the damp herbage. Stabling the horses every evening has been partly successful, but even there the miasma carries its deadly effects. Donkeys are proof against this malady; in fact they are proof against all the various diseases of S.E. Africa, except the "tsetse" fly, whose bite is fatal to all domestic animals. Eight days after the horse has become infected by the miasma malady, rapid breathing and extended heaving of the sides, with running at the nostrils, and swollen head sets in, and after a few hours of excruciating agony the poor brute dies.

The part of the Transvaal through which I travelled on reaching this spot from Leydenburg is as lovely a country as man would wish to settle in; cattle and sheep thrive admirably, temperate and subtropical fruits, tobacco, and all European crops would flourish in abundance, timber is plentiful, no lack of water, and no doubt an abundance of mineral wealth, for in this district the goldfields of South Africa exist. The only drawback being as to how the produce is to reach the seaports, and how the imports—sugar, tea, clothing, &c.—are to reach the settler. The present means of transport are by oxen and waggons to Durban, over 600 miles, which, of course, takes away the profits of the cultivator, and brings to a fabulous price the imported articles of consumption. It is only 150 miles from Leydenburg to Delagoa Bay, but the fever and "tsetse" fly prevent transport in that direction.

The fever and "tsetse" fly appear to go hand-in-hand, in fact to be the effects of the same cause, and have up to the present time prevented the rich jungles of the coastland north of Delagoa Bay from being explored, especially botanically. The fly prevents all means of transport by animals, and the fever for eight months out of twelve debars the European the pleasure of traversing the swampy forests during the time when Nature displays her floral beauties. From November to June it is almost certain death to descend into the lowlands towards Inhambane, Delagoa Bay, and St. Lucia Bay. The range of the "tsetse" fly commences north of St. Lucia's Lake in the Amatonga country, runs N.W. and crosses the Umzuti River to the foot of the Loobombo Mountains, skirting the foot of these mountains, north to the Sabia River, then in a N.W. direction to the Olifant River, and on to the Limpopo River, keeps to the south of this river as far up as the 28° E. longitude, crosses the river and comes back for a considerable distance on the north side, eventually striking north to the valley of the Zambesi River. Within these limits the domestic animals cease to live, and as a rule they form the boundary line of the fever-stricken district. *Chris. Mudd.*

* Communicated by Messrs Veitch & Sons, of Chelsea.

THE WOOLHOPE MENU.

For such of our readers as may not be so deeply versed in fungi as we the members of the Woolhope Club, we append a brief explanation of the allusions to be found in the pictorial border of the *menu* card. Beginning at the top, the pleasant faces seen in the "edible" fungi, and the dolorous mementos manifest in the "poisonous" ones, explain themselves. The former are suitable for frying, and "Fries" is the greatest living authority on fungi; the latter cause unpleasant symptoms and pain us—"Panus" is a genus of fungi; the pill-box, pill and medicine-bottle, are represented by the genus of fungi named

"Pilobolus." Mr. Berkeley in the top centre is being attacked by a starry Puff-ball (a species of vegetable octopus), and his exclamation of affright naturally takes the form of another genus of fungi named "Odontia." It will be observed that Mr. Berkeley, who is applying "Salus" to the nose of the monster (a material "no fungus can withstand") has let fall his *Outlines of Fun-gology*. The bottle of "Currey" on the left immortalises Mr. Fredk. Currey, the famous fungologist. "Kneiffia" underneath is a genus of fungi, and "Forkia" is a genus shortly to be established. The cuneiform inscription indicates the character of the fungoid octopus and the Colorado beetle at Hereford. The porcine quadruped on the left points to Dr. Robert Hogg, who has published a book on fungi, and the inscription "Non Sow.!" indicates that he is not to be confounded with Sowerby. The umbrella handle and great knife on the left always appear at the Hereford meetings: they belong to Mr. Plowright, the famous surgeon and fungologist of King's Lynn. The wine bottle bears the name of the renowned wine merchants of Rood Lane, who supply so many fungus eaters with their (as pronounced after dinner) "Sphæria champign." Sphæria is an immense genus of fungi, and "champign" is Champignon with its tail off. On the right we have Dr. Bull, the physician of Hereford, supporting "Cornu" (Latin for Dr. Bull's Horn of Plenty). M. Max Cornu, of Paris, is one of the highest living authorities on fungi, and was a guest at Hereford. The chains and ropes ornamenting the bovine nose indicate the power and irrepressible energy of Dr. Bull. Leveille is the name of a great fungus author, and refers at the same time to the "veal" which at an early period clothes the bones of all oxen. "Magnus" refers to Dr. Magnus, of Berlin, the fungologist. The greatness of this author's name has expelled the cork from the bottle. "Bad-ham," on the dried pig's leg, refers to Dr. Badham, who wrote the *Esculent Funguses of England*; whilst the mole hanging head downwards indicates the miserable condition of Mr. Lee's "molar theory," which referred the formation of fairy rings to the underground gyrations of the mole. "Hygrophorus" (the Water Bearer) is the name of a large genus of watery fungi; and the "Myxomycetes" are a large group of fungi now attracting peculiar attention. Phallus is a genus of fungi, which does service here in indicating that there is "no fallacy" as to the quality of the wine consumed. Some fungi bear spiral cork-screw-like springs for use in dispersing the spores; the springs are named "elaters," therefore the cork-screw figured is in more senses than one an "elator." The bottle of cider on the left and Agaricus cidar-is are synonymous, and "Du-Port" on the right is the name of an excellent fungoid clergyman from Norfolk who attended the Hereford meeting. Arriving now at the bottom we have "Tode," a writer on Mushrooms, together with a figure of Boletus edulis beheaded. Hussey, Broome, Cooke and Curtis are all renowned fungologists—Hussey and Cooke are in conflict, the latter has just thrown a rolling-pin (Clavaria—a genus of fungi) at the latter, and is now in the act of discharging a basin of batter (Batarrea—another genus of fungi) at her opponent. The cook's name is Psalliota, a sub-genus of fungi, the hussy's name Polyporus, a large genus of the same class of plants. C.E.B., M.A., on the hussy's weapon, point to the name and degree of Mr. Broome, the fungologist. "Sparassis" is an important genus of fungi, which is here giving a hint to the combatants as to how to proceed when their artificial weapons are no longer available. "Crucibulum" is the name of a large genus of fungi, and means a saucepan: the "Batch" inside is the name of a great fungus author. "Flammula"—a little flame — is a subgenus of fungi; and "Fries Epi-crisis" (the fat-in-the-fire) is the name of the best text-book of fungi in existence. The nature of the Woolhope ketchup, or "cats-up," was fully described in the *Gardeners' Chronicle* last year. As a matter of fact the word "Poissons" (fish) was misprinted "Poisons" by the printer; it was also overlooked by the revising editor, and appeared as "Poisons" on all the cards on the fungus dinner-table.

Fig. 90.—THE WOOLHOPE CLUB MENU.

ON THE SEDUMS OF THE RUPESTRE GROUP.

(*Concluded from p. 307.*)

4. *S. reflexum*, Linn. Sp. Plant., edit. ii., p. 618; Smith, Engl. Bot., t. 695; 3 edit., t. 804; Engl. Flora, vol. ii, p. 320; Gren. and Godr. Fl. Franc., vol. i., p. 626; Koch, Synop. Germ., edit. ii., p. 228; *S. rupestre*, D.C., Plantes Grasses, t. 115; Reich. Fl. Excurs., No. 3546, in part.—Densely tufted. Stems trailing at the base, $\frac{1}{8}$ inch thick, producing copious sterile leafy branches 2—4 inches long, which bear at the top oblong rosettes of leaves 1 inch in diameter. Leaves glaucous, subulate, terete, mucronate, the outer ones spreading, $\frac{1}{2}$—$\frac{3}{8}$ inch long, $\frac{1}{12}$ inch broad, rounded on both faces and as thick as broad, arranged in six rows. Flowering stems $\frac{1}{2}$—$\frac{3}{4}$ foot high, bearing about 20 erecto-patent stouter leaves, which are distinctly spurred at the base, the lower ones $\frac{3}{4}$ inch long, $\frac{1}{6}$ inch broad, $\frac{1}{8}$ inch thick. Cymes dense-flowered, 2—3 inches in diameter, composed of about four dichotomously-forked scorpioid branches; lower flowers shortly pedicellate, upper sessile. Calyx glaucous, campanulate, $\frac{1}{2}$ inch in diameter, $\frac{1}{6}$ inch long; segments oblong-deltoid, twice as long as the tube, hollowed out rather in the centre. Expanded golden-yellow corolla $\frac{3}{4}$ inch in diameter; petals 5—7, lanceolate, $\frac{1}{4}$ inch long, channelled down the face. Filaments golden-yellow, nearly as long as the petals, pubescent at the base; anthers oblong, minute. Carpels as long as the filaments, narrowed gradually into a style nearly $\frac{1}{12}$ inch long.

The above description is taken from the large stout long-cultivated form of reflexum which one sees everywhere upon old thatched roofs and in cottage gardens, the plant figured as reflexum in English Botany and as rupestre by Redouté and De Candolle. There are numerous varieties of what I look upon as the same species in cultivation, of which the following are the principal. In characterising them I have been mainly guided by a set of unpublished coloured figures in the Kew collection of drawings which were made from specimens which flowered in Kew Gardens in the year 1828.

1. *S. collinum*, Willd. Enum. Hort. Berol. Suppl., p. 25, Wimm. and Grab. Fl. Siles., vol. i., p. 444. This is the robust bright-flowered form just described, the reflexum described by Willdenow in the place cited being S. virens. The S. collinum of Haworth differs from this by its pale yellow flowers.

2. *S. virens*, Willd. Sp. Plant, vol. ii., p. 764; Haworth, Syn. Succ., p. 116.—Rosettes 1 inch in diameter. Leaves not at all glaucous, but bright green from the beginning, $\frac{1}{2}$—$\frac{3}{8}$ inch long. Flowers as large as in collinum, bright yellow.

With us at Kew this maintains its bright green colour from year to year, grown side by side on the rockery with collinum and albescens. On the subject of the value of colour as a distinctive character in the plants of this group, those interested in the matter should read a paper by Grenier in the tenth volume of the *Bulletin* of the Botanical Society of France, pp. 253 to 257. This form is the S. reflexum of many authors, as Willd. *Enum. Hort. Berol.*, p. 25, Reich. *Flora Excursoria*, No. 3545, and *Ic. Crit.*, tab. 276, fig. 459, and Lloyd, *Flore de l'Ouest de France*, p. 177. An allied or identical form sent to Kew under the name of S. *Bouvetii* I have not seen yet in flower.

3. *S. albescens*, Haworth, Revis. Succ., p. 28; D.C. Prodr., vol. iii., p. 407; Gren. Fl. France, vol. i., p. 627; *S. glaucum*, Smith, Eng. Bot., tab. 2477; Engl. Flora, vol. ii., p. 321, not Waldst. and Kit.—A less robust form than collinum, with very glaucous leaves, the largest of those of the sterile rosette about $\frac{1}{2}$ inch long, and 1 line

in breadth and thickness, the dense cymes 1—2 inches broad, the nearly white calyx ¼ inch long, and the bright yellow corolla when expanded ½ inch in diameter.

This is the commonest wild form of the plant, indigenous in England on dry banks at Mildenhall, in Suffolk, whence it was sent by Mr. Eagle for the *English Botany* figure, and on rocks at Babbicombe, near Torquay. It is the plant figured as rupestre by Redouté in De Candolle's *Plantes Grasses*, tab. 116, and it is the wild Swedish plant which was called rupestre by Linnæus, and which is distributed under that name by Fries in his *Herbarium Normale.*

4. *S. minus*, Haworth; *S. reflexum*, Fl. Dan., t. 113.—The most slender variety of all, with small sterile rosettes, not more than ½ inch in diameter, glaucous leaves and bright yellow flowers not larger than those of rupestre.

5 *S. recurvatum*, Willd. Pl. Hort. Berol. Suppl., p. 25; Haworth, Rev. Succ., p. 28.—A dwarf form, near albescens with glaucous leaves and bright yellow flowers, the lower leaves of the rosettes recurved.

6. *S. septangulare*, Haworth, Syn. Succ., p. 116.—A form near albescens, with glaucous leaves, ½ inch long, in seven distinct rows, the outer ones of the rosette spreading and straight, bright yellow flowers in cymes 1—1½ inch broad.

Of this form we have lately received characteristic specimens from Mr. Ware.

7. *S. virescens*, Willd. Enum. Hort. Berol. Suppl., p. 25; Haworth, Revis. Succ., p. 29.—Habit and glaucous leaves of var. albescens, but petals pale sulphur-yellow.

Of this we have wild specimens in the Kew herbarium gathered by Desmoulins in the Pyrenees, on the Butte St. Justin near Barèges, at an elevation of 3500 feet. Haworth notices also a similar form with green leaves, which I have not seen.

8. *S. cristatum*, Schrad. Hort. Goett., tab. 10; *S. portlandicum*, Lobel. Icon. 380; *S. crassicaule* and *monstrosum*, Hort.—This is not a proper variety, but a monstrosity, with dilated, flattened, sterile shoots, thickly beset with reduced leaves about ¼ inch long.

Taking S. reflexum as a whole, it has been cultivated so much and so long, that it is difficult to ascertain its indigenous range. It is clearly a native of France, Italy, Germany, England, and Sweden. Willkomm and Lange can adduce no certain evidence for it in Spain, where rupestre abounds; but certainly northward, and probably also eastward, it overpasses the geographical bounds of that species: and these seem to be the only two out of the five European kinds that are wild in Central and Northern Europe, decidedly beyond the northern bounds of the Mediterranean region.

5. *S. anopetalum*, D.C., Fl. France, vol. vi., p. 526; Prodr., vol. iii., p. 408; Mem. Crassul., t. 8; Reich. Ic. Crit., vol. iii., tab. 266; Gren. Fl. France, vol. i., 627; Willk. and Lange, Prodr. Hisp., vol. iii., p. 137; *S. hispanicum*, D.C., Fl. France, vol. iv., p. 395, non Linn.; *S. rupestre*, Vill. Delph., vol. iii., p. 679, non Linn.—Densely tufted. Barren shoots bearing at the end oblong rosettes of leaves, 2—3 inches long, about 1 inch in diameter. Leaves of the rosette arranged in about six rows, terete, glaucous, or green, the outer ones ½ inch long, 1 line broad, $\frac{1}{12}$ inch thick, rounded on both face and back. Flowering stems ½ foot high, bearing 20—30 erect, stouter leaves. Cymes dense, 1—2 inches across, consisting of 3—4 forked scorpioid branches, all the flowers sessile. Parts of the flower usually in sixes. Calyx ⅛ inch in diameter, $\frac{1}{10}$—⅛ inch long, the erect lanceolate segments 3—4 times the length of the short campanulate tube. Petals linear, erect, pale yellow, half as long again as the calyx, never spreading widely. Filaments rather shorter than the petals; anthers minute, oblong. Carpels greenish, ⅛ inch long, narrowed gradually into an erect style, half as long as the ovary.

This flowers early in July, at the same time as rupestre, and before reflexum and ochroleucum. It is wild in Spain, Italy, Switzerland, and the southern half of France, and extends eastward to Turkey and Asia Minor. I cannot distinguish it from S. reflexum without flowers, but in the flowering state it may be recognised at a glance by the character given in the key. The sheet in Sir J. E. Smith's herbarium labelled "*S reflexum*, Fl. Brit.," contains specimens of this species, but it has no claims to be regarded as British. *S. Verloti*, Jordan, in *Bull Bot. Soc. France*, vol. vi., p. 606, is a slender variety with green leaves. *S. aristatum* of Villars is probably a dwarf form either of anopetalum or reflexum, but the plant seems to be quite unknown to recent French botanists.

6. *S. amplexicaule*, D.C., Rapp., ii., p. 80; Fl. France, vol. v., p. 526; Gren., Fl. Franc., vol. i., p. 628; Willk. and Lange, Prodr. Hisp., vol. iii., p. 136; *Sempervivum tenuifolium*, Sibth. and Sm., Prodr. Fl. Græc., vol. i., p. 355; *Sempervivum anomalum*, Lagast, Nov. Gen., p. 17; *Sedum rupestre*, Linn. Herb.; *S. rostratum*, Tenore, Fl. Neap. Prodr., p. 26.—Densely tufted. Stems slender, wiry, under 1 line thick; sterile decumbent branches 1—3 inches long, bearing at the top rosettes 1—1½ inch long of slender subulate ascending or squarrose leaves ½—¾ inch long, the lower half or third of which is dilated into a grey chartaceous membrane, by which they clasp the stem. Flowering stems not more than ½ a foot high, very slender, and wiry, bearing a few distant ascending linear leaves, not dilated like those of the rosettes into a broad clasping base. Cymes very lax, sometimes reduced down to a single flower, at most consisting of two or three distantly-flowered scorpioid recurving forks 1—2 inches long; lower flowers shortly pedicellate. Calyx ⅛ inch long, deltoid teeth twice as long as the tube. Petals bright yellow, linear, twice as long as the calyx. Stamens a little shorter than the petals. Carpels as long as the filaments, narrowed gradually into a style half as long as the ovary. Parts of the flower in sixes to eights, or even tens.

A strictly Mediterranean species, extending from Spain and the South of France eastward to Syria. It flowers before any of the others, and is marked at a glance by its very distinctive leaves and very lax few-flowered cymes, which consist of only from six to fifteen flowers, whilst all the others have thirty, forty, or more. In Spain it ascends the mountains to a height of 8000 feet, so that it is quite hardy in England. The specimen that stands as the type of rupestre in the Linnean Herbarium is one of this species sent from Spain by Loefling. *J. G. Baker.*

Natural History.

I am tempted to send you an account which has frequently struck me as remarkable, and somewhat amusing as well. The gamekeeper (Mr. Drewett, Norton Manor) set a hen with the usual number of eggs, and by accident a duck's egg happened to be amongst the batch, and in due course the chickens and the young duck grew up together in harmony to the present time, when they are nearly their full size. There are plenty of ducks close by, and, still more tempting one would think, there is a broad trout stream, where the other web-footed family are enjoying themselves most thoroughly, but this duck does not leave his chicken friends to take to the water, but follows his companions wherever they go, and as they can travel faster than he, and he is left behind, it is amusing to see him stop, and with very loud "quacks" call their attention to the subject. Some short time since, while conversing with the above gentleman, a hawk made a dash amongst the poultry. There was amongst the ducks a scramble for the water, but the peculiar one I write about dashed under the bushes with the hens, &c. One would have thought that "instinct" would have prompted the subject of this paper to take to the water with his own kind. *William Payne, Taunton.*

Shooting Wild Birds.—I hardly know how to defend myself from "A. D.'s" attack upon me for shooting a landrail. These birds are not very rare, it is true. I have not failed to flush and bag several in the early part of the partridge season during many years past. I have shot them, sir, for thirty years, and intend to continue the diversion whenever a favourable opportunity occurs. "How cruel!" says "A. D." Yes; but the game birds owe us something; in fact, they owe us their lives, which they enjoy till the last moment, and which sportsmen and game preservers render possible, and—till that last moment—safe. There would be no game but for sportsmen, and there would be so much the less of that innocent and happy life to which "A. D." alludes. And in that case the grub and insect pest in fields and gardens would become still more serious. Then where would "A. D." slip in his objections to this kind of destruction? He speaks of harmless birds, and would draw the line with them perhaps. Does he eat mutton? I hope that he rejoices in a double row of unimpaired grinders. And if so, I would ask him to consider how he came by a set of teeth common to the carnivoræ? *Subscriber.*

—— After abusing sportsmen and libelling schoolboys "A. D.," at p. 430 says:—"No doubt the handling of a gun has a demoralising influence on the mind, as there comes with it the anxious desire to use it upon whatever object may present itself"! Surely, sir, this is one of the most astounding propositions that ever appeared in print, and is only equalled by the maudlin sentimentality of the rest of the article. There can be no more harm or cruelty in shooting a landrail than in killing a rabbit or any other animal in a legitimate manner. What next, and next? *P. O. M.*

Habits of the Cuckoo.—The two following lines embody the Yorkshire countryman's notions of the egg-sucking habit of the cuckoo, alluded to in last week's *Gardeners' Chronicle*, p. 430. I recollect hearing them some sixty years ago—

"She sucks little birds' eggs to make her voice clear,
And sings cuckoo, cuckoo, three months in the year."

I. O. Westwood.

Apiary.

Introducing Italian Queens.—Any one wishing to introduce Ligurian bees into their apiary should do so as early in October as possible. We recommend this month, because a fertile and young imported queen may now be purchased for a few shillings, whereas if the early part of the honey season be selected they are expensive. To many persons the safe introduction of queens has seemed a very difficult operation, but if the following plan be adopted they can be introduced with certainty, though after every care has been exercised sometimes failure occurs. First select a fine day, and having discovered the black queen, let her be carefully placed in a small perforated box containing a small piece of honeycomb suspended in the centre, together with a score or two of workers. We recommend this because if failure occurs, and the Italian queen should be unfortunately killed, you will have the original queen still, which may prevent the destruction of the entire colony. A small cage may be made by the most inexperienced of wire-cloth, having eight or ten meshes to the square inch, a piece 3 by 4 inches rolled or folded so as to bring the edges together, and having each end stopped with bits of cork. This answers quite as well as the most fashionable queen cage to introduce the new queen. Immediately after removing the common queen—many practical beekeepers say "stop until about twenty-four hours afterwards, in the meantime the colony will have found out or discovered their loss, then they will take to the Italian queen with demonstrations of joy;" take our advice, do it at once; it will succeed far better—place the wire cage containing the Italian queen with a few of the workers sent with her between the tops of the central combs, and against sealed honey if possible. About sundown the following day, after giving the bees a little smoke to quiet them, open the hive, and drizzle honey in a fine stream between the combs and on the tops of the frames; then allow the Italian queen to crawl down between the combs, completely daubing the lower part of her body with honey as she is leaving the cage. Close the hive at once, and contract the entrance the whole of the day following, giving sufficient room only for the exit of one bee at a time. On the second day examine the combs to assure yourself of the safety of the new mother. This latter is almost superfluous advice, though it is perhaps advisable. In all cases, especially in the active season, if the hive has been queenless for longer than a day, you must destroy all the queen cells which may be in process of formation before releasing the new queen, as the result may be serious. It will be observed we are speaking only of introducing a new queen to the bar frame hive. In the case of an ordinary skep first drive the bees into an empty hive, then knocking the bees out on a white cloth before the hive on a table,

search for the old queen. The new one may then be introduced as above recommended, though it is better to cut a small opening through the straw in the centre of the hive or just in the crown. *R.*

Garden Operations.

PLANT HOUSES.

Greenhouse Hard-wooded Plants.—Where plants are grown successfully there is no course but one with respect to insects—that is, waging an incessant war against them. To succeed with even the numbers that at the present day are found in a medium-sized collection, at least one-third the labour involved in their entire cultivation may be set down to the necessary continuous struggle that has to be kept up with the insects that prey upon them, and not only will those who are the most assiduous in keeping these animal parasites under, attain the greatest success with the plants they grow, but it will also be found that the old maxim of the "stitch in time" being a great saving is in this matter more correct than with many things, independently of the more healthy appearance that plants always have that are kept clear from the various pests that attack them. Even with greenhouse subjects, the foliage of which is usually of a hardier nature, and better calculated, without injury, to withstand the different operations necessary for the destruction of insects according to their kinds than the more tender stove species, at no time will they suffer so little from the effects of brushing, sponging, or washing with insecticide as at the present. With Camellias particularly, it rarely happens that a collection, however limited, is perfectly free from scale, especially the white species, which from its tenacity of life, is enabled to withstand a stronger application of the various liquids employed for the destruction of animal life than the plants in most cases will bear; even in the case of such as have at different times through the season been gone over, it is well now to give them a general overhauling, as if deferred later, when the buds of the early flowering kinds begin to swell, the brushing and sponging necessary often causes a considerable number to drop further on. With plants that are badly affected, and where the scale is allowed to get to a great head, so as to exist in large numbers among the flower-buds, it induces a stunted, unhealthy condition, to which a general loss of buds is often attributable. The whole of the wood and leaves, both on their upper and under surface, with every crevice in the bark, should be carefully brushed over, and afterwards sponged so as to leave the foliage bright and glossy. Inexperienced hands are sometimes set to this sort of work, and if an overhard brush is used without care the leaves are often seriously disfigured. In the case of large specimens planted out, it is more necessary to be careful that not a single branch of the plants affected escapes the operator. In respect to brown-scale this is not nearly so injurious in its effects upon the plants as the white species, confining itself much more to the leaves than the flower and wood buds, but it has the effect of making the foliage much more dirty by the excremental deposit which it leaves upon it, the glutinous nature of which attracts every particle of dust that comes near it, giving an unsightly appearance as well as injuring the leaves by closing up their pores. These cleaning operations should not at the present season alone be confined to Camellias, but extended to other plants that are affected, especially such things as Acacias, Cytisus, Oranges, Correas, Myrtles, Neriums, Statices, and similar things, that are generally more or less affected with these insects. Amongst fine-leaved plants that suffer from them are Yuccas, Cordylines, Dracænas, and others of like habit. When these are infested with white-scale it is very troublesome, as it gets down into the axils of the leaves so low that it is difficult to remove it without doing injury. In the case of such I have found "Abyssinian Mixture," at 8 oz. to the gallon, applied with a sponge, so as to moisten the affected parts, the most effectual, giving two or three successional dressings as required until the insects were destroyed. Greenhouse and conservatory climbers should now also have an extra cleaning, reducing the strong growth within reasonable limits to facilitate the work. Any that are very badly affected may be cut back, taken off the wires, and their heads dipped in a strong solution of the mixture, allowing them to remain immersed in it for an hour or so, which will be found much more effectual than simply dipping or syringing, as the solution reaches every part.

In conservatories generally at this time there is a paucity of flowers, but where some Fuchsias have, as advised, been especially prepared for late blooming along with such things as Statices, Croweas, the beautiful blue Witsenia corymbosa, Veronicas, either grown in pots or planted out and lifted; Belladonna Lilies, and the many coloured Celosias, the feathery form and numerous bright shades of which, combined with their easy growth and long-enduring capabilities renders this last one of the best and most useful plants that can be grown for autumn decoration—by the help of these, tastefully arranged amongst fine-leaved plants, the latter judiciously selected and well-grown, a very pleasing effect may be produced. In no situation are Tree Ferns seen to greater advantage than occupying a position in the centre of a cool conservatory when the plants employed are proportionate in size to that of the house, but in all cases with stems sufficiently high to admit of the fronds considerably overtopping the other occupants. From the moisture-loving nature of Tree Ferns generally many are led to suppose that they cannot be successfully grown in a house where the atmosphere is not considerably humid, yet such is by no means the case. Dicksonia antarctica and the nearly allied species, D. squarrosa, can be had in beautiful condition in an ordinary greenhouse, requiring much less shade under such treatment than when grown with more heat and moisture. All that is necessary is a plentiful supply of water to the roots. The fronds, as a matter of course, do not grow so large; but this in many cases is a decided advantage, and they are much more persistent than when grown in a way that imparts greater size, with less enduring qualities. In a comparatively dry atmosphere of this kind they sometimes assume a somewhat yellowish tint. This can be corrected by the use of manure-water, to which few plants are more partial. By its free application Tree Ferns may be kept for a long time in a luxuriant condition in comparatively small pots or tubs. The strong-growing—often to an extent that renders it unmanageable—Cyathea medullaris, kept in such a house assumes quite a different character, the fronds not attaining a size more than one-third of that which they grow to in a moist fernery. *T. Baines.*

FRUIT HOUSES.

Pines.—The temperatures, as given in the preceding Calendar for Pines, should remain in force during the present month unless very unfavourable conditions prevail outdoors, and then, rather than have recourse to very hard firing for the purpose of sustaining the heat at the maximum point, it will prove much more beneficial to the well-being of the plants to allow the heat about them to recede a few degrees. The advantage accruing from covering up Pine structures at night, during the prevalence of inclement weather, cannot be over-estimated, both in an economical and beneficial point of view; therefore, it should be adopted wherever practicable. To counterbalance the diminishing force of sunshine, &c., at this season the glass should be kept free from any obstacles which will hinder the free access of these elements to the plants; therefore, let the residue of any composition which may have been used for shading purposes be thoroughly cleared off now, and let shading likewise be abolished altogether for the season. Any alteration which may be required in the way of renewing the beds or rearranging plants in places such as those which necessitates exposing the plants should, as far as practicable, be done before the advent of severe weather. In the case of fermenting beds which are required to hold the heat for a considerable period onwards, attention should be given. If the old materials have become exhausted new beds should be made, otherwise an addition of one-half fresh material will suffice. If tan is procurable at the rate of about 4*s.* or 5*s.* a load, it is doubtless in the end less costly than any other substance which is employed for this purpose. Pursue the course of treatment already detailed for each class of plants in this department. Be circumspect in the application of water at the roots, particularly with respect to plants which were plunged in beds having only a moderate degree of heat in them, and in the case of others only give it when actually required, and then abundantly. Keep the plants free from suckers by screwing them out until the fruit is starting, when one on each plant should be allowed to grow. Suckers which may have been recently potted should not be crowded thickly together, and should be kept well up to the glass in order to keep them in a sturdy condition; at this naturally damp period in the year it is advisable to remove from the fruiting house any ripe fruits which are not to be cut at once. These can be placed in a late vinery, or similar place, where they will keep a considerable time. *Geo. T. Miles, Wycombe Abbey.*

Orchard House.—With the exception of a few late Plums, Peaches, and Figs, the pot-fruit season may now be considered over, and the zealous cultivator will be devoting his attention to the thorough ripening of the wood, without which a good set of fruit cannot be expected next year; the removal of all surplus and crowded growths, so as to admit of full exposure of the remaining spurs and shoots intended for producing the next crop. Let all potting or shifting be completed as the foliage shows signs of ripening, using strong calcareous loam, with a liberal admixture of crushed bones and burnt earth, or lime rubble. Use clean pots carefully crocked, ram the compost very firm, and protect from heavy rains if it is thought advisable to keep the trees out-of-doors for a time, at the same time care must be taken that stone-fruit trees do not get too dry through the winter, as many fine and promising Peaches and Nectarines cast ther buds in the spring through this cause alone. Half-ripened wood, and imperfectly ventilated houses will also cause dropping. To prevent the annoyance of seeing buds fall when they should be expanding into life and beauty, keep the old foliage clean and healthy, get the wood thoroughly ripe, give sufficient water to keep the soil in a healthy growing state, and avoid premature excitement in mild weather by reducing the temperature of the house to that of the open air. If trees for potting up have not been selected no time should be lost in getting them marked, as the demand this autumn will be very great, and it is hardly necessary for me to say the most promising trees are sold first. *W. Coleman, Eastnor Castle.*

KITCHEN GARDEN.

The beds of Cabbage intended to stand through the winter should now be thoroughly hoed over deeply, and if found necessary the earth may be drawn up to the plants, but they will scarcely be sufficiently advanced, and if the earth is moved deeply that operation may be deferred for some time. The beds of winter Spinach will also be much benefited by having the soil deeply stirred amongst the plants. At this season the seeds of weeds are apt to germinate very freely amongst these and all other recent plantations of vegetables, particularly Lettuces and Endive, and we cannot practise a better method than frequent stirring of the surface as often as they show themselves, for if they are left to grow it is double the labour to clear them off, and the beds never look so neat as when they are taken in time. This frequent stirring is also of great benefit in disturbing the slugs, which in moist weather are often very destructive at this season; constantly moving the ground puzzles them, as they cannot then get about freely and the plants soon grow away from them; if however, they are very numerous, sprinkling with fine quicklime will soon reduce their numbers. The splendid weather we have lately been favoured with has afforded excellent opportunities for tying up and otherwise preparing Endive and Lettuces for planting in pits or other suitable places where they can be protected for use during severe weather; the time of tying up is the most important, as the foliage should be thoroughly dry, and therefore the middle of the day should always be selected for the purpose. In taking up for storing, which should be before the advent of frosts, take care to retain a fair-sized ball of earth to each plant, and plunge them in the pit as close as they can be planted without touching: the after care will consist of plenty of ventilation in favourable and protection in severe weather. The Cauliflowers sown at the end of August will now have attained sufficient strength for planting under handlights as well as for potting up, as before recommended. In preparing the ground for handlights, the soil should first be deeply trenched up and well pulverised; the necessary manure, which should be applied with a liberal hand, should then be spread over the surface and pricked in. By the way, referring to manure to be pricked in, it should always be understood that it should be in a thoroughly decomposed state, for if only half decayed stuff can be had it had better be incorporated with the soil during the process of trenching. After turning in manure, level the surface, and dress the whole over with lime and soot mixed together in a dry state. Slugs are very partial to young Cauliflower plants, and this preliminary dressing will so check them that the plants will have time to establish themselves and make a start, when, if found necessary the dressing may be repeated. It is usual to have five plants to each handlight, but it is a good plan to put in double the number as they are easily removed if not required and used for filling up vacancies. Attention must now be given to the lifting and storing of all fusiform roots. Red Beet especially is impatient of frost, and must be lifted at once, great care being taken to keep the roots as intact as possible, as bruises are apt to let out the colouring matter in the process of cooking, for this reason the leaves must not be cut off within 1 inch of the solid root. In storing avoid placing them together in any bulk, as the effects of heating are injurious; our plan is to place the roots in an upright position in a deep trench in one of the out-buildings, placing them close together and filling up all the interstices with sand as the operation proceeds, and spreading a layer of 3 inches of sand over the top. Carrots, which should be lifted at once, should be stored in the same manner if room will serve, but in any case care must be taken to store them in such a position as precludes the possibility of heating, which is the great agent in producing rottenness and decay. Salsify and Scorzonera had better be lifted at once and stored, but Parsnips are better left in the ground and only lifted as required. Where Parsley is in much request during the winter it is a good plan to take up any surplus plants from the beds and pot them; they may be placed in a cold pit, or orchard-house, or a dormant vinery, so that a few can be taken at a time and placed in heat. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 13, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Oct. 15	Sale of Dutch Bulbs at Stevens' Rooms (and 17th).
Thursday,	Oct. 18	Sale of Greenhouse Plants, at Clapham Common, by Stevens.
Friday	Oct. 19	—Sale of Orchids, at Stevens' Rooms.
Saturday,	Oct. 20	—Sale of Dutch Bulbs, at Stevens' Rooms.

A short time since we announced the fact that an addition had been made to our dessert fruits in the shape of the so-called Mexican Apple, Casimiroa edulis. We now lay before our readers a figure of the fruit (fig. 91), and avail ourselves of the opportunity again to call attention to this very interesting plant. It owes its presence in our gardens to the late Dr. Seemann, who met with it in Nicaragua, and sent it to Mr. Bull, by whom it was distributed some nine or ten years ago. Since that time we have heard little or nothing about it, till a few weeks ago we had the pleasure of seeing and tasting fruits ripened in the gardens of Mr. Mitchell Henry, M.P., at Kylemore Castle, Galway, under the care of Mr. Garnier. Mr. Garnier, in reply to our enquiries, has kindly furnished us with the following particulars:—"The tree is now about 10 feet high, with a clear straight stem and a beautifully formed head, about 5 feet through. It seems to require some years before it produces fruit, as it showed no signs of fruiting until two years ago, when it showed some small fruits about the size of pullet's eggs, which, however, did not come to maturity. This year, however, I was agreeably surprised to see the fruit swell to the size of a good specimen of a St. Michael's Orange. As you will see, the tree is very prolific. The samples sent are not so fine as those which were sent to my employer's table, where the guests one and all pronounced them excellent. I myself consider it the best of all the tropical fruits with which I am acquainted. It begins to grow now (end of September) just as the other fruit is gathered, and swells very fast, completing its full growth very rapidly. The fruit is borne on the two-year-old wood, not in the axils of the leaves; it is of a greenish yellow colour when ripe, and had a delicious melting flavour like that of a Peach. I grow it in rich friable loam, mixed with a little peat, and if the drainage is perfect do not disturb its roots. The tropical-house here is a large and lofty span-roofed structure, and is never heated much more than to an intermediate temperature."

The specimens we tasted had evidently been gathered before they were fully ripe, but, making allowance for this circumstance, we are quite disposed to endorse the favourable verdict above given as to the merits of this fruit.

Casimiroa, though it has received the name of "Apple," is more strictly an Orange. The foliage and the outer parts of the flower are studded with transparent oil cysts, as in the Orange, but the leaves are digitate, like those of the Horse Chestnut, and the flowers are less conspicuous than those of true Oranges, and the number of stamens less; still, there is no doubt as to the close relationship of the plant to the Oranges and allied plants. The tree is a native of Mexico, where it is found in a wild and cultivated state; it has also been widely distributed through various parts of America. The best account of the tree is that contained in Seemann's *Botany of the Herald*, from which we borrow what follows:—"This tree has a remarkable tendency to accommodate itself to different climates; it grows from the lowest coast region to an elevation of 7000 feet, producing everywhere an abundant harvest. The fruit is said to produce a somniferous effect." Dr. Seemann goes on to quote the Latin account given by the Spanish writer, Hernandez, in 1790, from which we condense the following particulars. The tree is large and of loose habit—"*incondita;*" the leaves are like those of the Citron, thin and ternate. The fruit is of the form and size of a Quince, and is called by the Spaniards *Zapote blanco*. It is edible, of a pleasant flavour, but not very wholesome, the kernel of the seeds (*ossis nucleo*) being deadly and injurious—*lœthali ac deleterio*. After citing various medical and surgical purposes to which the leaves and powdered seeds may be applied, he goes on to say that the fruits when eaten promote sleep, a circumstance which has given rise to the Mexican native name, which we will not inflict on our readers—"*Poma ingesta somnum conciliant a quo invenere nomen.*" Hernandez also notices that the tree grows in warm and in cold districts.

It seems clear, then, that in its native country it is looked on with some degree of suspicion, though not to such an extent as to prevent its being eaten as a fruit. While the fruit is said to promote sleep, a much worse character is given to the seeds. These statements point to the necessity of caution—a caution the more needed from its delicious flavour. Who knows but that some modern Circe might tempt to their destruction the unwary partakers of a dessert of which Casimiroa fruits formed a part! Seriously, while we would urge the necessity of caution in partaking too largely of this fruit, and especially of its seeds—a caution not likely to be wanted for some time to come we expect, and in the case of the seeds not at all, as their bitter flavour is not very palatable—we would at the same time express an opinion that, partaken in moderation, the fruit is no more likely to be injurious than so many Cherries or Peaches, the seeds of which might also be truly described as *lœthalia et deleteria;* and as for the alleged soporific qualities we do not imagine them to be much more potent than those of the Lettuce. Still, we are reasoning from analogy only, and would by all means advocate caution. Only let this caution be exercised with judgment, else a really valuable fruit may be unjustly discredited.

Judging from its botanical affinities the tree might perhaps be grafted with success on the Orange. Judging also from Mr. Garnier's statement, it might be worth trying in an orchard-house, and might even succeed out-of-doors in the climate of the Scilly Isles or south-west Ireland, if not too moist. Undoubtedly in many parts of India, the Cape, and the Australian colonies it would prove a valuable introduction. Let our colonial friends look to it. In the meantime will some correspondent acquainted with the natural products of Mexico tell us how many of the fruits on the average a healthy adult may partake of with impunity? We know that the number of mutton chops that can be taken without harm is limited, so that we are quite prepared to hear that there are bounds and limits beyond which Casimiroa cannot safely be eaten. Even the Fungus eaters at Hereford, whose doings we chronicle this week, would admit so much against even Lactarius deliciosus.

Year after year we experience unpleasant reminders of "how they do things in France." Strange to say, we and Rose Buyers in particular do not profit by the experience. Year after year the tempting bait is offered—Madame la Comtesse de Méprise, La Marquise de Tromperie, Monsieur Joli-Vert, and a host of other Rose celebrities, are paraded as anxious for the honour of our acquaintance. To induce us to accede to the proposal their *signalement* is printed in brief but flattering terms—*fl. gr, bien faite, rose tendre, parfum exquis, très vigoureux, remonte franchement*, &c. A slight consideration is all that is demanded—a matter of a few francs, a bagatelle for so great honour. Twenty-five francs for a real Duchesse—who would hesitate? Besides, there is the usual trade reduction if we be traders; a few months' credit will be given if required, but, singularly enough, the period of credit is not long enough to enable us to see our new acquaintances in the flower before we have to pay!

Rose buyers know too well that all this is true, and yet they buy, and will continue to do so so long as novelties are in demand. But it may fairly be asked of French Rose growers, who, as a body of men, are worthy of all respect, why they do not combine to stop the wholesale influx of untried or inferior varieties. Is there no body of capable and conscientious growers in France to pass judicial opinions on new Roses, and to award certificates accordingly? Our own Floral Committee, though, like human-aggregates in general, it fails sometimes, yet does its work so honestly and well on the whole that its verdict is respected and acted on by the trade.

Could not a deputation from the Rose growers attend a meeting of our committee, or of that of one of the great Rose shows, and see how new seedlings and varieties are adjudicated upon, and then go back to their compatriots, form a like tribunal, and specially beseech their compatriots to refrain from flooding us with indifferent Roses?

We have before us a list of new French Roses purchased during the last five years, with their qualities and the names of their raisers. The list comprises 165 varieties in all. Of these, in our judgment, seventy-five are fairly good, with a few, such as Etienne Levet, François Michelon, Captain Christy, Hippolyte Jamain, Mons. E. Y. Teas, Abel Carrière, Duchesse de Vallambrosa, &c., really first-class Roses. The remaining ninety are indifferent or bad, some even have not afforded us the opportunity of estimating their merits, for they have never bloomed. We are sure that the verdict of Rose growers generally will not be greatly different from this. Last year's importation, we have reason to believe, is one of the worst, if not the worst, of the series. A timely caution to buyers, now that the Rose lists are coming in, may serve to prevent much disappointment to traders and heartburning among amateurs.

—— We hope to be able to publish in our next issue some account of the remarkable discovery of a Fossil Resting-spore, with its mycelium, closely similar to the recent Peronospora of the Potato disease, by Mr. W. G. Smith. In the same number we hope to present our readers with a Coloured Plate illustrative of some Edible and Noxious Fungi, and showing the distinctions between the true Mushrooms and some other fungi that have a general resemblance to them.

—— At the meeting of the Woolhope Club, held at Hereford on Oct. 4, M. Maxime Cornu, of Paris, described A New Disease of the Vine, which had been brought under his notice in plants from the neighbourhood of Narbonne. It is there called "Anthracnose" because it appears like dark burnt spots on the leaves and branches of the Vine, and even on the Grapes themselves. In the first or conidious stage the spots are white, and in the second stage they present the blackened and charcoal-like appearance that has given the popular name to the disease. It belongs to a fungus named by Berkeley and Curtis Phoma uvicola. Its third condition is yet to be observed. The disease has been introduced to France with young plants from America, and has now been observed in several places. The Vines are also attacked by another fungus named Cladosporium viticolum of Cesati, which may be recognised by its dark brown velvety spots which have been known for some years, and now it has been pointed out by Dr. Farlow at Boston that the French Vines in America are attacked by an ally of the Potato fungus in Peronospora viticolum, which attacks the young shoots and branches in the most destructive manner. M. Cornu

Fig. 91.—Casimiroa edulis, nat. size; one fruit cut transversely; crystals and cells of epidermis of fruit enlarged 160 diam.

dwelt on the great importance of the most careful attention to the study of these diseases, and called for the assistance of English mycologists in their observation. The remarks were illustrated by most carefully executed drawings of the fungi named above and illustrations of their effects on the leaves, stems, and fruit of the Vine.

—— It appears from a communication made to the Brandenburg Society of Botanists that Collomia grandiflora, a North American plant, is thoroughly naturalised and exceedingly abundant in some parts of Germany. In very stony places it grows only 2 to 6 inches high, and these plants bear exclusively cleistogamic flowers—that is, small closed flowers without petals, in which self-fertilisation must take place. Where they are stronger they bear both small closed flowers and ordinary open ones, or only the latter. It threatens to become a troublesome weed in cornfields, as it seeds very freely, and spreads rapidly, and the seeds are projected to a considerable distance when the capsule opens under the influence of the sun.

—— The Gloire de Dijon Rose, we are told by the *Journal des Roses*, was raised by MM. Jacotot, nurserymen, of Dijon, in 1849, as a seedling. Unfortunately, the parentage is not given. It was first publicly exhibited in 1852, and "sent out" in 1853. It remains decidedly one of the best all-round Roses, and if we had to grow but two, they would be Gloire de Dijon and Charles Lefebvre.

—— It must be a time for anxiety on the part of some Chrysanthemum cultivators as to whether the flowers will be expanded in time for the usual exhibitions of this popular autumn flower. The plants are generally very late this season, and some growers are housing them earlier than usual, to hasten the flowering period. The plants should now be fast showing their bloom-buds. Cultivators who like to have nicely rounded heads of fine blooms to their plants make a practice of removing all side blooms, leaving only the buds at the extremity of each shoot; and by doing this a plant when in flower will present one head of uniform and well-developed blooms. Such plants are better for, and more effective as, conservatory decorative plants. A few thoroughly good flowers are surely to be preferred to a large number small in size and confused in appearance. A little manure-water will be found of great service just now. Those who grow solely for specimen blooms to cut for the exhibition table must keep a sharp look-out for earwigs. They insinuate themselves into the space immediately about the bud, and so completely hide themselves from view that they are only detected when closely looked for. If undiscovered they work irretrievable damage. There is something in selecting the right buds. A successful cultivator once remarked: "In choosing the buds select only those which are perfectly round and bright in colour. Remove dull-coloured, brownish looking buds in every case, for if they swell or expand at all they will only produce malformed blooms." A little warmth—as, for instance, that of a greenhouse with artificial heat—greatly assists the development of the flowers. Manure-water must be used freely as the buds expand, and it is best applied when the plants are moderately dry.

—— Messrs. Edward Webb & Sons' Annual Root Show, at Wordsley, is announced to be held on Tuesday, November 20. Entries for root crops close on Tuesday, October 23, whilst those for specimen roots and cereals close on Tuesday, November 13, and the latest day for receiving roots and cereals intended for competition is Thursday, November 15.

—— Complaints are sometimes made that the Cineraria is a difficult plant to winter, and when such a lament is heard the results so much deplored in all probability are traceable to coddling and imperfect management. The Cineraria is a much hardier plant than is generally supposed, and can be wintered in a cold pit or frame if there be a good dry bottom. If the pit is deep the plants should be stood on inverted flower-pots, it brings them nearer the glass, and raises them to a dry position above the floor of the frame. If frosty nights threaten an ordinary garden mat thrown over the frame will keep all snug. The lights should be lifted off, and all possible air given in suitable weather to keep the plants compact and lusty, and inure them to severity of weather. The earliest among the plants will, in all probability, be throwing up their flower-stems, and if they be put in a greenhouse some early bloom will appear. Water should be given somewhat sparingly when the weather is dull and cold. The great enemies of the Cineraria at this time of year are the mildew and green-fly. For the last a lawful excuse can scarcely be found; tobacco in some form or the other will speedily settle them, either by fumigating with the smoke, or syringing with some prepared solution. The mildew will appear in spite of all efforts, and is not so easily disposed of. The best remedy is to dust the affected parts with flowers of sulphur as soon as discovered, and if the remedy gives the plants an unsightly appearance for a time it is at least effectual, and the only sure remedy at present known.

—— One of the most attractive of variegated coniferous plants is Cupressus Lawsoniana lutea. It stands well and is decidedly one of the best golden Conifers in cultivation, as the variety known as aurea is not nearly so well variegated nor so compact in growth. What is known as Fraser's variety of C. Lawsoniana erecta is also a very desirable plant, taking on a handsome upright growth. A variety of the Spruce Fir known as Abies Finedonensis is now very ornamental in Messrs. John Perkins & Son's Nurseries at Northampton. It is a good and distinct sport, obtained in the neighbourhood of Finedon, and has been in the locality for many years.

—— Mr. D. Macrae, late foreman at the Duke of Grafton's, has been appointed gardener to Lieut.-Col. H. Bagot-Lane, Lichfield.

—— We have received from Mr. Parker, of Tooting, some well-grown examples of the very distinct and desirable Gladiolus Saundersii. This is a recently introduced species, and one which, along with G. cruentus, may be expected to have an influence on the hybrids of the future, in which at the present time G. gandavensis (bred from G. psittacinus) is predominant. The plant grows from 2½ to 3 feet high, with a long terminal spike of large flowers of a brilliant scarlet, the two lateral sepaline divisions of the perianth being faintly speckled with white. The leaves are fully 1 inch broad, and of the usual sword-shaped character. It is remarkably showy, and should find a place on its own merits in every collection of hardy bulbs. The plants before us, now blooming from lateral branches, had their principal spikes in blossom fully two months since, and were then, as now, remarkable for the brilliancy of their colour.

—— We hear that Mr. Carmichael, late of the gardens, Sandringham, and more recently of Crowe Hall, Bath, has just been appointed gardener and steward to A. Porteus Oakes, Esq., of Norton Court, Bury St. Edmunds, and will enter on his new duties on November 1. Mr. Oakes is thoroughly remodelling his pleasure-grounds at Norton, which are well stocked with choice Conifers, and a large new kitchen garden is about to be formed and furnished.

—— Sir Joseph Hooker, we learn, left Boston on the 6th, after spending some days in that city with Professor Asa Gray, for the purpose of arranging the large collections of dried plants made by them in their recent trip in the Western States of America. We may look forward to some very interesting details concerning the botany and geology of the districts travelled over.

—— Mr. Hall, who for the last seventeen years has held the post of head gardener to the Right Hon. the Earl of Scarborough, at Sandbeck Park, near Rotherham, has been appointed by his lordship to the management (under the chief agent) of his Lumley Castle estate.

—— According to the Irish *Farmers' Gazette*, the Great Vine at the Viceregal Lodge, Phœnix Park, is at least one of the finest examples of a single Vine grown on what is called the extension system, to be found in these islands. It is quite possible and very probable, our contemporary admits, that there are other monster Vines monopolising entire houses, and covering a larger space; but he doubts if the Finchley or any other celebrity in its way presents such a picture of successful Grape culture as does at this present moment the large Vine at the Viceregal Lodge. The crop is the heaviest it has yet matured, the size and weight of the bunches being beyond the average; not a few would turn the scale between 3 lb. and 4 lb. weight, and the general run of bunches is fully 2 lb. each. The number of bunches is somewhere about 500, the heaviest, of course, being at the extreme end of the house opposite to that at which the Vine is introduced, and from which rods are conducted horizontally the entire length of over 70 feet. Nothing can be more robust, clean, and healthy, than the foliage. Altogether it is a triumph of cultural skill and good management.

—— We hear that Mr. Fowler, of Castle Kennedy, has lately been working at the improvement of the race of Dwarf Bedding Ageratums, and has obtained some seedlings of great promise. He has been growing them by the thousand, and our informant states that he was specially struck with one named Cupid, having blue flowers, a dwarf habit, and very free-flowering qualities—in fact quite a rival of Lobelia speciosa. Another dwarf and free-flowering variety, named The Queen, is the nearest approach to a white that our correspondent has seen. We should be glad to hear more of these novelties.

—— Mr. Barr has sent us a twofold novelty in the shape of the pretty sweet-scented Iris alata flowering in a Hyacinth Glass. The interest is by no means in the novelty only, and we have no doubt that when others see the plant so grown, they will be desirous of adopting it as a welcome change from the Hyacinths.

—— We hear that Signor Beccari is likely to succeed Professor Parlatore as Director of the Herbarium and Botanic Garden at Florence, if arrangements can be made for some other Professor to undertake the duties of lecturing. It is not every one who combines the administrative qualities requisite in the director of a large scientific establishment with those of a competent teacher. The irksomeness of teaching, and the interruption to original work, are also severely felt by many. It is clearly desirable in such cases that a division of labour should be carried out, though we are strongly of opinion that great advantage both to the director and to the public ensues from the occasional delivery of a lecture on some special point of study which has occupied the director's attention.

MR. PARKER'S NURSERY, TOOTING.

Mr. Parker's speciality is undoubtedly alpine and herbaceous plants, and call at his nursery when you will there is always something to be seen and admired—some rare or beautiful gem to feast your eyes upon; and if you don't find a fit subject for admiration amongst this class, you will amongst some others, for Mr. Parker has a *penchant* for the best of everything, makes his selections with rare judgment, and cultivates the objects of his choice in a style of proficiency that comes only of wide practical experience and years of lynx-eyed observation of Nature, as Nature is found amongst cultivated plants. His nursery is a model of order, neatness, and good cultivation, and every plant you may see there belongs to the front rank in its class or genus, so persistently is the weeding-out process carried out. No wonder, then, that the Exotic Nursery has gained such a high reputation as it now enjoys. Our last visit was made a couple of months ago, when we found the nursery in quite a blaze of bloom, Phloxes and Pyrethrums being then at their best, and flowering plants of some kind or other, here, there, and everywhere.

The remarkably showy Phloxes of the decussata and omniflora types were in fine flower, and presented a very brilliant appearance. Mr. Parker has weeded out all but the most approved flowers, and grows these strong and well, to fully bring out their true characters, with the result in the end of producing a rich floral *tableau*—a perfect *embarras de richesse* of high colours and exquisite forms. Where all are so good it is somewhat embarrassing to make a selection,

nevertheless we shall attempt it, and note the very cream of the varieties then in bloom. The pride of place we give to the charming coccinea, so rich is its colour, so neat and floriferous its habit. Next on our list comes Madame Thibaut, amaranth-red, with crimson centre; Madame Domage, white, with carmine centre; Danaë, creamy white, with purplish carmine centre; Madame Cannaert d'Hamale, salmon-rose, with crimson centre; Madame Autin, purplish crimson, with purple centre; Lothair, bright scarlet, with crimson centre—a great beauty; Madame Andry, purplish crimson, with crimson centre; La Candeur, white, with broad rosy purple centre; J. K. Lord, salmon red, with fine carmine centre; Gloire de Poiteau, clear rosy lilac, with a white centre, a fine old variety, with a rare constitution; Sultana, dark salmon-pink, with crimson centre; Mons. Donnaud, a salmon-red, with crimson centre; Richard Wallace, white, with a bright carmine centre; The Queen, a remarkably fine pure white; Baron Duruffe, purplish crimson, with crimson centre; Lucien Tisserand, mauve, with crimson centre; Madame Andry, rich crimson purple, with crimson centre; Princess of Wales, white, suffused with rose; Sparte, rosy purple, with crimson centre; Professor Koch, rosy salmon, with rich crimson centre; Menotti, rosy lilac, with white centre; and Madame Moisset, bright rose, with a rosy crimson centre. Selecting from these a dozen of the best for bedding purposes we have coccinea, Gloire de Poiteau, Lothair, Lucien Tisserand, Madame Andry, Madame Moisset, Menotti, Princess of Wales, Professor Koch, Richard Wallace, Sparte, and the Queen, all of which have a fine branching habit, with flowers of perfect form and purity of colour. These varieties all belong to the decussata type. In the omniflora section the most noteworthy variety that we saw was a charming bedding variety named Countess of Sefton, which only grows to the height of 8 inches, has white flowers with a purple centre, very pretty, and a free bloomer.

The first plant that specially claimed our attention in the herbaceous border was Hydrangea paniculata grandiflora (figured at p. 653, vol. iv.), with its fine large panicles of white flowers just opening. Here is a row of good plants, that have since been masses of bloom for about two months. It is a thoroughly good thing, and deserves a wide range of cultivation. For producing striking effects in the mixed border Symphytum officinale sulphureum variegatum struck us as being a particularly useful subject, on account of the fine bold character of its golden leaves and its almost perpetual blooming habit.

Sambucus nigra aurea is a glorious golden-leaved shrub, free in its growth, and rich in colour, which does not seem to be the least affected by any weather. For planting in groups in telling positions near the margins of woods or plantations, for town gardens, or for ornamenting carriage drives, this is one subject at least that should come into prominent notice.

Yucca flaccida was very striking. It is very dwarf in its habit, and a remarkably free bloomer. Every plant here had one or more fine spikes of white flowers. Amongst Campanulas, C. turbinata pallida is worthy of remark as a very good thing. A bed of Violas also made a brilliant show. This flower has done much better than usual with us in the South this season. The plants are green and vigorous, and flowering with great freedom at a time when they are usually almost burnt up. A variety named Blue Bell has a free dense habit of growth, is wonderfully floriferous, and stands well, and amongst whites none do so well, or give such great satisfaction here as Purity, which, like the first-named, is a grand bedder. What is this Tritoma with such gigantic flower-stems? Tritoma grandis, the tallest and finest of the genus, sometimes throwing a strong, sturdy spike to the height of 7 feet, but usually about 6 feet. It is a very continuous bloomer from this time onwards into January, should the weather be not too severe.

Amongst Roses there is nothing special to note, except it be that La France, on its own roots, is very fine. It does exceedingly well here, and throws splendid blooms.

One of the most striking flowering plants in the nursery is Lythrum roseum superbum, whose spikes of richly coloured flowers stand out well everywhere, and at first sight recall the beautiful Orchis foliosa, which it much resembles. A truly beautiful plant is this, common though it be. In Rudbeckia Neumanni we have one of the brightest of garden ornaments. It will soon be flowering in quantity, and will be found an exceedingly effective plant for border or pot culture. It grows to the height of from 2½ to 3 feet, and produces its rich orange-yellow flowers in great profusion. A beautiful free-flowering ornamental tree will be found in Robinia Pseud-Acacia semperflorens. It is a free grower, very ornamental, and keeps on producing its racemes of white flowers for a considerable time.

Amongst curious plants the singular Menziesia polifolia bicolor must always hold a conspicuous place, as much for the beauty of the purple, white, and striped flowers as for the singularity of their production on the same plant. Another odd-looking but very interesting plant is the white Monkshood, Aconitum album, flowering in the mixed border here for the first time. It is a scarce plant though by no means new, having been introduced from the Levant in 1752. One of the showiest of hardy biennials is the splendid pale yellow-flowered Carolinian Coreopsis lanceolata, and it is a very free bloomer. In Harpalium rigidum we have an herbaceous plant of the first water. It is neat and stately in its growth, and wonderfully floriferous from July till October, the flowers measuring from 4 to 5 inches across, and bright orange-yellow in colour, with a light brown centre. For planting in masses or for brightening up the mixed border, Harpalium rigidum will be found a plant of great merit.

Mr. Parker's nursery is especially rich in aquatic and bog plants, and wealthy indeed as regards that delightful plant, Aponogeton distachyon, which nowhere have we seen in finer condition than here. The well-known pond has this season been embanked, and the contents rearranged, so that all are seen to better advantage now. In addition to the Aponogeton we noted the beautiful white Nymphæa tuberosa, not so straggling in its growth as N. alba; Lythrum roseum superbum, as good as an aquatic as in the borders; Villarsia nymphæoides, very pretty and interesting, the segments of the straw-coloured flowers being delicately fringed; Menyanthes trifoliata, a good native summer-flowering plant; the Water Soldier, Stratiotes aloides, a peculiar floating or rather submerged plant, somewhat resembling a Bromeliad in habit, and which used to be found in the ponds on Wandsworth Common; Hydrocharis morsus ranæ, the Frog-bit; the Water Violet, Hottonia palustris, an elegant little plant, resembling some of the mosses in its habit of growth, and bearing spikes of delicate pink flowers; Equisetum filiforme, a very distinct plant, by reason of its well-defined black-banded nodes; Typha stenophylla, with its narrow leaves and singularly curious interrupted flower-spike; Limnocharis Humboldtii, a beautiful yellow aquatic, usually treated to the temperature of a stove, but which has been out two winters in this pond without being injured; and Nuphar advena, a distinct plant from its congeners, insomuch that its leaves stand well out of the water, and so have a more imposing effect.

Arrangements have been made to test the hardiness of various swamp plants, and it may be recorded that Sarracenia purpurea stood out all last winter in the new bed, and looks none the worse for it. Near by was a thriving specimen of Lobelia syphilitica, an old Virginian species, remarkable for its neat branching habit, and fine deep blue colour; and Acæna novæ-zelandiæ, a perfectly hardy peculiar little plant, for which the margin of a pond would be a very appropriate position.

Amongst trees and shrubs, the more choice things that came under our notice were the remarkably handsome double pink-flowered Rubus fructicosus roseo-plenus, one of the very finest pillar plants in cultivation. It grows with extraordinary freedom, and flowers with a vigour that is truly remarkable. Robinia Pseud-Acacia monophylla is very distinct, while the beauty of Virgilia lutea needs only to be mentioned. Acer Negundo variegatum is becoming well known and freely planted now. What a striking object this is by moonlight! Hypericum proliferum is a very fine yellow-flowered shrub; and after seeing the fine specimen of Euonymus radicans variegatus latifolius growing against Mr. Parker's house, we can strongly recommend it for clothing walls. There are two varieties of this plant in cultivation. This is the major variety, having the broader and bolder leaves of the two. It is a splendid wall-clother. In the Carolina Poplar, Populus angulata, we have a variety with enormous heart-shaped leaves, which in a young state will prove of great service in the sub-tropical garden. Ceanothus azureus grandiflorus, is an exceedingly floriferous plant, and the finest of the genus. The golden variegated Balsam Poplar also makes a beautiful tree; and passing to a more lowly subject we have in an arborescent form of Hedera Helix aurea, a bushy, golden-leaved Ivy, of rare beauty. That beautiful white flowered shrub, Olearia Hastii, we noted as flowering very freely in a small state. Wistaria japonica is a very distinct and thoroughly good wall or pillar plant. It is a good grower, and flowers with much greater freedom than W. sinensis, though the panicles of flowers are not so long as in that variety. It has seeded here for the first time this season, and its club-shaped, woolly pods are by no means the least ornamental feature in the plant. Besides the Ceanothus previously mentioned, we may allude to C. Arnoldi as a free-flowering and perfectly hardy shrub, with pale blue blossoms. C. Gloire de Versailles and C. spectabilis roseus are also very pretty varieties.

We also remarked here several varieties of the American Blackberries, which deserve much more attention than they get at present. One of the best of all is the Lawton, a most prolific bearer of large, jet-black and finely-flavoured berries. The black fruits of the Kittatinne are also of fine quality, and as large as Mulberries. The Dorchester variety may also be mentioned as being amongst the best.

Home Correspondence.

Three Days' Shows.—The great shows of the current year having passed away, the framing of new schedules for 1878 will soon occupy the attention of secretaries, indeed one or two are already in print, and as three days' shows which terminate on Saturdays seem to be the order of the day, permit me to draw the attention of the promoters to the great loss, inconvenience, and sacrifice which attend this arrangement, and to inquire if nothing can be done to relieve distant exhibitors, who are obliged to pack and travel the day before the shows open to the public, and cannot by any possible chance return before the following Monday. To make large shows pay, I am well aware that they must be attended by the masses, and we are told that Saturdays are the only paying days; but, judging from appearances, I am inclined to think the majority of the visitors could have attended the September shows equally well earlier in the week when owners of valuable plants might have reached home with their treasures on Saturday, and exhibitors of fruit would have been able to remove their produce while fit for use. When I state that the three great September shows this year represented in my case seventeen days' absence from home, including three Sundays, I feel sure that the hard-working secretaries, to whom we are indebted for every facility and accommodation, will admit that we have a grievance, and as distant exhibitors cannot be dispensed with, I trust they will endeavour to make arrangements that will admit of our getting home before the Sunday. If this cannot be done it is more than probable that many exhibitors of valuable plants and perishable fruit will be conspicuous by their absence. Another inconvenience and annoyance with which exhibitors have to contend is the way in which the public are allowed to elbow and impede them when they commence packing up after the show is over. When I was at the Alexandra Palace I discovered that the majority of the exhibitors, distant and local, were strongly opposed to Saturday night terminations; but no one seems to have taken up the matter, and as societies may be living under the happy delusion that horticulturists are perfectly satisfied with their arrangements, kindly favour me with space for these lines at your earliest convenience, and assist in working out a system of holding shows which will tend to the advancement of horticulture by making the interests of promoters and producers mutual. *W. Coleman.* [We have received other complaints of like nature with reference to the proposed provincial show at Preston next year. Eds.]

How to Keep Nuts.—Thinking that a few remarks as to the best way, according to my experience, of keeping Nuts *àpropos* just now—the time of ingathering—I will briefly lay before the readers of the *Gardeners' Chronicle* the *modus operandi* practised here, and which is very simple, but nevertheless effective, and answers the purpose for which it has been made admirably. In the east portion of a south and east angle border, and under the shelter of a wall of the

same angle, are our "Nut vaults." They are made with dry bricks placed closely together to prevent the mice from getting through, 20 inches deep, 3 inches from the surface, to leave room for covering material, and 18 inches wide at the bottom, and about 20 at top. In these vaults are placed pots corresponding in size with the vaults, having their drainage holes stopped, and into these pots are put the nuts, leaving them in their husks, in which they keep better. They are of course put into the pots in a dry state, and as the pots are being filled a sprinkling of salt can be applied with advantage to the keeping quality of the nuts. When the pots are filled they are covered with slates overlapping each other and with the ends resting upon the side walls of the vaults; then over the slates 1½ inch Oak board about the same size as the slates, so that they can be easily removed; after which the whole is covered with a couple of inches of soil, and, in doing so, making it correspond with the other portion of the border, which has a slope of about half an inch in the foot. This done, there remains nothing more to be done except the taking out of the Nuts as they are required—say sufficient for three or four days at a time—which can be easily done by removing a little of the soil from the first two boards and the slate, immediately replacing them, taking care not to let any of the soil fall into the pots in doing so. To those gardeners who either harvest or buy a quantity of Nuts or Filberts, and which they wish to keep satisfactorily through the winter and spring months, I would say, "Try the above." *H. W. Ward, Longford Castle.*

White Blackberries (p. 439).—The white Blackberry is not a new plant. I had a large bush of it some years ago. The fruit was pretty and abundant, but the bush became too straggling and I destroyed it. *Henry N. Ellacombe, Bitton Vicarage, Oct. 8.*

Pan-Culture of the Watercress.—In your report on my pans of Cresses (p. 442) you say "the first cutting will be ready in about six weeks." Permit me to say that the time that must elapse between putting in the cuttings and taking the first supply for the table varies with the season and the conditions. From May to the end of September twenty days will suffice to fill the pans, and allow of a plentiful gathering. In the middle of April last we started some pans on the floor of a Pelargonium-house. The cuttings were well rooted in three days, and the pans were then put on the stage, to benefit by the sunshine. From those pans we cut Cresses for table of the finest quality in fifteen days from the time the cuttings were inserted. The weather happened to be very favourable, or another five days would have been required. I hear that many have failed in their attempts to grow Watercresses in this quick and simple way, and I suspect the cause of failure is the use of large instead of small cuttings, and perhaps the want of a little careful nursing in the first instance. The pans I showed at South Kensington had been cut from for six weeks. *Shirley Hibberd.*

Ampelopsis Veitchii.—I regard the changeable character of this creeper as one of its principal merits, adding much to its interest and value, for were it evergreen it would be without one of its principal charms—the rich blending of colour in the leaf that renders it so exceedingly attractive at this season of the year. One great objection to most creepers on houses is their loose straggling habit, necessitating almost constant attention and the use of nails or other means of support to keep them tidy and in proper trim, but the grip of Ampelopsis Veitchii is so secure as not to require the slightest assistance, be the position ever so exposed. Planted in poor sandy soil I know of nothing more ornamental or desirable to climb up the light brick walls of dwellings or to use alternately with any of the small-leaved variegated Ivies such as marginata rubra, which associates well with it and assists in showing up the beauties of the Ampelopsis to great advantage. To have the best effect it is possible to produce, they should be kept in distinct panels, which may easily be done by cutting away any shoots likely to encroach beyond the space alloted. There are many hot-looking fronts and gable-ends of houses that might be clothed and adorned in this manner instead of being disfigured by straggling Roses covered with mildew or greenfly, and dragging out a miserable existence. Much as I admire the Rose I do not think hot dry walls the proper place on which to train them, or to see them to advantage, and the climbing section never look so well as when they can ramble at their own sweet will without training or restraint of any kind. *J. S.*

—— I was much struck with this beautiful climber when on a recent visit to Strafford House, Strafford, County Kildare, the beautiful seat of the Hon. Mrs. Barton. It is covering a wall here 15 feet high and as much in breadth. The beautiful tints of the foliage render it one of the most beautiful of deciduous climbers. I enclose some of the leaves and shoots for your inspection. [They were richly coloured. Eds.] Mr. Bedford, the intelligent gardener here, intends planting it largely, for as seen with him it is really an object of very great beauty. It clings to the walls and cement of its own accord, therefore requires no nailing. Clematises also grow out-of-doors here, and are very fine, producing a profusion of flowers when there is a scarcity elsewhere. *A. Outram.*

Removing East Lothian Stocks in Flower.—We have this autumn succeeded in removing a considerable quantity of the above most useful and ornamental plants, when they were full grown and with quite a show of flowers, from medley borders to a terrace, where, for certain reasons, it was necessary to make a show, which was neither anticipated nor provided for earlier in the season. The origin of such an idea at a time so apparently inopportune was more the result of necessity than anything else; there was no other alternative left for us besides risking the East Lothians or assuming the winterly attire of evergreen shrubs six weeks before the proper time. Finally we concluded that the chance to win or lose was worth the venture. We had excellent stubby, well-grown plants, not overcrowded, to select from, and we were further fortunate in having the plants planted in a soil of a heavy, holding texture. The success attending such an operation seemed to rest mainly on the size of the ball of earth that could be removed intact with the plants, so that we exercised every care in lifting to cut all round the plant in the first place, and we were equally careful to take every individual plant on a spade direct to its destination without further tossing about. The process was no doubt a slow one, as it was found impracticable to take more than four spades on a hand-barrow at a time—the hand-barrow being considered the only safe means of locomotion; and yet it is surprising the quantity of plants that two careful men will remove in a day within convenient distance. In planting the hole was made large enough to receive each ball of earth without risk of breakage, and a dew overhead night and morning was all the further trouble that was necessary to secure the object we had in view. We used a thin shade during strong blinks of sun for an hour or so, and to-day (October 8) the beds are one glowing mass of scarlet, purple, and white, alternately arranged, and he would have a keen eye indeed who could tell that the plants were only taken there three or four weeks ago, the only traces of removal being a few yellow leaves at the bottom of each plant. The success of even such a small scheme as this is sometimes of importance after such a fearful season. With plenty of material in hand many an eyesore might be erased, and many a gloomy spot in conspicuous places made bright. It only requires a little forethought, and the will to carry it out. He is supposed to be a bad general who cannot plan and counter-plan, and perhaps the past season has offered more scope and compelled more "scheming" than any of its predecessors for a long time past. It may be useful to those for whom these hints are intended to add that our seed was sown in a cold frame early in March, and transplanted in due course, and never "coddled." Many a failure that is wrongly ascribed to other causes is the result of sowing the seed too late in the season. *W. Hinds.*

Pumpkin Preserve.—Your correspondent, Mr. A. Dean, is wrong in his surmise as to the Gourd I grow and recommend for making preserve being the Ohio Squash. Instead of being egg-shaped, as he describes that variety to be, it is round, and as rich and handsome looking as a Melon, and when grown on a rubbish-heap or in rich vegetable soil often attains to such a size as to weigh from 100 lb. to 150 lb. I have several now that are not far short of this, one of which I shall have great pleasure in sending Mr. Dean if he would like to have it, or a good supply of seed if he prefers that instead. I think he will find this Gourd far superior to any of the Marrows, all of which, however, are good, and of special value this year now that fruit is so scarce and dear. About here the poor use them in pies with a few Raisins or sour Apples, with either of which they are very palatable and wholesome. It would be well if the growth of them could be more encouraged and people taught how to turn them to the best account, and this was my object in writing about the matter, as I thought the present season a favourable one to bring them under notice. *S. W.*

The Flow of the Sap.—Your correspondent "A." somewhat misapprehends my reference to a possible clogging of the sap cells of the tree as probably producing the gradual decadence in the growth to which he refers. If the sap, as I assume, does ascend through what "A." terms the vascular wood and returns through the bark, it is evident that the clogging must commence immediately above the ring made by the severed bark. Then, as the vessels become choked for lacking outlet for the sap, the ascending action of the sap must become less and less vigorous, until at length there is no further room available for more of the upward fluid; in fact, the tree or branch would become asphyxiated or choked by its own current of blood. This is but a guess, perhaps a wild one, but it has, at least, the merit of seeming to be correct. *D.*

The Late Potato Show at the Aquarium.—After the treatment the promoters of the recent Potato show received at the hands of the manager, Mr. Wybrow Robertson, it is scarcely probable that they will again honour that place of amusement with their presence. It transpired that during the performances that were taking place on the stage in the afternoon and evening for an hour and a half each period of the day, the Manager had all visitors and exhibitors excluded from the front portion of the Potato show. This matter did not come under the special notice of any members of the committee until the afternoon of the last day, when several, including the Hon. Secretary, M. Henry Vilmorin of Paris, and other gentlemen, were hustled out of the place. This violation of the agreement made with the committee naturally excited the ire of some members, and Mr. Robertson having been found, was bluntly told that it was a breach of faith, both to the subscribers and the public, thus to exclude them from the Potato show. Mr. McKinlay set Mr. Robertson and the police at defiance by getting under the tables into the allotted space, and the officials thought better than to remove him! Mr. Robertson endeavoured to palliate his conduct by stating that the public would have climbed upon the tables to see the performance, and thus have damaged the Potatos; but there was no ground for this assertion, as the public in the gallery at the time were chiefly persons of Potato tastes, and further, the placing of a length of baize along the top of the gallery rail would at once have completely shut the merry-Andrew business from view. The truth must be told. It was the manager's desire, by excluding the public from the gallery, to force them into the reserved seats below, for which an additional charge was made. The Potato men have had enough of the manager and the Royal Aquarium courtesies; they will in the future be careful that they place themselves in the hands of gentlemen only. *A Committeeman.*

—— I have read with much interest your account of the great Potato exhibition, and regret I had not the opportunity of inspecting the grand display of the really useful root, for such exhibitions must be of immense importance, and do a great service to the community, whose health and comfort are so much helped or hindered by a liberal supply of good Potatos. I think there is more attention given to the cultivation of this root than ever there was, and I know there are much better kinds now grown than formerly, and I observe in the local shows called "cottagers' shows" that the working men are fully aware of the importance of growing the very best sorts that they can procure. At some of these very small shows I have seen (this very unfavourable season) a very creditable sample of tubers, apparently perfectly healthy, but the results obtained by different people in respect to the quantity and quality is very conflicting and confusing. One gentleman here grew the Snowflake, and was delighted with his success in every way. The quality was very superior, but in a few days the crop was rotten with disease, while others who grew the same sort in adjoining gardens had no disease. The Rector of Woodstock produced with us an excellent crop, and resisted the disease, while others of great name, growing under the same conditions, were entirely lost. But there is one point which seems to have escaped the notice of schedule-makers which seems to me to be of great importance in forming a sure and reliable test of the quality of the Potato, and that is by having samples cooked and submitted to the judges in that state. I officiated as judge recently where we had several dishes submitted to us, and they were well cooked—done to perfection—a thing seldom seen in our large hotels, &c., where the very best Potatos are spoiled by cooking. I think that while the man who produces the best tubers is deserving of thanks, the cook who can do her part in the culinary department also deserves honourable and substantial reward. *William Payne, Belmont, Taunton.*

Strawberries.—Three years ago I excavated to the depth of 4 feet a large plot of ground. I had several large cartloads of rubbish, consisting of cuttings of plantations and hedges, cast into this pit. The whole of the soil was then thrown on to the top of this rubbish, the good soil being kept uppermost. Strawberries were planted on this raised bed and were allowed to grow in a mass; last year we grew on this bed, or a series of beds, the largest crop we have ever grown. Two years since I excavated another large plot, to the depth of 5 feet, throwing in rubbish and treating it in the same way as the last one. The plants are now most luxuriant. I ordered that several beds of Strawberries, which were to have been dug up this autumn, be preserved: I had them heavily manured; the beds are now a mass of plants, and these are to remain as they are—the leaves not only keep the beds

moist, but they exclude frost from the crowns. Another plan I have tried this autumn. I have had all the old plants of a bed five years old transplanted on fresh deeply trenched ground, well manured. The plants are looking very vigorous, and the crowns are well developed. I think it is the soil which gets exhausted, not the plants. Again, I had all the plants which had been forced last spring re-potted, the exhausted earth having been knocked off, and fresh loam, mixed with soil from a cesspool, put in its place. These plants are now specimens of vigour, the crowns much more developed than at this time last year, or in fact at any time during their former growth: the pots are 12 inches in diameter. *Observer.*

Eucharis.—We have at present a double row of Eucharis amazonica on a stage in front of our conservatory which is between 50 feet and 60 feet long. One row of the Eucharis are in 15-inch pots, the other in 6-inch and 9-inch. With a few Dracæna terminalis amongst them the effect is very striking. Some of the 6-inch pots have three flower-stems, and on one of the 15-inch pots there are forty-one flower-stems, with from five to seven flowers on each in different stages. They last a long time either in a moderately warm conservatory or a sitting-room. I shall be very pleased to let any one see them who takes an interest in such things. *Richard Carr, Gr. to F. N. Micklethwait, Esq., Taverham Hall, Norwich.*

Potato Disease.—I am indeed sorry to say that destroying the haulms, as recommended in your last week's number of the *Gardeners' Chronicle*, is powerless to arrest the spread of the fungus, or to prevent the loss of the crop. Immediately I discovered indications of the Peronospora this season—in fact, only some half-dozen spots could be detected on the leaves in my small garden crop, the whole looked green and healthy—no finer or healthier could be found in the entire county—I at once mowed down the stems, and burned the entire lot, and when I got up the crop shortly afterwards I did not find three unsound tubers, but in a month afterwards fully two-thirds were decayed, and thrown away to the fowls. I could tell a strange tale about experiments with the Peronospora, if I judged it would interest our readers, that would upset many theories so called. *R.*

Agave Corderoyii.—Seeing from the description and figure of Agave Corderoyii in the *Gardeners' Chronicle*, that you are desirous of a little information respecting it, I beg to say that I received it of Mr. De Smet, of Ghent, who was the gentleman that named it in my honour. He received a couple of plants from Mexico in 1868, and I enclose his statement to me respecting it. I am very proud of the honour he showed me, as I consider it a very distinct and interesting plant. The plant I then possessed of it I sold to Mr. Peacock, as he was very desirous to obtain it, and probably the one described and figured is the same plant. I have another variety of it, with leaves about 10 inches long, and rather wider, and the spines on the edges not so thick and dark, but the end spine is about the same—1 inch. I have also another, once called A. C. glauca, presented to me by the above gentleman, but the leaves are not so erect growing as the in former, but it is a very distinct variety. *Justus Corderoy, Blewbury, Didcot.*

Reports of Societies.

The Fungus Meeting at Hereford.—The annual meeting of the Woolhope Club for its "Fungus Foray," was appointed for the week beginning Monday, October 1, and ending Saturday, October 6, but a few members of the Society put in an appearance at Hereford as early as September 26. No special work was done by the Club till Monday, but on the previous Thursday Thomas Andrew Knight's "Monarch" orchard was visited at Tillington, his birthplace at Wormsley Grange, and his grave. For a portrait and an account of T. Andrew Knight's work see *Gardeners' Chronicle*, February 10, 1877.

Hereford Pomology.

The visit to Wormsley was altogether a pomological excursion, the authorities being Dr. Hogg, Dr. Bull, the Rev. C. H. Bulmer, and an old man from Hereford, 80 years of age, who brought a branch of Xanthium spinosum with him, just found close to Hereford. Many of the Apples now growing at Wormsley are hybrids or seedlings, difficult if not impossible to name. The latter part of the Wormsley day was devoted to archæological and architectural matters, ending with lawn tennis and an excellent dinner at the Rev. C. H. Bulmer's. The Hereford men did not leave Credenhill till after 10 P.M., and the 4 miles drive to Hereford was through a thick, white, wet fog, which, though it gave a romantic turn to the drive—it being like riding through the clouds—yet the wet air got sadly into the bronchial gubes of the fungologists, and with anything but pleasant effects. On Friday the 28th the pomologists visited Holme Lacy to see the wonderful collection of Pears growing upon a south wall, and to see the portrait of Lord Scudamore and Mr. Cornwall. Good gardening was observed in the magnificent growth of the Pears, of Tropæolum speciosum, Gentiana acaulis, &c.; together with bad gardening, represented by enormous quantities of diseased Potatos, allowed to fall into a mass of wet decay upon the surface of the beds. Truffles were turned up from under Laurels. In the afternoon a visit was paid to Breinton to see a famous Foxwhelp Apple tree, but owing to the badness of the season only one Apple could be found, but a Mistleto plant was observed growing upon the tree with a whorl of three leaves instead of two. At this place a fine specimen of Polyporus bispidus was observed on an Ash, but as one side of the ladder always fell off when the top was reached neither ladder nor tree could be ascended: some mischievous person, moreover, had a short time before shot the Polyporus. Fungi are not included amongst the small birds protected by Act of Parliament. Here a small collection of Apples was examined, some with peculiar names, as "Hang Down" and "The Ten Commandments." On asking for an explanation of the latter an Apple was cut in two so as to display ten bundles of vascular tissue very strongly marked (fig. 92). These names were surpassed, however, by the names of others which found their way to Hereford, as "End of the Walk," "Close to the Pump," "Near the Gate," &c. No proper names were known for these Apples, so they took temporary names from their position in the orchard. Saturday was devoted to painting various Herefordshire Apples and Pears, by Miss Ellis, of Hereford, and one of the artists employed on the *Gardeners' Chronicle*. Sunday was spent in a quiet and proper manner, as became the day, the only event of importance being a telegram from M. J. de Seynes, "Professeur agrégé à la Faculté de Médecin de Paris," to say he had just arrived in London with his son, and would be at Hereford on

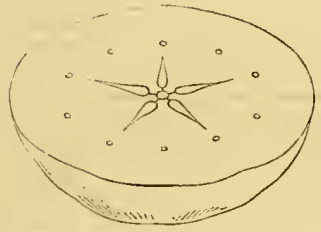


Fig. 92.—The "Ten Commandments" Apple.

the following day at 12; to accomplish this he had to leave London at 6 A.M. on Monday. So much for fungological enthusiasm!

The Fungus Foray.

At last Monday, the 1st of October, and the first day of the "foray," arrived, and with it an influx of fungus men and women and their paraphernalia. M. de Seynes, his son, and Mrs. Chapman, of London, arrived punctually at 12—Mr. Broome, of Batheaston, being in the same train. Later in the day M. Maxime Cornu, of Paris, with Mr. Howse, of Sydenham Hill, were met at the station by Dr. Bull and the Historian of the Woolhope Club. Still later in the evening came Mr. Renny, of London, Mr. and Miss Du Port, of Norfolk, Mr. and Mrs. Bicknell, of London, Mr. Cecil H. Sp. Perceval, of Henbury, the Rev. Mr. Cunningham, from Nottinghamshire, and many others. Dr. George Bennett, Member of the Medical Faculty of the University, Sydney, New South Wales, re-arranged his plans specially to attend the Hereford meeting. M. de Seynes brought with him from Central France some magnificent specimens of the orange-topped Agaricus cæsareus, the first species in Fries' *Epicrisis*, and the species which, cooked under the direction of Agrippina, poisoned Claudius. None of the Woolhopeans had seen the species before, and it was sketched on the spot. M. Max. Cornu also brought a large number of species of fungi, notably Agaricus Eryngii—a parasite upon the roots of Eryngium campestre, and never yet detected in this country. Mr. Berkeley could not come, as he was detained by an examination in London; he, however, sent a letter (enclosing two funguses) congratulating the Club on the fine weather. The Rev. J. E. Vize, of Forden, the author of Æcidium depauperans, was detained for two days in Montgomeryshire, as two persons in that benighted district had the bad taste to wish to be married during the week of the "foray." Mr. Plowright, the surgeon of King's Lynn, was detained for two days, owing to some "cramming" process, the details of which did not come to light.

Never before were there so many visitors at Hereford from long distances, and it was rumoured on apparently good grounds that next year would certainly witness the arrival of the Mikado of Japan, and three botanists from Yokohama, to see if they could not get some hints on fungus-growing better than their present method of producing the "Shu-take" fungus by tapping the "Shu" tree with a mallet. There would be no difficulty with the language, as Dr. Bull speaks all languages (dead and living) with equal fluency. Dr. Bull entertained the visitors from France to dinner, but during his temporary absence no one could remember either the French, Latin, or Greek for "Welsh Rabbit." At this and other dinners the famous Foxwhelp cider was produced; this cider is so strong, that it is hardly safe to open a bottle of it in a dining-room, for the cork rushes out with a terrific explosion. Many bottles burst in the cellars. (Mr. Andrew Knight invented a cold-water cellar to keep the extraordinary potency of this cider within limits by flooding.) It is not uncommon to see scars in ceilings from the percussion of Foxwhelp cider corks, and at one dinner a bottle was opened on the lawn for safety and experiment. In this instance the cork flew out like a rifle-bullet, struck the branch of a tree with terrific violence, and flew off at a tangent into space: it is certain the cork never came down again, and it is probable that at this moment it is sailing through the universe as one atom in the cider-ial system, and is perhaps the new asteroid recently named "Maria" by an American astronomer!

All went to bed very tired on Monday night. Nevertheless, on Tuesday morning the French visitors and a number of old Woolhopeans, including Miss Ellis, were at Dr. Bull's house before 7 in the morning, to snatch a hasty breakfast before starting by the 7.30 A.M. train for Ludlow. All the fungological visitors in Hereford joined this excursion, meeting Messrs. Cooke, Phillips, Lees, &c., either at the Ludlow station or at the Messrs. Forty's house. The excursionists were twenty-three in number. The Messrs. Forty with their customary liberality had prepared an excellent (we were almost writing luxurious) breakfast for the entire party, and after a stroll through the ancient town the botanists departed in vehicles for Downton Woods. The weather was uncommonly fine, had been uncommonly fine, and remained uncommonly fine until the end of the meeting, so that the visitors from France had no reason in this instance to complain of Perfidious Albion; the only little difficulty rested with one of the Ludlow horses, which proved to be a desperate kicker, and looked round at the Nottinghamshire clergyman (on the box) in a most spiteful manner. Max Cornu carried an immense cylindrical vasculum over his shoulder, a pocket microscope, and a dangerous-looking knife with a blade 9¼ inches in length: M. Cornu said the same sort of knife was used for stabbing a French policeman a day or two before. M. De Seynes carried a very small vasculum in front and an instrument half-way between a chisel and a knife, with a blade more than 1 foot long. The first fungus found was the Vegetable "Bifteck," and Hygrophorus pratensis, growing in company with Gentiana campestris. After these came many of the other well-known rare Herefordshire fungi, as Cortinarius sanguineus, cinnamomeus, cinnabarinus, Strobilomyces strobilaceus, Peziza onotica, Clavaria Botrytis, aurea, coralloides; Agaricus eucbrous, Hygrophorus calyptriformis, &c., all large, handsome, rare, and highly-coloured species. The fungi, as regards number, were scarce, but several species, either new or of uncommon interest, were found. By the Teme side we noticed Scrophularia Ehrharti and Iris fœtidissima. One of the Puff-balls, Lycoperdon gemmatum, was growing for a considerable distance up the mossy side of a tree, whilst various species of Hygrophorus were growing in plenty in the open spaces, with the "Eye-bright," Euphrasia officinalis—"Break-spectacles" in France, said M. Cornu. The find of the day, and new to this country, was undoubtedly Agaricus Russula, a crimson-topped Agaric, looking exactly like a Russula till the gills were examined, and then it proved to be an Agaricus "mimicing" the colour and habit of a Russula. Agaricus Russula was so named by Schæffer, but there is another (book) plant named by the illustrious Fries Hygrophorus erubescens; the descriptions of both tally as well as natural objects (especially fungi) will tally with descriptions, and the two plants are undoubtedly the same. According to book descriptions the two things cannot be "co-generic," but those who know the Agaricus have never seen the Hygrophorus, and those who find the Hygrophorus (says M. Cornu) never meet with the Agaricus.

There are at least twice as many described species of fungi as there ought to be, especially amongst the small species; a fungus in a dry place is another species in a moist one, on a sunny day it is one thing, on a rainy day another; it may be one thing over night and quite a different species in the morning! A slight alteration in shape, size, colour, odour, or habit of a fungus is quite enough with many fungologists to constitute a new species, and if the species go on increasing in

numbers at the present ratio for a few years longer no one will at length be able to master the plants, or even the literature of a single genus. To merely look over the figures and descriptions of one section of one genus of Peziza in No. 1 of Dr. Cooke's *Monographia* is enough to send an ordinary mortal into a cold sweat. No doubt there are differences, permanent or otherwise, in some of these little red Pezizas, with their little spores and little bases, but we hope the day is not far distant when at least one-half the species will be knocked on the head, to the despair of their founders!

Truffles.

In some parts of the Downton Woods, especially in the open places, there is a luxuriant growth of a common moss, Mnium hornum (= Bryum hornum). Whilst walking over this dense and tall growing moss the quick eye of M. Cornu detected a yellow mycelium known to belong to the singular black, club-shaped fungus termed Torrubia ophioglossoides. This Torrubia is a parasite upon a spurious sort of underground Truffle named Elaphomyces muricatus, and the yellow mycelium (explained M. Cornu) was running over and amongst the moss in search of its underground victim, the Truffle. A careful search just under the surface of the ground in the neighbourhood of the mycelium infested moss soon brought the "Truffle" to light, and in one instance the perfect parasitic Torrubia itself was found by Mrs. Chapman. In the search for the Elaphomyces, another curious underground fungus came to light, viz., Cenococcum geophilum, and the fact was also observed that mice were searching for and eating the same Elaphomyces, so that there was a race between the mycelium of a fungus and mice in search of the same object to prey upon. It is well-known that squirrels and mice are in the habit of searching for, and devouring when found, the Truffles of our markets (Tuber æstivum). Truffle-dogs will also eat the Truffles if not carefully watched, as will the trained Truffle-hogs of France.

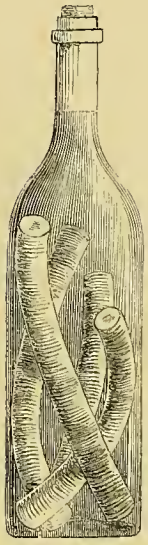


Fig. 93.—Four Vinegar Plants in a Bottle of Cider.

M. Cornu in referring to the latter animals termed them "learned pigs." Immense quantities of Agaricus nebularis were found later in the day; these were often covered with the mycellum which, under favourable circumstances, gives rise to the parasitic Agaricus Loveianus. In the moss-house in the woods the Messrs. Forty provided a most sumptuous repast of ham, meat pies, cake, bread and cheese, whisky and champagne. The same gentlemen also provided a substantial tea at Ludlow, so that the fungologists were well refreshed, and all retired tired to Hereford. Mr. Vizé (his marriage well over) joined the party in the train.

On Wednesday, October 3, Dinmore was visited as usual; M. Cornu was too tired to accompany the excursionists; Dr. Bull, Dr. Hogg, and some others, remained at Hereford for the committee meeting of the pomological department, and one or two other members remained to examine and sketch the Apples and Pears, and to put the fungi in order. Dr. Bull again entertained the visitors from a distance at dinner, and all adjourned to the Free Library in the evening, where Mrs. Chapman was found still busy sketching. Other members now discussed poisonous fungi; the best and readiest antidotes to fungus poisoning were pronounced to be found in oil and milk, the latter to prevent the poison laying hold of the coats of the stomach, and brandy to be used as a reviver.

Thursday, October 4, was the "Club day," when the Whitfield lawns were visited, by the kind permission of the Rev. Archer Clive. A larger number of excursionists than usual left Hereford in various vehicles, and horseflesh proved so limited that the Woolhopeans were obliged to enlist for their services two rank jibbers and four jet-black undertaker's horses with flowing manes, long tails, and a funereal trot. Amongst the fungi found may be mentioned one of the true Truffles, Tuber puberulum, Agaricus dryinus, Cantharellus tubæformis, Peziza æruginosa in abundance, Russula Queletii, Clavaria cinerea, Hygrophorus chrysodon, Helvella elastica, and Stemonites fusca. On leaving Mr. Archer Clive had kindly prepared a good luncheon for such as cared to partake of it.

The Dinner.

There were seventy-one Woolhopeans at the "Green Dragon" dinner, and the *menu* (see p. 461, fig. 90), prepared by the artist-in-ordinary to the Club, shows the nature of the repast set before the guests. Craterellus cornucopioides was a highly relished novelty, cooked in honour of M. Cornu. This fungus, when prepared for the table, has a somewhat singular appearance, being jet-black in colour, and in this resembling burnt Onions. Its odour is highly inviting, and its taste truly delicious.

After dinner Dr. Bull gave a report of the progress of mycology during the year. In this report he touched on all the new work done by fungologists since last autumn, and pleasantly referred at some length, in the French language, to the visitors from France and their works, so well known and appreciated in this country. In happy and well selected terms he bade them a hearty wecome to the Woolhope meeting, and then again breaking off into English he gave a welcome to Dr. Bennett, of New South Wales, who was at the head of the table. Dr. Bull's speech was followed by some remarks (also in French) from Dr. Steele, of Abergavenny. This speech, by its fluency and pleasant allusions, took the room by storm, and was replied to, first by M. de Seynes, and then by M. Maxime Cornu. Both gentlemen expressed themselves delighted with this, their first visit to England, and with the generous and hearty welcome they had received at Hereford and elsewhere. They said how pleased they had felt to meet so many English botanists, and how the different societies of France were arranging fungus gatherings after the exact manner of the Woolhope Club. The Rev. C. H. Bulmer then read a report on the progress of the forthcoming new illustated work to be named *The Herefordshire Pomona*, in which work it is proposed to give life-size coloured figures of all the best Apples and Pears grown in Herefordshire. The last paper at the "Green Dragon" was a humorous one by Dr. Cooke, termed "What is the Use of Fungus Hunting?"

The Soirée.

At 8 o'clock a *soiree*, attended by a large number of botanists, was held in the house of Thomas Cam, Esq. Here microscopes with high powers were ready, and serious work was commenced. M. Maxime Cornu described at some length, in the French language, a disease of the Vine named "Anthracnose," observed in the environs of Narbonne; the description was accompanied by a series of beautifully-executed drawings. The same gentleman exhibited highly-finished drawings of new Agarics and other fungi. The next paper (by the writer of this report) was on a fossil Peronospora from the scalariform axis of a Lepidodendron from the Coal Measures. The fungus, therefore, existed during the Palæozoic epoch. One of the remarkable points in the plant exhibited was that the zoospores could be seen under the microscope still *in situ*, and another point of interest was that these zoospores, and indeed the other parts of the parasite exactly agreed in size and habit with the similar bodies found in the fungus of the Potato disease at the present day. The paper was illustrated by enlarged drawings, and the actual specimens were exhibited under the microscope. This extremely ancient fungus is now named Peronosporites antiquarius, and it will be illustrated in an early number of the *Gardeners' Chronicle*. The writer of this also exhibited a singular growth of Penicillium glaucum at the bottom of a bottle of Callocine.

The Rev. J. E. Vize then read some notes on a singular development of the spores of Puccinia Conii, illustrated by drawings and specimens. This paper was followed by one from Dr. Cooke on the Myxomycetes, and some notes by Mr. Phillips on Pezizæ. Time would not permit of reading the Rev. Augustin Ley's paper on the Mosses of Herefordshire, which all regretted, though it was nearly midnight when the last of the visitors left Mr. Cam's house.

Another Excursion.

Friday, October 5, was devoted to an exploration of Lyonshall Wood and neighbourhood, near Titley. Amongst notable plants found here may be mentioned Uredo vacciniorum, Puccinia veronicarum, Nyctalis parasitica, N. asterophora, Ptychogaster albus, Lactarius glyciosmus, Agaricus vaccinus, and many other rarities too numerous to mention. The Rev. J. E. Vize lighted on Poronia punctata growing on a discarded fragment of a rustic's corduroy breeches. After this district had been well searched the Woolhopeans drove direct to Moor Court, where they were most hospitably received by the Rev. James and Mrs. Davies. Here an excellent dinner had been prepared, and over this dinner till dark the fungus men discussed fungus subjects in a variety of languages. French was probably most pronounced, often mixed with English; when both failed Latin came to the rescue, with sometimes a touch of Greek—when all languages fell short of a clear meaning, drawing as a last resource was resorted to. As an example, no one at our end of the table could remember the French for Cranberry-pie, whereas Vaccinium Oxycoccus-pie was common to all! And so, with many thanks to the kind host and hostess the party drove off in the black darkness of evening to the Titley station. Owing to the nature of the vehicles and the quality of the quadrupeds, the party was late at the station, but such is the respect with which fungus-men are held in Herefordshire that the station authorities detained the train for six minutes till the arrival of the party.

Odds and Ends.

Amongst objects of interest in the Woolhope room may be mentioned four singular Vinegar-plants in (what once was) a bottle of cider (fig. 93). They were overlooked till the last moment, as every one took them to be four tracheæ or wind-pipes, or something of the sort, in spirit, belonging to one of the doctors of medicine present. The true explanation of the singular growth is probably as follows:—A small Vinegar-plant at first grew on the top of the cider in the neck of the bottle, and as layer on layer got formed the plant took the shape of the neck of the bottle till it got heavy and dropped to the bottom in the form of a wind-pipe. When the first plant had fallen down another got formed and dropped away for a third, till at last all the four perfect plants were free in the liquid. Another singular growth was shown in a plant of Craterellus cornucopioides, in which a curious lip-like growth on the edge had embraced a branch and carried it up in a tight fold, reminding one of Mr. Darwin's observations on the leaf of Pinguicula. Had the twig been a sing, a crane-fly, or a worm, we should have had an imitation "carnivorous fungus" at once. Mr. Berkeley sent for exhibition Cantharellus cinereus and Craterellus sinuosus. It will be observed how much alike in sound the generic names are. Unfortunately for the two genera, certain species belonging to one or other are also so much alike in character and habit, that it is almost impossible to refer them with certainty to one or the other: and to make matters worse, the Craterellus of one book is often the Cantharellus of another. Mr. English, of Epping, sent Sistotrema confluens, Thelephora multizonata, cristata, and sebacea; on the table we noticed Lenzites sepiaria, Polyporus nummularius, P. Schweinitzii, P. ribes, P. sanguineus from South America (Mr. Perceval), Cynophallus caninus, Peziza auricolor, P. corium, a large, handsome, jet-black plant, brought from King's Lynn by Mr. Plowright; Agaricus phlebophorus, A. inamænus, Lycoperdon saccatum, Thelephora caryophyllea, and many others. As

Fig. 94.—A twig embraced and held tight by the incurled edge of a fungus.

regards hybridism and cross species in fungi, it is worthy of note that a plant was exhibited exactly intermediate between Helvella lacunosa and H. crispa, the plant in question had the black and somewhat plain pileus of the former, and the larger growth and snow-white deeply ribbed and hollow stem of the latter. As regards the fungus of the Potato disease Mr. Broome stated that he had repeated his experiment this year with Potato leaves infected by the Peronospora by placing them in water: in a week's time the leaves were again completely filled with resting-spores. Mr. Bickoell mentioned a curious fact in regard to Boletus scaber, he stated that he had recently seen about 10,000 specimens growing in groups or masses all within a quarter of a square mile on Cray Common, near Chiselhurst: it is usual to see the plant in single specimens only. There was an exhibition of Apples and Pears at the same time with the fungi, and the specimens were so numerous that they filled a second room down-stairs, and some were even placed upon the floor; there were more than 3000 specimens exhibited.

All the fungus men met at Dr. Bull's house for the last time on Friday evening, October 5, when M. Maxime Corou exhibited a series of drawings and plates (at present unpublished), illustrative of the life history of the Phylloxera and its ravages upon the Vine. M. Corou explained the illustrations in detail, and all present agreed that the drawings were the most highly finished, elaborate, and exhaustive illustrations they had ever seen. Dr. Cooke exhibited drawings of Agarics and some of the larger fungi; Mr. Chapman showed a series of boldly executed and richly coloured drawings of fungi, many having been made in France and Switzerland; and the writer showed a drawing of Agaricus campestris, with traces of a volva.

FAREWELL!

The French visitors and some others left Hereford by an early train on Saturday, several Woolhopeans being on the platform to see them off, and by mid-day all the fungus visitors had left the place. The 1877 meeting was the tenth, and though funguses had been uncommonly scarce in numbers all through the autumn, yet the 1877 meeting will always be remembered as in every way the most pleasant and successful of the entire series, on account of the additions made to the flora, the importance and newness of the papers read, and the thoroughly enjoyable nature of the excursions and meetings. *W. G. Smith.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, OCT. 10, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Oct.	In.	In.	°	°	°	°	°				In.
4	30.06	+0.37	57.0	34.0	23.0	44.7	— 8.8	40.0	84	E.S.E.: E.: E.N.E.	0.00
5	32.31	+0.62	64.4	38.4	26.0	50.0	— 3.2	44.9	83	S.E.	0.00
6	32.44	+0.76	64.8	39.1	25.7	50.0	— 2.9	43.8	80	S.S.E.: N.E.	0.00
7	32.22	+0.54	53.5	36.2	17.3	44.0	— 8.6	43.6	93	Calm.	0.00
8	30.01	+0.32	55.6	44.4	11.2	49.5	— 2.7	42.3	76	N.	0.03
9	30.11	+0.42	55.0	40.8	14.2	46.9	— 5.0	40.7	80	N.: NNW	0.00
10	29.84	+0.15	53.9	36.7	17.2	45.2	— 6.4	41.1	86	S.S.E.: S.W.	0.00
Mean	30.14	+0.45	57.7	38.5	19.2	47.2	— 5.4	42.3	84	variable	sum 0.03

Oct. 4.—A fine day, but cloudy and very cold. Fog in morning.
— 5.—A very fine bright day. Cold.
— 6.—A brilliantly fine clear day.
— 7.—A dull cold day. Foggy and misty. Little rain fell at 11 P.M.
— 8.—A fine day, cloudy and strong wind. Little rain fell in early morning. (Great fall of leaves.)
— 9.—A fine day, partially cloudy. Cold.
— 10.—Overcast, dull day. Very cold.

LONDON: *Barometer.*—During the week ending Saturday, October 6, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.21 inches at the beginning of the week to 30.01 inches by the evening of October 2, increased to 30.67 inches by the morning of the 6th, and was 30.63 inches by the end of the week. The mean reading for the week at sea level was 30.25 inches, being 0.05 inch above that of the preceding week, and 0.38 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 64¾° on the 6th to 57° on the 4th; the mean value for the week was 62°. The lowest temperatures of the air observed by night ranged from 34° on the 4th to 43° on the 1st; the mean for the week was 38¾°. The mean daily range of temperature in the week was 23¼°, the greatest range in the day was 26°, on the 5th, and the least 18¼°, on the 1st.

The mean daily temperatures of the air were as follows:—September 30, 50°; October 1, 50°.7; 2d, 49°; 3d, 46°.6; 4th, 44°.7; 5th, 50°; 6th, 50°; and the departures in defect of their respective averages were 4°.3, 3°.7, 5°.2, 7°.3, 8°.8, 3°.2, and 2°.9. The mean temperature of the air for the week was 48°.7, being 5°.1 below the average of sixty years' observations.

From September 16 to the present time the weather has been exceedingly cold, and the mean daily temperatures have been all below their averages to the mean amount of 5°.2; on September 25 the deficiency amounted to 10°.7, and on October 4 to 8°.8.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 118½° on the 5th, 123¾° on the 6th, 113° on the 2d, and 111° on the 1st; on the 4th the reading did not rise above 99¾°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 25½° on the 4th of October, 26½° on the 6th, 28° on the 5th, and 28½° on the 3d. The mean of the seven low readings was 29°.

Wind.—The direction of the wind was N.E., and its strength very light. The weather during the week was fine and bright, very dry and cold. No rain fell. Fog prevailed on the 1st, 2d, 3d, and 4th of October, and a solar halo was seen on the afternoon of the 6th inst.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 68° at Truro, 65¾° at both Cambridge and Eccles, and 64¾° at Blackheath; the highest temperature of the air at Hull was 58°, and at Wolverhampton 59¾°; the mean value from all stations was 62½°. The lowest temperatures of the air observed by night were 29¾° at Cambridge, 31° at both Wolverhampton and Nottingham, and 33½° at Bristol; the lowest temperature of the air at Portsmouth and Sunderland was 43°; the general mean from all stations was 36½°. The range of temperature in the week was the greatest at Cambridge, 36°, and the least at Sunderland, 18°; the mean range from all stations was 25¾°.

The mean of the seven high day temperatures was the highest at Truro, 64¾°, and at Cambridge 63°, and the lowest at Bradford, 56½°; the mean value for the week from all stations was 60°. The mean of the seven low night temperatures was the lowest at Nottingham, 35½°, and at Wolverhampton 36°, and the highest at Truro and Sunderland, both 46½°; the mean from all stations was 40¾°. The mean daily range of temperature in the week was the least at Sunderland, 12½°, and the greatest at Cambridge, 28½°; the mean daily range from all stations was 19½°.

The mean temperature of the air for the week from all stations was 49½°, being 6¾° lower than the value for the corresponding week in 1876. The highest was 54¾°, at Truro, and the lowest 47½°, at Nottingham, Sheffield, and Hull.

The weather during the week was fine, bright, very dry, and cold. At Plymouth and Truro one-tenth of an inch of rain fell, but at other places scarcely any rain was measured. The average fall over the country was 0.01 inch. Fog was prevalent during the week. A solar halo was seen at Bristol on the 6th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 64° at Dundee to 59° at Leith; the mean value from all stations was 61½°. The lowest temperatures of the air ranged from 33° at Perth to 42° at Greenock; the mean from all stations was 38½°. The mean range of temperature in the week from all stations was 23½°.

The mean temperature of the air for the week from all stations was 51°, being 1½° lower than the value for the corresponding week in 1876. The highest was at Glasgow, Dundee, and Aberdeen, all 52°, and the lowest at Leith, 49¾°.

Rain.—The fall of rain at Greenock was 0.26 inch, and at Aberdeen was 0.05 inch; at Glasgow, Edinburgh, Dundee, Paisley, Leith, Perth, no rain fell; the mean average fall over the country was 0.04 inch.

DUBLIN.—The highest temperature was 68½°, the lowest 36¾°, the range was 31¾°, the mean 53½°, and no rain fell.

JAMES GLAISHER.

Obituary.

WE regret to hear of the death lately, at Nursery House, Broughty Ferry, N.B., of JOHN STEWART, Esq., in the eighty-second year of his age. Mr. Stewart was the senior partner of the well-known nursery firm of John Stewart & Sons, of Dundee.

Enquiries.

He that questioneth much shall learn much.—BACON.

210. ERIOPSIS.—I bought a plant of the above (with peculiar long, rough, purplish bulbs), which proved to be in bad health, and there is now only an atom living. Mr. B. S. Williams says E. biloba requires cool treatment, sunshine, and plenty of water. The *Botanical Magazine* says E. rytidobulbon (also rutibulbon) was found on the trunk of a Palm; and Burbidge (*Cool Orchids*, &c.) says that both names are of one species, which grows on the margin of streams, even sending down its roots into the water (!). Please advise on the above. *T. T.* [We have no experience. What do our correspondents say? EDS.]

Answers to Correspondents.

BEGONIAS: *T. T.* Your Begonia argyrostigma is losing its leaves from not being kept sufficiently warm, and possibly too wet at the root. It is a stove plant.

BOOKS: *E. W.* The pamphlet, *Stock and Share Investments*, is published at the *Bazaar* Office, 32, Wellington Street, Strand, W.C. — *Ignoramus.* Grigor's *Arboriculture* will probably suit you.

BOX EDGING: *T. B.* No. The best time is during showery weather in spring.

CAMELLIAS: *A. H. D.* Have the bed prepared, so as to plant them out after they have done blooming, or else defer the operation till the young growth has become set.

CHRYSANTHEMUMS: *T. T.* The dying of the tips of the leaves is probably caused by drought at the root; unless, indeed, it may have suffered from injudicious fumigation.

CELERY: *P. B.* The leaves are badly attacked by a fungus—the well-known "Celery Blaud," Puccinia apii = Uredo apii.

FRUIT TREES FOR WALLS: *An Amateur.* For north-west aspect try Pears and Plums, planted at, say, 10 feet apart. Sorts: Pears—Marie Louise, Louise Bonne, Glou Morçeau, Doyenné du Comice, Joséphine de Malines, Bergamotte d'Esperen; Plums—Victoria, Jefferson, Transparent Gage, Belle de Septembre. For south-west aspect: Peaches — Hale's Early, Stirling Castle, Bellegarde, Walburton Admirable; Nectarines—Elruge, Lord Napier, Victoria; Apricot—Moorpark. See our Fruit Number.

FUNGI: *C. Green.* It is a tuft of some imperfectly developed Agaric, — probably Agaricus squarrosa. *M. J. B.*

MAKING LAWNS: *G. R.* Get the ground prepared now, or during the dry open weather of the next month or two, and sow down with well-selected seeds next February. Rhododendrons may be removed now, or in spring. If it is only a small lawn, and you are going to lay it down with turf, do it at once.

MALFORMED ORANGES: *C. H.* A common occurrence. The fruit is normally made up of several segments united together; sometimes, as in your specimen, one or more get detached, or do not unite, and the result is as you see.

MRS. PINCE VINE AS A STOCK: *Talpey.* We have no direct experience, but incline to believe that Mrs. Pince will not prove a suitable stock to graft upon. Madresfield Court and Foster's Seedling are both excellent sorts.

NAMES OF FRUITS: *George Swailes.* London or Five-crowned Pippin.—*Mr. Croxton.* 1, Carlisle Codlin; 2, Ravelstone Pippin; 3, Manks' Codlin; 4, Ribston Pippin; 6, Northern Greening; 7, Gravenstein; Cockle Pippin; others not recognised.—*W. Hockin.* Apple, Mère de Ménage. Pear, not sure of.

NAMES OF PLANTS: *T. R.* 1, Cratægus Crus Galli, var.; 2, C. punctata; 3, C. prunifolia; 4, C. pyrifolia, probably. The two cones sent are clearly both of one species, P. nobilis. You know best whether there is anything different in the foliage or habit to constitute one of them a variety.—*R. K.* Pyrus pinnatifida; now considered a variety of the White Beam, P. Aria.—*T. W.* 1, Ceanothus azureus; 2, Retinospora juniperoides, syn. decussata; 3, Retinospora plumosa aurea; 4, Juniperus virginiana Leeana; 5, Cupressus nutkaensis.—*J. Morton.* Sedum spectabile, sometimes called S. Fabaria.—*G. Bath.* Platycrater arguta is a synonymous name for P. Sieboldii—a recently introduced Japanese shrub, with lanceolate dentate deciduous leaves, and white Philadelphus-like flowers. It is a close ally of the Deutzias.—*Ada.* Asplenium Adiantum-nigrum, [Euonymus europæus. — *E. C.* Hymenophyllum tunbridgense.—*A. McDonald.* The Halleri form of Asplenium fontanum.—*T. Hare.* 1, Adiantum concinnum; 2, Blechnum occidentale; 3, Pteris serrulata; 4, Pteris cretica; 5, Selaginella Kraussii, commonly but erroneously known as S. denticulata; 6, Lophospermum scandens.—*E. G. H.* Tropæolum tuberosum.

PICEA NOBLIS: *T. Bury.* They may be sown at once and kept in a dry, cold frame, where, if good, they will germinate next spring. Those sent to us do not, however, appear to be perfect, possibly through the female flowers not having been impregnated.

POTATOS: *G. Donaldson.* 1. An "Amateur in Potato-growing," is like an amateur in any other gardening pursuit—one who cultivates only for pleasure, not for profit. 2. The reply to this question—"Will a man who grows three or more acres of Potates for sale, puts up a stall to sell to the public, and sends out printed lists of what he has to dispose of, be allowed to compete at the Royal Horticultural Society, as an amateur or as a Potato Salesman?"—should be addressed to the Secretary of the Society; but you may learn our opinion from the reply to the former question.

Rainfall: *E. E. H.* The weight of an inch of rain falling over an acre of ground is equal to 101 tons.

Scolopendrium: *J. B.* The variety Cousensii is a crested and viviparous variety of the Hart's-tongue Fern, and we believe there are others that present the same characteristics. S. vulgare Cousensii is a very compact dwarf growing variety.

Training Epacrises: *J. T. S.* Epacrises should be cut down rather closely after flowering is over, and the stronger the growth afterwards obtained the better will they flower. You can do but little in training those of the E. impressa type, as they produce long erect shoots, but those allied to E. grandiflora, which should be cut somewhat less freely, may be trained into bushy plants by careful and persistent stopping when young. Both these and Heaths may be syringed at seasonable times.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received.—Messrs. Paul & Son (The "Old" Nurseries, Cheshunt, Herts), Catalogue of Roses; also Catalogue of Fruit, and Ornamental Trees and Shrubs, &c.—Thomas S. Ware (Hale Farm Nurseries, Tottenham, London), Catalogue of Hardy Florists' Flowers, Roses, &c.—Messrs. J. G. Wheeler & Son (Kingsholm Nursery, Gloucester), Autumn Catalogue of Fruit Trees, Roses, Forest Trees, Evergreens, Flower Roots, &c.

Communications Received.—G. W.—H. H.—J. C.—R. D.—E. B. C.—G. H. S.—E. S. D.—T. W.—A. W.—W. C.—C. W. D.—T. E.—C. M.—W. P.—S. & M.—P. B.—W. T. D.—J. G.—J. P.—W. M.

Markets.

COVENT GARDEN, October 11.

We have been well supplied with Apples during this week, the demand being quiet, and, except for very best samples, prices easier. The first consignment of American fruit this season is just to hand. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 6– 5 0	Peaches, per doz.	6 0–15 0
Grapes, per lb.	0 9– 6 0	Pears, per doz.	1 0– 3 0
Lemons, per 100	8 0–12 0	Pine-apples, per lb.	4 0– 8 0
Melons, each	2 0– 5 0	Figs, green, doz.	1 0– 3 0
Nuts, Cobs, per lb.	0 4– 0 6	Walnuts, per bushel	5 0– 8 0
Oranges, per 100	12 0–20 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Herbs, per bunch	0 2– 0 4
Asparagus, Sprue, per bundle	1 6– ..	Horse Radish, p. bun.	4 0– ..
Aubergines, p. doz.	2 0– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per bushel	10 0– ..	Lettuces, per score	2 0– ..
— Scarlet Runners, per bushel	6 0– ..	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Brussels Sprouts, p. bush.	8 0– ..	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Eodive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s. Large importations are being received from Germany, selling at from 3s. 6d. to 6s. per bag. Onions are also coming from the same place, fetching 4s. to 4s. 6d. per bag.

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Asters, 12 bun.	6 0–12 0	Pelargoniums, 12 spr.	1 0– 3 0
Bouvardias, per bun.	1 0– 4 0	— zonal, 12 sprays	0 6– 1 6
Calceolaria, p bun.	0 6– 1 0	Primula, double, per bunch	1 0– 2 0
Chrysanthem. 12 bun.	4 0– 9 0	Pyrethrum	0 6– 1 0
Cornflower, 12 bun.	6 0– 9 0	Roses (outdr.), 12 bun.	6 0–12 0
Dahlias, 12 bun.	6 0–12 0	— (indoor), per doz.	1 6–12 0
Eschscholtzia, doen bunches	2 0– 6 0	Stephanotis, 12 spr.	6 0–12 0
Eucharis, per doz.	4 0–12 0	Stocks, 12 bunches	4 0– 8 0
Gardenia, per doz.	5 0–12 0	Sunflower, 12 bun.	2 0– 6 0
Heartsease, 12 bun.	1 6– 6 0	Sweet Peas, 12 bun.	6 0– 9 0
Heliotropes, 12 spr.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 4 0
Jasmine, per bunch	1 0– 2 0	Violets, 12 bunches	1 0– 2 0
Mignonette, 12 bun.	2 0– 9 0		

Plants in Pots.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	6 0–12 0	Ferns, in var., p. doz.	4 0–18 0
Bouvardias, do.	12 0–24 0	Ficus elastica, each	2 6–15 0
China Asters, dozen	6 0–12 0	Fuchsias, per dozen	6 0–12 0
Chrysanth., per doz.	5 0–12 0	Liliums in var., each	1 6– 6 0
Clematis	6 0–24 0	Mignonette, per doz.	6 0– 9 0
Coleus, per dozen	3 0– 9 0	Myrtles, do.	3 0– 9 0
Cyclamen, per doz.	18 0–24 0	Palms in variety, each	3 6–21 0
Cyperus, do.	4 0–12 0	Pelargon., scarlet, p. dozen	2 0– 9 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Valotta purpur., doz.	9 0–18 0
Euonymus, in var., per doz.	6 0–24 0		

SEEDS.

London: *Oct.* 10.—The seed market continues to present a quiet appearance, and a general disinclination to purchase red Clover at current rates is observable. Still lower quotations come to hand from France, but in view of the superabundant supply promised by America and other countries buyers are naturally loath to operate. The latest reports from Germany are more promising than the early ones. To-day's advices from the United States confirm previous information as to the largeness and goodness of the Clover crop; their home consumption this season will, it is said, be heavy. In consequence of the high prices of last season, Western farmers put in much less Clover than usual, but this year the seedings will be above the average; the cheapness and fineness of the seed will also stimulate the domestic demand. As to the probable range of prices obtainable for the large surplus which will be left after the Americans have supplied their own wants, this will naturally be regulated by the export demand from Europe; consequently if merchants on this side of the Atlantic adopt a waiting policy, and hold off from buying, they will probably be enabled later on to lay in their stock at a reasonable figure. In Alsike and Trefoil there is just now very little business doing, but for White Clover more inquiry has prevailed. Foreign Italian is offering at low rates. Some new American Timothy has just arrived on this market. For Canary seed the sale keeps extremely slow; new home-grown samples are now to hand. Fine new white Millet can now be bought on Mark Lane at a moderate price. White Mustard shows on the past few weeks a heavy drop, and the downward tendency meets with no arrest. Rape seed is also rather weaker. For Blue Peas there is a brisk request at the late advance. Owing to the long-continued lack of rain the winter Tare trade has latterly been very dull. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday the demand for English Wheat was very slow, but owing to the recovery which had taken place at New York holders were firm, and, in some instances, an advance of 1s. per quarter took place. In foreign Wheat choice descriptions were held for more money. Barley sold slowly at the recent decline. Malt was quiet at about late rates. For Indian corn the prices were supported. The Oat trade was steady, without material change in prices. For Beans and Peas the quotations ruled firm. Flour was in moderate demand at late rates. Wednesday's market was quiet, with little or no change in the quotations. Fine dry samples, whether of Wheat, Barley, or other description of produce, were scarce, and fully as dear as on Monday.—Average prices of corn for the week ending October 6:—Wheat, 55s. 11d.; Barley, 44s. 2d.; Oats, 24s. For the corresponding period last year:—Wheat, 46s. 3d.; Barley, 40s. 2d.; Oats, 25s. 5d.

CATTLE.

At Copenhagen Fields on Monday the choicest quality beasts were rather dearer; for other kinds trade was slow, owing to large supplies at the dead market. The number of sheep was smaller than last week, but quite equal, however, to the demand. Some choicest half-breds made 7s., but our quotations were the more general. Trade was very dull for calves. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 6d. to 6s.; calves, 4s. 6d. to 5s. 6d.; sheep, 5s. 4d. to 5s. 8d., and 6s. 4d. to 6s. 10d.; pigs, 4s. to 4s. 10d.—On Thursday the supplies of beasts were short, but more than equal to the demand, which ruled heavy. Prices must be quoted lower than on Monday. As regards sheep the supplies were very short, and well-breds were tolerably steady, but other kinds were irregular in value. Calves sold at about late rates.

HAY.

At the Whitechapel market on Tuesday trade was quiet, and prices unchanged. There was a large supply—Prime old clover was quoted at 100s. to 140s.; inferior, 85s. to 95s.; good new, 100s. to 135s.; prime meadow hay, 90s. to 115s.; inferior, 70s. to 85s.; and straw, 44s. to 55s. per load.—On Thursday there was a fair supply of hay and straw on sale. There was a brisk trade for good Clover at from 100s. to 145s., but prices were lower for hay.—Cumberland Market quotations:—Superior meadow hay, 110s. to 120s.; inferior, 84s. to 98s.; superior Clover, 134s. to 140s.; inferior, 95s. to 126s.; and straw, 54s. to 60s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that the arrivals of Potatos at these markets have been moderate, but sound qualities are scarce, and command full prices. For inferior produce the trade is slow at somewhat irregular quotations. Kent Regents, 120s. to 140s. per ton; Essex ditto, 100s. to 130s.; rocks, 90s. to 100s.; kidneys, 110s. to 130s.; Victorias, 120s. to 140s.; American Rose 100s. to 120s.—The imports into London last week consisted of 38,125 bags from Hamburg, 2222 sacks Rouen, 2725 Dunkirk, 9316 bags Bremen, 1179 Antwerp, 1578 Harlingen, 3838 Ghent, 1477 Boulogne, 775 Rotterdam, and 255 barrels New York.

COALS.

On Monday there was a good market demand for house coals, at the prices quoted last week. Wednesday's market was characterised by a brisk business, and quotations for house coals were advanced 6d. per ton. Quotations:—Bower's West Hartley, 17s. 3d.; Walls End—Hetton, 22s.; Hetton Lyons, 19s. 9d.; Lambton, 21s. 6d.; Original Hartlepool, 22s.; Newbottle, 18s. 6d.; South Hetton, 22s.; East Hartlepool, 21s. 9d.; South Hartlepool, 20s.; Tees, 21s. 9d.

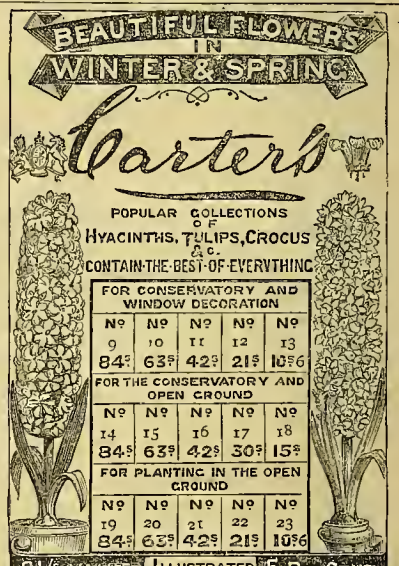
AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.
LIMES, 10 to 20 feet high.
POPLAR, canadensis nova, 12 to 20 feet high.
These trees have been grown expressly for Street and Avenue Planting. They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.
ANTHONY WATERER, Knap Hill, Woking, Surrey.

CHOICE WINTER FLOWERS.

RHODODENDRON MULTIFLORUM, 2s. 6d. to 3s. 6d. each.
" PRÆCOX, 1s. 6d. to 2s. 6d. each.
AZALEA DAVIESII, 2s. 6d. to 3s. 6d. each.
" HYBRIDA ODORATA, 2s. 6d. to 3s. 6d. each.
All the above are beautiful bushes, well filled with bloo buds. Descriptive List of these and other Novelties forwarded on application to
ISAAC DAVIES, Nurseryman, Ormskirk.

Surplus Stock.
INDIAN AZALEAS, from 3000 to 4000 nice flowering plants of the best varieties, 15s. to 24s. per dozen. Descriptive List forwarded on application.
DAPHNE INDICA RUBRA, from 1000 to 2000 plants, 8s. to 30s. per dozen.
LILIUM AURATUM, home-grown Bulbs, that have borne from four to eight flowers each this season, 12s. to 18s. per dozen.
ISAAC DAVIES, Nurseryman, Ormskirk.



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HIGH HOLBORN, LONDON, W.C.

To the Trade.
W. HEATH AND SON beg to offer the undermentioned plants, all of which are healthy and well-established:—
STATICE PROFUSA, good plants, 3-inch pots, 12s. per dozen; 4 and 5-inch pots, 24s. and 30s. per dozen.
DENDROBIUM NOBILE, splendid plants with 7 to 12 branches, 6-inch pots, 7s. 6d. and 10s. 6d. each.
CROTONS, healthy young plants, of all the best varieties, 4-inch pots, 12s. and 18s. per dozen.
IXORAS, of varieties, 3-inch pots, 18s. per dozen.
GARDENIAS INTERMEDIA and RADICANS MAJOR, 4-inch pots, good plants, 18s. per dozen.
ARDISIA CRENULATA and CRENULATA ALBA, young plants, 9s. and 12s. per dozen.
DIPLADENIA BOLIVIENSIS, good plants, 24s. per dozen.
POINSETTIAS, a splendid stock of healthy plants, 4½ and 5-inch pots, 9s. and 12s. per dozen; smaller plants, 6s. per dozen.
BEGONIA INSIGNIS, good plants, 1 foot high, 5-inch pots, 9s. and 12s. per dozen.
BOUVARDIAS, all the best varieties, 4½-inch pots, 10s. per dozen.
PELARGONIUMS, 1877, new varieties, strong plants, 24s. per dozen.
ABUTILON BOULE DE NEIGE, fine healthy plants, 8s. per dozen; larger, in 4½ and 5-inch pots, 12s. per dozen.
ROGIERA GRATISSIMA, 3½-inch pots, 18s., 30s., 42s. per dozen.
PRIMULAS, ALBA PLENA, several thousands of strong healthy plants, in 3 and 4½-inch pots, 9s. and 10s. per dozen.
CINERARIAS, all the best varieties, to name, thumb-pots, 4s. per dozen.
ADIANTUM CUNEATUM (Maidenhair), splendid plants, 4-inch pots, 12s. per dozen, £4 per 100.
ADIANTUM FARLEYENSE, nice young plants, 24s. per dozen.
PTERIS SCABERULA, good plants, 12s. per dozen.
" SERRULATA, small plants, 3s. per dozen; plants in 5-inch pots, 5s. per dozen.
CARNATIONS, The Bride, Miss Joliffe, and La Belle, splendid plants, well rooted, 9s. per dozen.
CARNATIONS and PICOTEES, named varieties, 50s. per 100 pairs.
PANSIES, best named varieties, 25s. per 100.
" best bedding varieties, 20s. per 100.
WILLIAM HEATH AND SON, Nurserymen and Seed Merchants, Cheltenham.

THE BEST HOUSE FOR BULBS.

Mr. Iliffe.—"The bulbs had from your firm have turned out very good."

The Rev. Dr. Holt.—"The Rev. Dr. Holt presents his compliments to Messrs. Jefferies, and begs to say that the bulbs he had of them were excellent."

The Rev. W. P. Bennett.—"It gives me great pleasure to say the collection of bulbs you sent last year gave great satisfaction."

THE BEST GUINEA COLLECTION OF BULBS.

None but First-Class Bulbs will be sent.

This Collection has the advantage of having Bulbs suited for Indoors and Outdoors.

200 CROCUS, Assorted	100 SNOWDROPS
50 ANEMONES, Assorted	50 WINTER ACONITES
75 TULIPS, Assorted	50 RANUNCULUS, Assorted
18 NARCISS for Pots, Assorted	24 NARCISS, for Beds, Assorted
12 JONQUILS, Assorted	12 HYACINTHS, for Beds
6 HYACINTHS, for Pots, Assorted	6 SCILLAS
6 TRITELEIAS, Assorted	4 IXIAS.

Double the number, Two Guineas. *Half the number*, 10*s.* 6*d.*

20*s.* and over carriage free to any Station in England; 42*s.* free in Ireland or Scotland.

Persons desirous of making their own Selection should send for our Illustrated BULB CATALOGUE, post-free on application, and obtain best Bulbs at special low prices for cash. The Catalogue contains most useful hints for Spring Gardening, with all the desirable varieties of Bulbs.

Jno. Jefferies & Sons,

BULB MERCHANTS, CIRENCESTER, GLOUCESTERSHIRE.

HYACINTHS, TULIPS, AND OTHER BULBS.

WM. PAUL & SON

BEG TO ANNOUNCE THAT THEIR

NEW CATALOGUE OF HYACINTHS, TULIPS,

AND OTHER BULBS, CAMELLIAS, AZALEAS, &c.,

is now ready, and will be sent post-free on application.

COLLECTIONS of BULBS, from 10*s.* 6*d.* to 84*s.*

A CHOICE COLLECTION OF CAMELLIAS, 30*s.* per dozen [and upwards.

SPECIMEN CAMELLIAS, from 1 to 30 Guineas each.

"Hyacinth's were again the main feature—Mr. Wm. Paul taking first prize with a collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardeners' Chronicle.*

"Hyacinths formed the most important feature of the show, the principal exhibitor being Mr. Wm. Paul, of Waltham Cross, who was far in advance of any other in the size and beauty of the noble spikes which he placed in competition."—*Journal of Horticulture.*

"It is due to Mr. Wm. Paul's wonderful group of 24 Hyacinths, to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist.*

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WALTHAM CROSS, HERTS.

PICEA CONCOLOR VIOLACEA.

Of this beautiful and distinct Rocky Mountain SILVER FIR we are glad to be able to offer established Plants, received by us, direct from its native habitat, two years ago. Whilst possessing some resemblance to P. LASIOCARPA our plant is thoroughly distinct, the leaves being rounder or needle-like in form, and verticillate rather than pectinate. The colour also is of a uniform silvery glaucous hue, both above and beneath, and is very aptly described by the name it bears. To all cultivators of the choicer Conifers, or Planters for Landscape effect, this must prove a valuable introduction.

Plants in Pots, 3 to 5 inches high .. .. 10s. 6d. each.
Plants in Pots, 5 to 7 inches high .. .. 15s. 0d. ,,
Plants in Pots, 7 to 10 inches high, bushy .. 21s. 0d. ,,

JAMES BACKHOUSE & SON,

THE NURSERIES, YORK.

Our Collection of CONIFERÆ and other ORNAMENTAL TREES is extensive and fine, the Plants as a rule being well-grown and well-rooted.

CATALOGUES, NOW READY, WILL BE SENT ON APPLICATION.

STRAWBERRY PLANTS.—Strong well-rooted plants of the under-named varieties, 3*s.* 6*d.* per 100, purchasers' selection:—Aromatic, Amateur, Ananas Perpetual, Ascot Pine-apple, British Queen, Bicton Pine, Black Prince, Cockscomb, Comte de Paris, Cornucopia, Comte de Zans, Crimson Queen, Dr. Hogg, Duke of Edinburgh, Eleanor, Exquisite, Early Prolific, Enchantress, Eliza, Fairy Queen, Filbert Pine, Frogmore Pine, Grove End Scarlet, Garibaldi, Haiquin, James Veitch, John Powell, Keens' Seedling, La Grosse Sucrée, Leon St. Lannier, La Constante, Lucas, Marguerite, Newton Seedling, Oscar, Prince of Wales, Prince Arthur, President, Premier, Princess of Wales, Royalty, Sir J. Paxton, Sabreur, Stirling Castle, Sir John Falstaff, Souvenir de Kieff, Scarlet Pine, Countess, Vicomtesse Héricart de Thury, Victoria, Unza Fritz, Wonderful, W. J. Nicholson. Our selection, 2*s.* 6*d.* per 100, 20*s.* per 1000, in ten or twenty sorts, all true to name.

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PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2*s.* per dozen.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

SPECIAL OFFER TO THE TRADE.

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 14*s.* per 1000.

STOCKS for BUDDING and GRAFTING.

PYRUS MALUS, Crab-Apples, 20*s.* per 1000.
ROSE, Manetti, 25*s.* per 1000.
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FRUIT TREES.

APPLES, on Crab and on Doucin, extra strong, beautifully trained, Maidens, 25*s.* per 100, 209*s.* per 1000; 2-yr. Cordon's, 42*s.* per 100; 2-yr. Palmettes and Pyramids, 42*s.* per 100; 3-yr. Palmettes, 59*s.* per 100.

PEARS, on Crab and on Quince, extra strong, beautifully trained, Maidens, 34*s.* per 100, 292*s.* per 1000; 2-yr. Cordons, 50*s.* per 100; 2-yr. Palmettes and Pyramids, 50*s.* per 100; 3-yr. Palmettes, 67*s.* per 100.

PLUMS, on Prunus St. Julien, extra strong, beautifully trained, Maidens, 34*s.* per 100; 2-yr. Cordons, 50*s.* per 100; 2-yr. Palmettes and Pyramids, 50*s.* per 100; 3-yr. Palmettes, 67*s.* per 100.

A List of the Names of the Fruit Trees gratis on application.

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SPIRÆA JAPONICA, 16*s.* to 20*s.* per 100: have been awarded several First Prizes, and always considered best shown.

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LILIUM LANCIFOLIUM ALBUM MONSTROSUM, 30*s.* to 40*s.* per 100: very free flowering.
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Trade Catalogues on application. Post-office Order or good reference from unknown correspondents.

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THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.

The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A person inspection earnestly solicited. Catalogues free on application to R. AND G. NEAL, Chief Office, Wandsworth Common.

The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

6000—Camellias—6000.

H. WALTON begs to call attention to his extensive collection of the above, of all sizes, from 42*s.*, 63*s.*, 105*s.*, to 120*s.* per dozen; large handsome plants of all the best varieties, from 21*s.* to 105*s.* each, all home grown.

AZALEAS, all the leading varieties in fine healthy plants, from 24*s.* to 63*s.* per dozen.

A large quantity of Specimen STOVE and GREENHOUSE PLANTS in fine condition.

ERICAS, in Half and Quarter Specimens, all the best Exhibition varieties.

Inspection invited.

Edge-end Nurseries, Brierfield, near Burnley, Lancashire.
See Report, No. 190, page 212, Aug. 18, 1877.

Fruit Trees.

THOMAS EVES begs again to call the attention of all persons intending Planting to his immense and superb stock of FRUIT TREES, for the growth of which the Gravesend Nurseries are particularly adapted, and for which they also have a wide reputation, the trade for them extending to all parts of the United Kingdom and Colonies. The leading sorts of Apples, Pears, and Plums most in demand by Market Growers are extensively cultivated as Pyramids and Standards, and can be supplied in large quantities at from 70*s.* per 100; Espaliers from 20*s.* per dozen.

CHERRIES, a fine lot of tall Standard, from 100*s.* to 120*s.* per 100.

GOOSEBERRIES, 3-yr. to 5-yr., 100*s.* to 120*s.* per 1000.

CURRANTS, 3-yr. to 5-yr., 60*s.* to 75*s.* per 1000.

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BEDDING VIOLAS and PANSIES.—The best of all plants for Spring, Summer, and Autumn Bedding. They require no special treatment, are perfectly hardy, and continue in flower from early spring till long after all other bedding plants have been removed. They are now so generally known and appreciated that it is unnecessary to do more than remind Planters that this is the best time to secure a stock. The Subscribers have an immense quantity of healthy, well-rooted plants of all the best varieties, that have been thoroughly tested, and in order to place them within the reach of all they make the following special autumn quotation (selection being left to themselves), post-free to any part of the kingdom:—

100, in 10 sorts, 16*s.* 6*d.* to 21*s.*
50, in 10 sorts, 10*s.* 6*d.* to 12*s.* 6*d.*
25, in 5 sorts, 6*s.* 6*d.*

Descriptive CATALOGUES and special Prices will be sent on application to the Trade or to those requiring large quantities or particular varieties.

DICKSONS AND CO., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place. New Nursery at Pilrig Park, Edinburgh. Established upwards of a Century.

F. AND A. SMITH offer the undernoted Plants, which are in fine condition, and suitable for present use:—
BOUVARDIAS,
CYTISUS,
ERICA GRACILIS,
" CAFFRA,
PRIMULA, single-fringed, } in bud and bloom.
SOLANUMS, in berry, well coloured, and in various sizes.
The Nurseries, West Dulwich, S. E.

Important Notice to the Trade.

SEAKALE, ASPARAGUS, RHUBARB,
EXTRA STRONG ROOTS FOR FORCING.

H. THORNTON,

Having devoted great attention to the production of fine roots, and having an immense stock on hand, invites the inspection of large Buyers, or he will be happy to forward Prices for large or small quantities on application.
H. THORNTON, 12, Maxwell Road, Fulham, S.W.

COCOA-NUT FIBRE REFUSE, newly made. Reduced price:—In 4 bushel bags, at 1s. 3d. (not less than 5 bags), or truck load (delivered free to rail in London) for 30s. J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.
Fresh SPHAGNUM, 10s. 6d. per sack.
WALKER AND CO., Farnborough Station, Hants.

B G L Oilcake.

ARREST YOUR PURCHASES of all other Cake until you have read the "Book of Testimonials" from users of this cake. Sent post-free by the Agent for the County, or by the Makers.
Mills, Shad Thames, London, S.E.

AMIES' CHEMICAL MANURE.

USED BY THE ROYAL HORTICULTURAL AND BOTANIC SOCIETIES.

This Manure, after six years' trial, is unapproached in its results by any other manure. It is suitable for all soils, and permanently improves the fertility of even the poorest. It provides the necessary foods for plants, creates a vigorous growth without over-stimulating, and it increases the produce. It is a powerful insecticide. It has been used with perfect success on

FLOWERS, SHRUBS, VEGETABLES, FRUITS, GRASS, VINES.

PREPARED IN A FINE, DRY, INODOROUS POWDER.

Price, £12 per Ton; 15s. per Cwt.; and in Canisters, 1s., 2s. and 4s. each.

Trial Orders of the Manure are invited, to be used in comparison with other Manures.

Write for Further Particulars to
AMIES' CHEMICAL MANURE CO. (LIMITED),
79, MARK LANE, LONDON, E.C.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

SCOTT'S WASP DESTROYER.—The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 1s. 6d., 2s. 6d. and 5s. each. The larger sizes are the cheapest. May be obtained through any Seedsman, or direct from
JOHN SCOTT, The Royal Seed Stores, Yeovil.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60s. to 100s. per 100; superior close-wove, 40s., 50s. and 55s. per 100; Packing Mats at 20s., 30s., and 35s. per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

ARCHANGEL, PACKING **MATS** PETERSBURG ETC.
RAFFIA for TYING,
TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO.,
COX'S QUAY, LOWER THAMES STREET, LONDON.

HYACINTHS, CROCUS, TULIPS, &c.

DICK RADCLYFFE & CO.'S

ILLUSTRATED
CATALOGUE
OF THE ABOVE
IS NOW READY,
And will be forwarded,
GRATIS and POST-FREE
ON APPLICATION.

HORTICULTURAL
REQUIREMENTS
OF
EVERY DESCRIPTION
KEPT
IN STOCK

28 and 129, HIGH HOLBORN, W.C.

DUTCH FLOWER ROOTS.

B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HE HAS RECEIVED HIS ANNUAL IMPORTATION OF

HYACINTHS, TULIPS, CROCUS, NARCISSUS,

And other BULBOUS ROOTS, in fine condition.

CATALOGUES, containing a Select List of the above, are now ready; Also of NEW PLANTS, FRUIT TREES, ROSES, &c.;
GRATIS AND POST-FREE ON APPLICATION.

VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

FORDELDEAN DUKE OF EDINBURGH STRAWBERRY.

The Subscribers having arranged with MESSRS. MOFFAT, of Fordeldean, to send out their famous

DUKE OF EDINBURGH STRAWBERRY,

Are now prepared to Execute Orders.

As none have been Sold previous to this Season, the Subscribers are the only Holders of the Genuine Stock.

Strong Plants, 25s. per 100.

JAMES DICKSON & SONS,

32, HANOVER STREET, EDINBURGH.

NOTICE TO THE TRADE.

THE THAMES BANK IRON COMPANY,

UPPER GROUND STREET, LONDON, S.E.,
Having Bought the Entire Stock of
HOT-WATER BOILERS, PIPES, AND CONNECTIONS
OF
Messrs. ANDREW McLAREN & CO., LONDON,
(Who have relinquished this branch of their business),
WILL FOR A FEW WEEKS OFFER THESE GOODS AT
REDUCED PRICES.

HOT-WATER APPARATUS ERECTED COMPLETE, OR THE MATERIALS SUPPLIED AT WHOLESALE PRICES.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
JAS. T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.C.

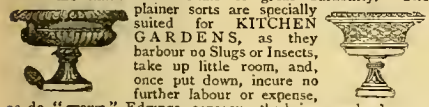
Wholesale Russia Mat Merchants.

NEW ARCHANGEL MATS, ST. PETERSBURG MATS, of all qualities and sizes. RAFFIA FIBRE, &c. Firms are requested to send cash or reference in first transactions.
MARENDAZ AND FISHER, James Street, Covent Garden.

RUSSIA MATS for Covering from Frost, from 30s. to 70s. per 100; good for packing from 20s. GUNNY BAGS, from 3½d. each. Delivered free to any station in London.
SUTHERLAND, SON AND CO., 11, Fenchurch Buildings, Fenchurch Street, London, E.C.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incure no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by Post. The Trade supplied.

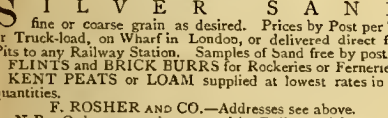
ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
See addresses above.

SILVER SAND, fine or coarse grain as desired. Prices by Post per Ton or Truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
F. ROSHER AND CO.—Addresses see above.
N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12s. 6d.; 21-oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36s.; 3ds, 46s. per 300 feet;—21-oz. 4ths, 36s.; 3ds., 46s. per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

LABELS.
Secure Tree and Plant Labels.

PARCHMENT or CLOTH LABELS, TREE or PLANT LABELS, punched parchment, 4 inches long, 3s. 6d. per 1000, or 30s. per 10,000; if eyeleted, 4s. per 1000. Vellum cartridge, 4 inches long, 3s. per 1000 for 10,000. Sample Labels sent on receipt of postage stamp. Orders delivered free in London.
FISHER, CLARK AND CO., Label Works, Boston.

Indestructible Terra-Cotta Plant Markers.

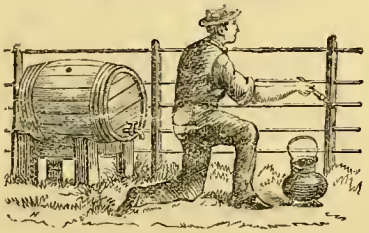
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens, sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Broseley.

GREEN'S PATENT
Wrought-Iron Hot-water Boilers,
With Shelves and Hollow Grate Bars,
AND
SADDLE BOILERS with WATERWAY BACK.

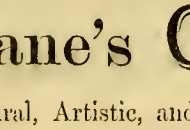
Specially adapted for Heating
GREENHOUSES, CONSERVATORIES, CHURCHES, CHAPELS, SCHOOLS, PUBLIC BUILDINGS, ENTRANCE HALLS, WAREHOUSES, WORKSHOPS, &c.
They are the Neatest, Cheapest, Most Effective, and Durable of any extant.

Descriptive Illustrated Priced LIST may be had free on application to
THOMAS GREEN AND SON, Smithfield Ironworks, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

Oil Paint No Longer Necessary.



HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.
UNSOLICITED TESTIMONIAL RECEIVED MAY 3, 1877.
"*The Ryleys, Alderly Edge, Manchester.*—Messrs. Hill & Smith.—Sirs,—For some 20 years I have used your 'Black Varnish,' and shall be glad if you will forward me another cask, *as I consider it the best thing known for the preservation of all outdoor work, either wood or iron,* that requires to be painted. —Yours respectfully, ALFRED LOWE, J.P."
Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained
CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

Trade  Mark.

Branded on every Casting.

Macfarlane's Castings,

Architectural, Artistic, and Sanitary,

Conservatories; Winter Gardens; Arbours; Pavilions; Garden Screens; Garden Entrances; Bandstands; Verandahs; Covered Ways; Boathouses; Railings; Balconies; &c. Plain and Ornamental Castings of every description for Parks, Gardens, Pleasure Grounds, Esplanades, &c.

FOR HOME & EXPORT.

Illustrated CATALOGUE with Price List and Estimates for special Designs on application.

WALTER MACFARLANE & CO., GLASGOW.

Sole English Medallists for the Best Hot-Water Apparatus at the United States International Centennial Exhibition, Philadelphia.

WRIGHT'S
ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

"The 'Boiler of the Future.' I have no doubt about this."—WM. THOMSON, *Clovenfords.*

By Her Majesty's *Royal Letters Patent*

NEW PRICE LIST.

Boiler Number.	Length.	Width.	Height.	No. of Top Sections.	Surface Exposed to the Flame.	Calculated Heating Power. 4-in. pipe.	Recommended for 4-in. pipe.	Price.
	ft. in.	ft. in.	ft. in.		ft.	ft.	ft.	£ s. d.
1 A	2 0	1 6	1 10	2	13	520	400	10 0 0
2 A	2 0	1 6	2 2	3	17½	700	500	11 10 0
3 A	2 0	1 6	2 6	4	22	880	600	13 0 0
4 A	2 0	1 6	2 10	5	26½	1,060	700	14 10 0
5 A	2 0	1 6	3 2	6	31	1,240	..	16 0 0
6 A	2 0	1 6	3 6	7	35½	1,420	..	17 10 0
1 B	2 6	2 0	2 4	2	20	800	650	14 10 0
2 B	2 6	2 0	2 9	3	27½	1,100	750	17 0 0
3 B	2 6	2 0	3 2	4	35	1,400	850	19 10 0
4 B	2 6	2 0	3 7	5	42½	1,700	950	22 0 0
5 B	2 6	2 0	4 0	6	50	2,000	..	24 10 0
6 B	2 6	2 0	4 5	7	57½	2,300	..	27 0 0
0 C	3 0	2 0	1 11	1	18	720	700	16 10 0
1 C	3 0	2 0	2 4	2	27	1,080	1,000	20 0 0
2 C	3 0	2 0	2 9	3	36	1,440	1,300	23 10 0
3 C	3 0	2 0	3 2	4	45	1,800	1,600	27 0 0
4 C	3 0	2 0	3 7	5	54	2,160	1,900	30 10 0
5 C	3 0	2 0	4 0	6	63	2,620	..	34 0 0
6 C	3 0	2 0	4 5	7	72	2,880	..	37 10 0
0 D	3 6	2 6	1 11	1	24½	980	850	20 0 0
1 D	3 6	2 6	2 4	2	37½	1,500	1,500	25 0 0
2 D	3 6	2 6	2 9	3	50½	2,200	2,200	30 0 0
3 D	3 6	2 6	3 2	4	63½	2,540	2,540	35 0 0
4 D	3 6	2 6	3 7	5	76½	3,000	3,000	40 0 0
5 D	3 6	2 6	4 0	6	89½	3,580	..	45 0 0
6 D	3 6	2 6	4 5	7	102½	4,100	..	50 0 0
0 E	4 0	3 0	1 11	1	30	1,200	1,100	27 10 0
1 E	4 0	3 0	2 4	2	48	1,920	1,900	35 0 0
2 E	4 0	3 0	2 9	3	66	2,640	2,600	42 10 0
3 E	4 0	3 0	3 2	4	83½	3,340	3,300	50 0 0
4 E	4 0	3 0	3 7	5	101½	4,060	4,000	57 10 0
5 E	4 0	3 0	4 0	6	119½	4,780	..	65 0 0
6 E	4 0	3 0	4 5	7	137	5,480	..	72 10 0

We can supply Foundation Plates—which form Ash-pit—and Smokestacks, if wanted, thereby doing away with the necessity for even a single brick in their erection.

	A	B	C	D	E
	s. d.	s. d.	s. d.	s. d.	s. d.
Foundation Plate	35 0	45 0	60 0	75 0	90 0
Smokestack, Damper, and Soot-Door	30 0	30 0	40 0	40 0	40 0
Furnace and Ash-Pit, Frame and Doors; also Furnace Bars, Bearers, Dumb-Plate, &c. ..	30 0	40 0	50 0	60 0	70 0

Foundation Plates are arranged to heat the air before it is sent into the ash-pit at back, and furnace-doors to heat the air before its admission into the furnace, furnishing in fact two "hot air" blasts to the furnace; the admission of large volumes of cold air being most injurious to the economical working of the furnace.

In preparation an entirely NEW SERIES of SEVENTY BOILERS, embracing a large variety suitable for small places, &c., and all specially adapted for low situations where shallow boilers are a necessity. Particulars on application.

WM. WRIGHT & CO.,
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SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

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Patentees and Manufacturers of Wrought Iron

CONTINUOUS BAR FENCING,

Iron Hurdles, Strained Wire Fencing,
Field and Entrance Gates, Tree Guards, &c.,
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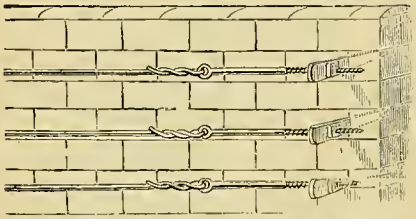
And 3, Crooked Lane, King William Street, London, E.C.
Catalogues free on application.

THOMAS'S FITTINGS for WIRING WALLS.

NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

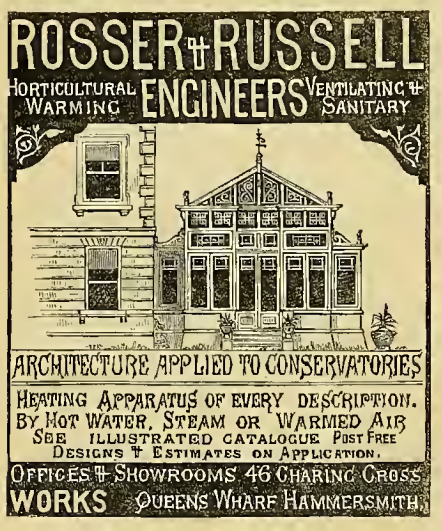
Length of Wall:—	20 yds.		40 yds.		60 yds.		80 yds.		100 yds.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
No. 14 Gauge Wire	1	0	1	7	2	1	2	7	3	1
No. 13 " "	1	3	1	10	2	5	3	0	3	7

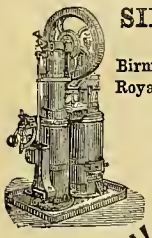
Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.

Five per cent. discount allowed for prompt cash on Orders amounting to 20s. and upwards.

Special quotations for larger quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.





SILVER MEDAL
AWARDED AT
Birmingham Meeting,
Royal Agricultural
Society,
1876.

THE NEW PUMPING ENGINE

1876.
HIGHEST HONOR
AT THE
Centennial Exhibition,
Philadelphia.

Specially adapted for Pumping in Gentlemens' Houses and Grounds. No Labor Required.

HAYWARD TYLER & Co.,
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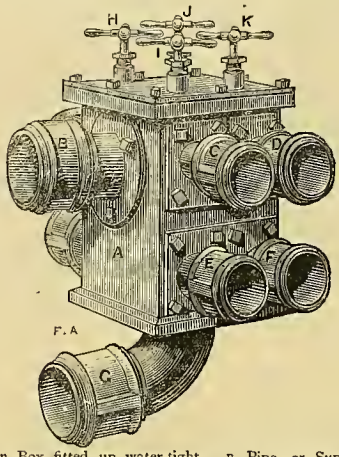
For Sale, a
STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
HILL AND SMITH, Brierley Hill Ironworks, Dudley.

CRITCHLEY'S PATENT HEAT REGULATOR,

AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

The following Testimonial has been received :—

" Berkeley Castle, April 13, 1875.

" Gentlemen, — I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve ; in fact, I think it the greatest improvement that has come out for horticultural purposes.

" I am, Gentlemen, yours truly, " R. H. CRONK,
" Gardener to the Right Hon. Lord Fitzhardinge."

Estimates and Plans furnished for Warming Gentlemen's Mansions and Public Buildings. Orders attended to in any part of the kingdom, and guaranteed to answer their intended purposes. Prospectus and Price Lists post-free.

Messrs. CRITCHLEY & CO.,
Horticultural Engineers and Builders,
GROSVENOR WORKS, CHELTENHAM.

JOSEPH BRAMHAM, HORTICULTURAL and HOT-WATER ENGINEER, WIRE WORKER, WEAVER, &c., 104, Dale Street, and 44, Elizabeth Street, Liverpool.

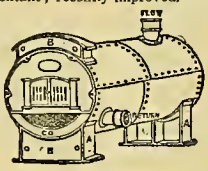
J. B. strongly recommends the ALLERTON PRIORY BOILER as one of the most powerful for extensive work. He has fixed one capable of heating 10,000 feet of 4-inch piping. See *Gardeners' Chronicle*, p. 647. Also his WELDED WROUGHT IRON WATERWAY BACK for ordinary Saddle Boilers. These Backs can be fixed to any Boiler now in use, and are a great saving in fuel and labour. He is also prepared to fix any kind of Boiler made.

Manufacturer of the Registered LIVER FRONT for large Boilers, IRON and WIRE WORK in all branches. References from Noblemen and Gentlemen for work done.

Plans and Estimates given.

STEVENS' TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant ; recently improved.



Copy of a Testimonial.

" Royal Exotic Nursery, King's Road,
" Messrs. SILVESTER. Chelsea, S.W.—Aug. 8, 1877.

" GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

" For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hot-houses during the cold winter months as we do now.

" We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.

" We are, Gentlemen, yours faithfully,
" JAMES VEITCH AND SONS."

For Illustrations, with full particulars, apply to the Sole Makers.

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

STOVES,

Terra-Cotta! Portable! For Coal!

ROBERTS'S PATENT.

Healthy Heat twenty-four hours or longer for about 1*d.*, without attention. For Bedrooms, Greenhouses, or almost any purpose. Prospectus and authenticated Testimonials sent. In use daily at Patentee's, THOMAS ROBERTS,

112, Victoria Street, Westminster, S.W.

THE THAMES BANK IRON COMPANY,

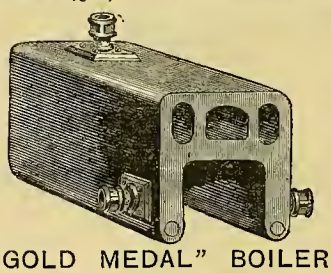
OLD BARGE WHARF,

UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



PRICE LIST on application, or Six Stamps for Descriptive CATALOGUE (Seventh Edition).

"GOLD MEDAL" BOILER.

This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872).
PATENT "EXCELSIOR" BOILER (1871).
"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.
PATENT PAXTON INDEPENDENT BOILER.
"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

MUSHROOMS

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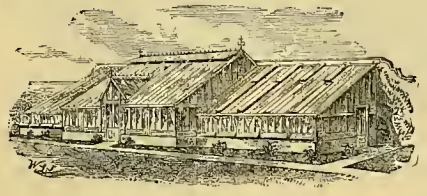

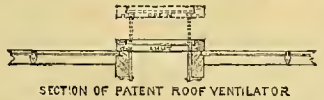

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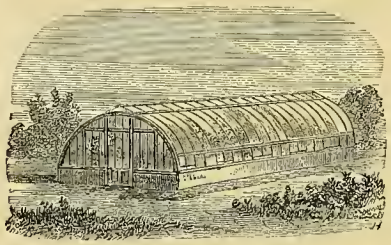

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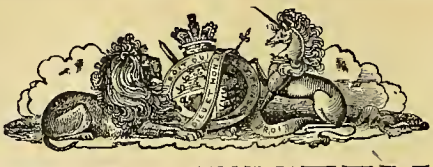
The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUT, and INDIGESTION; and the safest aperient for delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD AND CO.,
172, New Bond Street, London, and all Chemists.

HOLLOWAY'S PILLS.—Nothing preserves the health so well as an occasional alterative in changes of weather, or when the nerves are unstrung. These Pills act admirably on the Stomach, Liver, and Kidneys, and so thoroughly Purify the Blood that they are the most efficient remedy in warding off derangements of the Stomach, Fever, Diarrhœa, Dysentery, and other Maladies, and giving tone and energy to Debilitated Constitutions. All who have the natural and laudable desire of maintaining their own and their family's health, cannot do better than trust to Holloway's Pills, which cool, regulate, and strengthen. These purifying Pills are suitable for all ages, seasons, climates, and constitutions, when all other means fail, and are the female's best friend.

DR. LOCOCK'S PULMONIC WAFERS.—(this week).—Mr. STRAD, *Chemist, High Street, Lees, Manchester*, writes:—"I am certain that if your Wafers were more known, they would confer greater benefits. I have customers who speak very highly of them." Dr. Locock's Wafers instantly relieve and rapidly cure Asthma, Consumption, Bronchitis, Coughs, Colds, Shortness of Breath, and taste pleasantly. Sold at 1s. 1½d. and 2s. 9d. per box.

BY HER MAJESTY'S  ROYAL LETTERS PATENT.

RENDLE'S PATENT SYSTEM OF GLAZING.

This invention is now adopted by Her Majesty's Government, all the leading Railway Companies, Public Buildings, Winter Gardens, &c., throughout the Country.

ROOFS, &c.,

LATELY

GLAZED on RENDLE'S PATENT SYSTEM.

Albert Hall, Sheffield.
Batley Market,—Batley Corporation.
Boat House and Club House, Kew.
Blackpool Winter Gardens.
Brick Lane Stables,—Great Northern Railway Company.
Bath Goods Station,—Great Western Railway Company.
Corporation of Leeds Corn Exchange.
Cardiff Station,—Great Western Railway.
Chatham Royal Dockyard.
Ceres Works, Wolverhampton.
Cambridge Barracks, War Department.
Evesham Corn Exchange.
Glasgow Cab Sheds,—Enoch Square Railway Station.
Great Northern Railway Company.
Great Malvern Station,—Great Western Railway.
Keyser's Royal Hotel, Blackfriars.
Knostrop Sewage Works,—Leeds Corporation.
Lecture Hall, York.
Leicester Tramway Stables.
Leicester Opera House.
Lett's Wharf,—Commissioners of Sewers, Lambeth.
Manchester,—De Bergue & Co.
Manchester,—Vickers & Sons' Warehouses.
North Road Railway Station, Plymouth, — Great Western Railway Company.
Neath Railway Station, — Great Western Railway Company.
Neath Goods Station, — Great Western Railway Company.
Plymouth,—Willoughby Bros., Warehouses.
Perry & Co.,—Warehouses, Birmingham.
Paddington Station, Departure Platform, — Great Western Railway Company.
Paddington Station, Engineer's Offices,—Great Western Railway Company.
Royal Aquarium, Westminster.
Rhyl Winter Gardens.
Rawdon Convalescent Home.
Smithfield Warehouses, Parker's Works.
Sparbrook Nail Works, Birmingham.
Sheffield Vegetable Markets,—The Duke of Norfolk.
Southend Skating Rink.
Swimming Baths, Chelsea.
Sewage Farm,—Corporation of Birmingham.
Torquay,—G. S. Bridgman, Esq.
Thornfield,—J. R. Armitage, Esq.
Wooodside Railway Station, Birkenhead, — Great Western and North-Western Joint Station.
Wolverhampton Skating Rink.
Wolverhampton,—H. Lovatt, Esq , Workshops.
Wolverhampton,—Perry, Esq., Orchard-house.
Wolverhampton,—Mr. Henry Gough, Warehouses.
Wolverhampton,—S. C. Riddle, Esq.
Wolverhampton,—John Harper & Co., Workshops.
Woolwich Royal Arsenal,—Contract Stores.
Woolwich Royal Arsenal,—Carriage Department.
Woolwich Royal Arsenal,—Greenhouses.
Woolwich Royal Arsenal,—Rocket Shed.
Woolwich Royal Arsenal,—New Smithy.
Woolwich Royal Arsenal,—Shell Foundry.
Woolwich Barracks,—Royal Engineers Department.
Westminster,—Hankey, Esq., Mansions.
Woolverton Carriage Sheds, — London and North-Western Railway.
Willesden Junction, — London and North-Western Railway Company.
Winter Gardens, Aston Park, Birmingham.
Weaving Sheds,—Messrs. Marshall & Co., Leeds.

SPECIAL ADVANTAGES

OF RENDLE'S PATENT SYSTEM OF GLAZING.

This system is now being universally adopted by Her Majesty's Government, several of the leading Railway Companies, some of the principal Corporations, including the Metropolitan Board of Works, Commissioners of Sewers, and the New Winter Garden Companies throughout the Country.

There is an enormous Saving in the Maintenance and Repairs of Roofs on this System—say from 80 to 90 per cent.,—and there is no reason why a Roof should not be as perfect in 20 years as the first week, because all the perishable materials, such as wood, iron, or paint, are completely covered by the glass from the destructible influences of the weather.

Another great recommendation is, that there is no breakage from contraction or expansion either from heat or cold, as the glass has full play in every direction. Tens of thousands of squares are broken from this cause every year. Nor is there any breakage from vibration of large Railway Roofs in heavy gales of wind, or from the passing of express or fast trains. Indeed, it is well known that a puttied roof is never perfect in a station where express trains run through.

In adopting this System, all the everlasting expenses of re-painting or re-puttying are completely done away with; and as it is now used by several of the Great Railway Companies, an enormous saving will be effected —it will have considerable influence in supplying an addition to the yearly dividends.

SUMMARY OF SPECIAL ADVANTAGES.

1.—*Saving of from 80 to 90 per cent. in maintenance and repairs.*
2.—*No breakage from contraction or expansion, from heat or frost.*
3.—*No breakage from vibration caused by heavy winds or passing trains.*
4.—*Squares of glass can be instantly replaced.*
5.—*The construction is very strong and durable.*
6.—*The glass can be put on in one-fourth the time of the old plan.*
7.—*No drip from condensation.*
8.—*Putty, cement, felt, &c., are entirely dispensed with.*

PLANT HOUSES,

CONSERVATORIES, &c.,

ERECTED AND GLAZED ON THE RENDLE SYSTEM.

His Royal Highness the Prince of Wales.
His Royal Highness Prince Christian.
His Highness the Maharajah Duleep Singh.
Her Majesty's Commissioners for Parks and Gardens.
His Grace the Duke of Portland.
His Grace the Duke of Rutland.
His Grace the Duke of Sutherland.
His Grace the Duke of Devonshire.
His Grace the Duke of Beaufort.
The Right Hon. the Earl of Normanton.
The Right Hon. Lady Llanover.
The Right Hon. the Earl of Stamford and Warrington.
The Most Noble the Marquis of Exeter.
The Right Hon. the Earl of Romney.
The Right Hon. the Earl of Charlemont.
The Right Hon. the Earl of Macclesfield.
The Right Hon. the Earl of Dartmouth.
The Right Hon. the Earl of Portsmouth.
The Dowager Countess of Aylesford.
The Right Hon. Lord Ebury.
The Right Hon. Lord Vernon.
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The Right Hon. Lord Alfred Churchill.
The Right Hon. the Earl of Bradford.
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The Right Hon. Sir W. G. Hayter, Bart.
The Right Hon. Lady Rayleigh.
The Right Hon. Lord Charles Russell.
The Right Hon. Lord Berkeley Paget.
The Right Hon. Lord Bolton.
The Right Hon. Lord de l'Isle and Dudley.
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Bartholomew's Hospital.
Victoria Skating Rink, Scarborough.
Royal Horticultural Society.

For all other information see Illustrated Catalogues and Books of Design, which can be obtained from the Inventor and Patentee,

WILLIAM EDGCUMBE RENDLE,
No. 3, WESTMINSTER CHAMBERS, VICTORIA STREET, LONDON, S.W.

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 199.—Vol. VIII. { New Series. } SATURDAY, OCTOBER 20, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, 5½d.

In consequence of an unavoidable delay, the publication of the COLOURED PLATE of Mushrooms, entitled, "TRUE and FALSE MUSHROOMS," is postponed until SATURDAY NEXT, October 27.

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NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 are 1s. each.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
The days selected for the EXHIBITIONS, &c., NEXT YEAR are—WEDNESDAYS:—
EXHIBITIONS of SPRING FLOWERS, March 27, April 24.
SUMMER EXHIBITIONS of PLANTS, May 22, June 12.
EXHIBITION of FRUIT and CUT FLOWERS, July 10.
EVENING FÊTE and SPECIAL EXHIBITION, June 26.
PROMENADES, BOTANICAL LECTURES, &c., as usual.

BOROUGH of HACKNEY CHRYSANTHEMUM SOCIETY. — The Thirty-first Annual Exhibition (open to all England) of the above will be held at the Royal Aquarium, Westminster, S.W., on TUESDAY and WEDNESDAY, November 20 and 21. Schedules may be had on application. Entries will be received up to and including Friday, November 16, by JOHN RAINBOW, Jun., Hon. Sec., London Road, Clapton, E.; or WILLIAM HOLMES, Jun., Superintendent, Frampton Park Nursery, Hackney, E.

WM. LEWIS GOAD (Messrs. Fraser, Goad & Co.) respectfully informs his numerous Friends that he has resumed Business on his own account, as a WHOLESALE and RETAIL SEED MERCHANT, at 7, Borough Market, London, S.E., and trusts that the kind support given to him for so many years will be extended to him in the future, as it will be his constant endeavour to merit a renewal of the confidence hitherto reposed in him.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

MENTHA PULEGIUM GIBRALTARICUM. — Notwithstanding the demand for this charming new carpet-bedder, unsurpassed for compactness, fragrance, and beauty, I can still supply thousands of nice healthy plants, at 5s. per 100, post-free. Now is the time to procure and increase it.
WILLIAM ABRAHAM, Nurseryman, Limerick.

WONDERFUL (Smith's).—The best Geranium in cultivation, 3s. 6d. per dozen, 25s. per 100. Special prices to the Trade for larger quantities.
A lot of good Stock Plants of VESUVIUS, from the ground, 1s. 6d. per dozen, 8s. per 100.
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DRIED FLOWERS, GRASSES, and MOSS. Address N. BOETTNER, Roemhild, Germany.

HYACINTHS in POTS.—Pots made expressly for Hyacinths can be supplied by J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List Free.

Vines for Fruiting and Planting.

JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

VINES.—Magnificent Canes, splendidly ripened, short jointed, all leading kinds, for Fruiting or Planting. Cannot be surpassed. Warranted clean. Inspection invited. The Trade supplied. Priced LIST on application to FRANCIS & ARTHUR DICKSON & SONS, The "Upton" Nurseries, Chester.

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MESSRS. LEVAVASSEUR AND SON, SEEDSMEN, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on Commission.

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CHARLES TURNER can supply these in great variety, fine healthy plants, showing bloom, at 18s. to 30s. per dozen; also PINKS for immediate planting, 9s. and 12s. per dozen pairs; and extra strong forcing PINKS, 9s. and 12s. per dozen.
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Special Offer.

ESCALLONIA MACRANTHA, average 1 foot, 10s. per 100.
AUCUBA JAPONICA, average 1½ foot, 12s. 6d. per 100.
LAURUSTINUS, average 1 foot, 7s. 6d. per 100.
,, average 1½ foot, 10s. per 100.
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DRACÆNA AUSTRALIS, 1½ foot, 6s. per dozen.
PHORMIUM TENAX, 2 to 2½ feet, 9s. per dozen.
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SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16s. per 100, £7 per 1000, or £60 per 10,000.
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J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

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WILLIAM FLETCHER'S CATALOGUE for the present season is now ready, and may be had on application. The stock is very large and most healthy.
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Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.
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WANTED, CALCEOLARIA CUTTINGS, aurea floribunda (true) and Brown Prince of Orange. Samples and price per 1000.
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WANTED, 10,000 yards of good Dutch BOX EDGING. Sample and price to R. AND G. NEAL, The Nurseries, Wandsworth Common, London, S.W.

WANTED, a quantity of large well-grown EVERGREEN SHRUBS and some TREES of various sorts for Laying-out Grounds. Address full particulars, E. H., 9, Aldridge Road Villas, W.

WANTED, HAZEL, in quantity. Must be good, 4 to 5 feet. Sample, with prices and quantity that can be supplied. Address
G. NICHOLSON, Nurseryman, Watford, Herts.

WANTED, a quantity of ARBUTUS, 1 to 2 feet and 2 to 3 feet, in pots or out; also EVERGREEN OAKS in pots, from 1 to 2 feet and 2 to 3 feet. State price per 100 or 1000.
E. WHITE, F.R.H.S., The Nurseries, Bournemouth.

DUTCH BULBS, &c.—The most complete Catalogue in the Trade, post-free for 3d., returned to purchasers.—GIBBS AND COMPANY, Seedsmen and Importers of Bulbs, Woodbridge, Suffolk.

Hyacinths, Tulips, Crocus, Gladioli, &c.

OUR REVISED LIST for 1877 is now ready, and will be handed to all Gardeners and Amateurs, post-free, on application.
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ORCHIDS.—Pleione Wallichiana, strong bulbs, 24s. to 42s per dozen. Apply to S. WOOLLEY, Nurseryman, Cheshunt, Herts.

WHITE DOG'S-TOOTH VIOLETS. Price per 1000 on application.
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SPECIMEN SHRUBS, several hundreds, 6 to 9 feet, comprising Araucarias, Thujopsis, Cupressus, Thuja aurea, &c., together with thousands suitable for pots. Must be Sold without reserve. No reasonable offer refused.
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ENGLISH YEWS, 3½ to 4 feet, 12s. per doz., 80s. per 100; 4 to 4½ feet, 18s. per doz., 100s. per 100. All recently transplanted. Every plant a perfect specimen.
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To the Trade.

SEEDLINGS.—Native and Tyrolese LARCH, Scotch FIR, English ELM, ALDER, BIRCH, ASH and SYCAMORE, at moderate prices. For Samples and PRICE LIST apply to
WILLIAM KIERNAN, Nurseryman, Clonmahan, Summerhill, Enfield, Co. Meath, Ireland.

NERTERA DEPRESSA, good stuff, in single pots, 4s. per dozen, 30s. per 100.
MENTHA PULEGIUM GIBRALTARICUM, good clumps, in single pots, 16s. per 100.
These are the greatest acquisitions for Carpet Bedding yet introduced.
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JASMINUM NUDIFLORUM, 5 feet, splendid stuff, in 48's, 50s. per 100.
JASMINE, common White, splendid, in 48's, 50s. per 100.
IVY, Irish, extra fine stuff, in 32's, 100s. per 100.
,, ,, good, in 48's, 50s. per 100.
,, ,, extra strong, from ground, 25s. per 100.
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To the Trade.

DWARF BOX. — 3000 Yards of very Superior, for Edging.
G. S. FRIEND, Seedman and Florist, Port William, N.B.

TO BE DISPOSED OF, for want of room —a good opportunity to Gentlemen and Others wishing to Furnish a Wall quickly—Twelve PEACH TREES and One NECTARINE, from 5 to 8 feet in diameter. Apply to the GARDENER, Isleworth House Gardens, Isleworth, Middlesex.

Cucumber Seed.—To the Trade.

E. COOLING can now offer choice Stocks of TELEGRAPH KING, TENDER and TRUE, FEARNOUGHT, LONG GUN, CARTER'S MODEL, &c. Prices on application.
Mileash Nurseries, Derby.

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CABBAGE PLANTS. — Gee's Superior Early Enfield Market, Drumhead, and Thousand-headed, all at 3s. per 1000; Purple Sprouting BROCCOLI, and BRUSSELS SPROUTS, 5s. per 1000; Winter LETTUCE PLANTS, Brown Cos and Hardy Green, at 7s. 6d. per 1000. Terms cash with order. Gee's noted stocks of Winter ONIONS, CAULIFLOWER, CABBAGE, and all other kinds of Seeds and Plants for present use, of best quality. CATALOGUES on application to FREDK. GEE, Seed and Plant Grower, Nurseryman, &c., Biggleswade, Beds.

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GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

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MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during October, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Stove and Greenhouse Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, October 24, a small Collection of Specimen AZALEAS, YUCCAS, PALMS, DRACÆNAS, TREE FERNS, MARANTAS, &c.

On view morning of Sale, and Catalogues had.

Clapham Park, S.W.

IMPORTANT SALE of SPECIMEN STOVE and GREENHOUSE PLANTS.

MR. J. C. STEVENS has been favoured with instructions from S. Ralli, Esq., to SELL by AUCTION, on the Premises, Cleveland House, Clapham Park, S.W., on TUESDAY, October 30, at half-past 12 o'Clock precisely, the COLLECTION of EXHIBITION PLANTS, comprising Crotons, Nepenthes, Dracænas, Palms, Ixoras, Dipladenias, Allamandas, Heaths, Azaleas, &c., which have won such high honours at the chief Metropolitan Shows, and sold in consequence of Mr. G. Legg being about to terminate his engagement with Mr. Ralli; also the well-made EXHIBITION VAN. The beautiful Collection of SEEDLING CROTONS (15 in number), raised by Mr. Legge, will be included in this sale.

On view the day prior and morning of Sale, and Catalogues had of Mr. LEGG, on the Premises; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Unreserved Sale of a Large Consignment of Choice

HYACINTHS, TULIPS, CROCUS, POLYANTHUS, NARCISSUS, LILIES, GLADIOLI, &c., containing many large Trade Lots.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, E.C., near the Bank, on MONDAY NEXT, at half-past 11 o'Clock to the minute.

On view the Saturday prior and morning of Sale.

Tooting, S.W.

IMPORTANT SALE of THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on MONDAY and TUESDAY, October 22 and 23, at 12 o'Clock each day, several thousands of NURSERY STOCK, remarkably well grown, and in excellent condition for removal, comprising choice Evergreen and Coniferæ Shrubs, in specimen borders, admirably adapted for effective planting; a large quantity of handsome specimen Coniferæ, a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees in bearing condition, Ivies, Clematis, Virginian Creepers, Lily of the Valley, &c.

May be viewed at any time previous to the Sale. Catalogues are now ready, and may be obtained on the Premises or of the Auctioneers.

City Auction Rooms, 38 and 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Rooms as above, on TUESDAY, October 23, at half-past 12 o'Clock precisely, a first-class Collection of DUTCH BULBS, a choice assortment of 400 Standard, Dwarf, and other ROSES, selected FRUIT TREES, choice hardy AMERICAN PLANTS, CONIFERÆ and Evergreen SHRUBS, &c.

May be viewed the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

East Dulwich Road, S.W.,

Close to Peckham Rye and Goose Green.

CLEARANCE SALE, the land being required for building purposes.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, at the rear of Malmesbury House, East Dulwich Road, S.W., on FRIDAY, October 26, at 12 for 1 o'Clock precisely, 100 fine old TIMBER TREES (Ash and Chestnut), Standard FRUIT TREES, large quantities of BOX EDGING, and other PLANTS and SHRUBS, together with two GREENHOUSES, HOT-WATER PIPING, a Weeks' Tubular BOILER, two SUMMER HOUSES, quantity of IRON HURDLES, 10,000 TURF, &c.

May be viewed. Catalogues had on the Premises, and of Estate Agents.

Godalming, Surrey.

GREAT UNRESERVED SALE of first-class NURSERY STOCK, worthy the attention of the Trade and others largely engaged in Planting.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Millord Nurseries, near Godalming, Surrey, on MONDAY, October 29, and four following days, at 12 o'Clock to the minute each day, by order of Mr. Maurice Young, in order to clear for alterations, an unusually large quantity of well-grown NURSERY STOCK, comprising thousands of handsomely grown specimen Coniferæ and Evergreen Shrubs of all sizes, in fine condition for removal and transplanting; also 12,000 choice named Hybrid and other Rhododendrons, 1 to 6 feet; 5000 Retinosporas, 2500 Portugal Laurels, 3500 Variegated Hollies, 10,000 English Yews, 5500 Thujas, of sorts; 2000 Cedrus Deodara, 1000 Young's New Golden Chinese Junipers, 1000 Golden Yews, &c. Ornamental and Fruit Trees, and others too numerous to mention.

Goods may be transmitted to any part of England, Scotland, or Wales without change of truck.

May be viewed prior to the Sale. Catalogues had on the Premises and of the Auctioneers.

Moulsham Nurseries, Chelmsford.

CLEARANCE SALE of well-grown NURSERY STOCK, a portion of the land having been sold for building purposes.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Saltmarsh & Son to SELL by AUCTION, without reserve, on the Premises, on THURSDAY, November 1, at 11 for 12 o'Clock precisely, a large quantity of valuable NURSERY STOCK, consisting of a fine assortment of handsome specimen Coniferæ and Evergreens; also a considerable quantity of smaller stock; a fine collection of clean-grown Fruit Trees, likewise a quantity of Ornamental Trees, together with a choice assortment of Standard and Dwarf Roses.

The Stock may be valued at any time. Catalogues may be had on the Premises.

Hare Hill Nursery, near Addleston, Surrey.

One mile from the Addleston Station, South-Western Railway.

POSITIVE CLEARANCE SALE of NURSERY STOCK.

MR. W. ABRAHAM is instructed by the Proprietor to SELL by AUCTION, without the least reserve, on the Premises as above, on MONDAY and TUESDAY, October 22 and 23, at 12 o'Clock each day punctually, the whole of the NURSERY STOCK on 5 acres of land, consisting of common and Portugal Laurel, Scotch and Austrian Fir, large quantities of English Yew, Green Holly, Poplars of sorts, Horse and Spanish Chestnuts, Limes, Norway Maples, Birch, Mountain Ash, Mussel, Pear, Crab, Cherry, and other Stocks, Fruit Trees, various; Cupressus Lawsoniana, fine Pampas Grass, Yucca gloriosa, Retinosporas, Aucuba japonica, Laurustinus, a quantity of Standard and Dwarf Roses, also Two strong Spring Carts, a Set of Harness, &c., all of which will be enumerated in Catalogues to be obtained on the Premises, or post-free of the Auctioneer, Goldworth Nurseries, Woking, Surrey.

N.B.—The Auctioneer begs to state that this is a *bonâ fide* Clearance Sale, and well worth the attention of the Trade and Gentlemen Planting.

Trucks can be loaded at the Addleston Station, and forwarded to any part of the country without change.

Manley Hall and Park, Manchester.

CAPES, DUNN AND PILCHER have received instructions from the Directors of the Manley Palace and Park Co. (Limited), the land being required for building purposes, to SELL by AUCTION, on TUESDAY next, October 23, and Two following days, at 12 o'Clock each day, the VALUABLE EFFECTS in the Gardens and Grounds of Manley Hall, Manchester, including a collection of choice Stove Plants, about 40 well-trained Specimen Azaleas, about 75 Vines of the best sorts, strong and healthy Canes, in full bearing; good Peach and Nectarine Trees, about 250 young Vines, the choice Fruit Trees and Shrubs in the Kitchen Garden, 68 splendid Standard 6 feet Currant Trees, about 400 Dwarf-trained Pyramid Fruit Trees, a fine Holly Hedge, 1000 Strawberries, in pots, for Forcing, and many thousands in the ground; 150 Specimen Pyramid Fruit Trees, from 6 to 10 feet, and a number of Orchard Trees; a fine selection of Herbaceous and Alpine Bedding Plants, the extensive Range of Glass-houses, forming the Vinery and Peach Houses; 6 Double-span Greenhouses, of handy size, and a large Conservatory, now used as the Azalea-house, as erected, with the Heating Apparatus for each; 20 Cucumber Frames, a number of growing Timber Trees, and a variety of Agricultural Implements, &c.

May be viewed on Friday and Saturday, October 19 and 20, by Catalogue only, price 1s. each. Catalogues may be obtained from the Auctioneers, 8, Clarence Street, Albert Square, Manchester; and at the Park on the days of View and Sale.

Hereford.

GREAT SALE of NURSERY STOCK, at the Barr's Court Nursery, Hereford.

MR. O. SHELLARD is instructed by Messrs. G. Davison & Co. to SELL by AUCTION, on TUESDAY and WEDNESDAY, October 23 and 24, at 12 o'Clock each day (in consequence of the land being required for the erection of the Middle Class College), the whole of the VALUABLE STOCK, including many thousands of strong Apple Stocks of superior quality; strong Hawthorn Quick and transplanted Ash; large quantities of Spruce and Austrian Firs; other Shrubs and Trees in great variety; several thousands of dwarf Roses and fine Christmas Trees.

Full particulars in Catalogues, on application to the Auctioneer, 13, King Street, Hereford.

Stanhope Nursery, Westerham Hill, Cudham, Kent.

EXTENSIVE and VALUABLE NURSERY STOCK, comprising fine Specimen Shrubs, Fruit Trees, Standard and Dwarf Roses, Cedars, Deodars, Weymouth and other Pines, Portugal and Common Laurels, Hollies, Ivy, Creepers, and a large quantity of Forest Trees, &c.

MESSRS. BAXTER, PAYNE, AND LEPPER will SELL by AUCTION, on the Premises, by order of Mr. A. Fairall, on TUESDAY, October 30, at 11 for 12 o'Clock precisely, the above valuable NURSERY STOCK, comprising a very choice collection of many thousand Trees and Shrubs.

May be viewed, and Catalogues obtained at the various Inns in the neighbourhood; at the place of Sale; and of BAXTER, PAYNE, AND LEPPER, Auctioneers and Land Agents, Town Hall, Bromley, Kent, and 157, Fenchurch Street, E.C.

To Florists.

TO BE SOLD, a genuine old-established BUSINESS (in the same hands ten years)—¾ acre of ground, two houses, Potting Shed, Sets of Frames, &c. Stock optional. Premium £225. Lease five years. Rent £10 per annum. Particulars of

ROBERT W. FULLER AND MOON, Estate Agents, Croydon and Reigate. (3059)

To Nurserymen and Others.

TO BE DISPOSED OF, one of the oldest established NURSERY BUSINESSES in the North of England, with valuable connection.

The executors of the late Mr. John Harrison, of the North of England Nurseries, Catterick Bridge and Scorton, are open to treat with a gentleman possessing capital, for the disposal of the business, which has an established connection of nearly 50 years.

The Nurseries consist of about 60 acres of Freehold Land, about 40 acres of which are stocked with a choice Collection of Roses and General Nursery Stock. There are good Residences in the Grounds, and fine Ranges of Glass, close to the Catterick Bridge Station of the North-Eastern Railway, situate between Darlington and Richmond, and offering unusual facilities for doing a large and profitable business. A large portion of the purchase money could remain on security of the property at a reasonable rate of interest. Possession could be given at any time as a going concern. Principals or their Solicitors only may apply to the undersigned,

A. E. HARRISON, Solicitor, Church Yard, Rotherham.

TO BE DISPOSED OF, a Small FLORIST'S BUSINESS, with Two substantially built Houses, heated with hot water and well stocked with Spring Bedding Plants, 150 feet of Frames, with light, 6 feet; Three Green's Mowing Machines, Ladders, Barrows, Tools, &c., Eight-roomed House on lease.

G. C., 35, Grove Lane, Camberwell, Surrey.

TO BE DISPOSED OF, TWO ACRES of LAND, planted with choice Fruit Trees, in full bearing; also covered with Nursery Stock in fine condition. It is under a Nobleman, in the county of Nottingham, within a small distance of three Markets. A good opening for a working man with a little capital. The Valuation about £150. More Land could be obtained if required at reasonable rent. For particulars,

G. F., *Gardeners' Chronicle* Office, W.C.

White Cross Nurseries, Hereford.

IMPORTANT to NURSERYMEN, SEEDSMEN, FLORISTS, and Others.

TO BE SOLD, by Private Treaty, as a going concern, in consequence of a Dissolution of Partnership, the whole of the valuable STOCK-IN-TRADE, with 8 Greenhouses, Propagating Houses, 2 Vineries, and 4 Ranges, about 500 feet in length, of Pits, fully stocked, and in good repair; Horse, Van, Spring and Heavy Carts, Tools, Implements, Utensils, and Plant, upon and belonging to the White Cross Nurseries, situated on the confines of the City of Hereford, together with the Stock of Agricultural and Garden Seeds, Fixtures and Effects at the Seed Warehouse, occupied in connection with the Nurseries, and situated in Library Buildings, Hereford, aforesaid.

The Nurseries (with the Cottages and Buildings thereon) cover an area of about 23 acres, are well stocked with the choicest variety of every kind of Fruit, Standard and Dwarf Roses, and other Trees, Ornamental and other Shrubs, Plants, &c., are well and pleasantly situated, close to the City of Hereford, and within a few minutes' walk of the Barton Railway Station.

The Nurseries, together with about 12 acres of Pasture Land, are held under a Lease, of which about 4 years are unexpired, and will be included in the purchase.

To view, apply to Mr. CHARLES WHITING, the Foreman at the Nurseries. Any further particulars which may be required may be obtained on application to H. C. BEDDOE, Esq., Hereford; or, Messrs. DEWES, SON AND WILKS, of Coventry, Joint Solicitors.

Sealed Tenders (marked "Tender for White Cross Nurseries") to be forwarded to Mr. HENRY MERRICK, of Earl Street, Coventry, Public Accountant, not later than October 25 next. The Vendors do not bind themselves to accept the highest or any Tender.

To Nurserymen and Gardeners.

TO BE SOLD or LET, an old-established NURSERY, SEED, and FRUIT GROWING ESTABLISHMENT, in an important and fashionable town, in one of the midland counties. An excellent opportunity for an experienced Gardener with moderate capital. For particulars apply to

ALEX. McKENZIE, 1 & 2, Great Winchester Street Buildings, London, E.C.

To Nurserymen, Florists, and Others.

TO BE LET, with Immediate Possession, CRESCENT ROAD GRAPERIES, Worthing, standing on an acre and a quarter of ground. Nearly 500 feet run of Glass; good Cottage. No Valuation on entering. For particulars, or for view, apply to

GARDENER, The Graperies, Crescent Road, Worthing.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

C. W. MIETZSCH, Dresden, Saxony, recommends his healthy and well-grown stock of

CAMELLIAS with buds, 2 feet, bushy, 150 marks per 100 (alba plena in large quantities).

" without buds, 1½ to 2 feet, bushy, 90 marks per 100; larger ones according to size.

AZALEA INDICA, very bushy, with buds, from 50 to 75 marks per 100.

DRACÆNA TERMINALIS ROSEA, and other kinds, 15 marks per dozen.

LILY OF THE VALLEY, strong pipes, 30 marks per 1000.

Packing done most carefully. Shipping *viâ* Hamburg to low figures.

Planting Season.

E. BURGESS begs to offer the following :—
Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet; Spruce FIRS.
Prices on application.
The Nurseries, London Road, Cheltenham.

Fruit Trees.

THOMAS EVES begs again to call the attention of all persons intending Planting to his immense and superb stock of FRUIT TREES, for the growth of which the Gravesend Nurseries are particularly adapted, and for which they also have a wide reputation, the trade for them extending to all parts of the United Kingdom and Colonies. The leading sorts of Apples, Pears, and Plums most in demand by Market Growers are extensively cultivated as Pyramids and Standards, and can be supplied in large quantities at from 70s. per 100; Espaliers from 20s. per dozen.
CHERRIES, a fine lot of tall Standard, from 100s. to 120s. per 100.
GOOSEBERRIES, 3-yr. to 5-yr., 100s. to 120s. per 1000.
CURRANTS, 3-yr. to 5-yr., 60s. to 75s. per 1000.
T. EVES, Gravesend Nurseries.—Established 1810.

6000—Camellias—6000.

H. WALTON begs to call attention to his extensive collection of the above, of all sizes, from 42s., 63s., 105s., to 120s. per dozen; large handsome plants of all the best varieties, from 21s. to 105s. each, all home grown.
AZALEAS, all the leading varieties in fine healthy plants, from 24s. to 63s. per dozen.
A large quantity of Specimen STOVE and GREENHOUSE PLANTS in fine condition.
ERICAS, in Half and Quarter Specimens, all the best Exhibition varieties.
Inspection invited.
Edge-end Nurseries, Brierfield, near Burnley, Lancashire.
See Report, No. 190, page 212, Aug. 18, 1877.

HOTEIA (SPIRÆA) JAPONICA.—100,000 in very strong and sound condition.
SPIRÆA JAPONICA, 16s. to 20s. per 100; have been awarded several First Prizes, and always considered best shown.
DIELYTRA SPECTABILIS, very strong, 20s. to 26s. per 100.
LILIUM LANCIFOLIUM ALBUM MONSTROSUM, 30s. to 40s. per 100: very free flowering.
,, ,, ROSEUM, strong, 20s. to 26s. per 100.
,, ,, RUBRUM, strong, 20s. to 26s. per 100.
Trade Catalogues on application. Post-office Order or good reference from unknown correspondents.
BUDDENBORG BROS., Nurserymen, Hillegom, near Haarlem, Holland.

To the Trade.

W. HEATH AND SON beg to offer the undermentioned plants, all of which are healthy and well-established :—
STATICE PROFUSA, good plants, 3-inch pots, 12s. per dozen; 4 and 5-inch pots, 24s. and 30s. per dozen.
DENDROBIUM NOBILE, splendid plants with 7 to 12 branches, 6-inch pots, 7s. 6d. and 10s. 6d. each.
CROTONS, healthy young plants, of all the best varieties, 4-inch pots, 12s. and 18s. per dozen.
IXORAS, of varieties, 3-inch pots, 18s. per dozen.
GARDENIAS INTERMEDIA and RADICANS MAJOR, 4-inch pots, good plants, 18s. per dozen.
ARDISIA CRENULATA and CRENULATA ALBA, young plants, 9s. and 12s. per dozen.
DIPLADENIA BOLIVIENSIS, good plants, 24s. per dozen.
POINSETTIAS, a splendid stock of healthy plants, 4½ and 5-inch pots, 9s. and 12s. per dozen; smaller plants, 6s. per dozen.
BEGONIA INSIGNIS, good plants, 1 foot high, 5-inch pots, 9s. and 12s. per dozen.
BOUVARDIAS, all the best varieties, 4½-inch pots, 10s. per dozen.
PELARGONIUMS, 1877, new varieties, strong plants, 24s. per dozen.
ABUTILON BOULE DE NEIGE, fine healthy plants, 8s. per dozen; larger, in 4½ and 5-inch pots, 12s. per dozen.
ROGIERA GRATISSIMA, 3½-inch pots, 18s., 30s., 42s. per dozen.
PRIMULAS, ALBA PLENA, several thousands of strong healthy plants, in 3 and 4½-inch pots, 9s. and 10s. per dozen.
CINERARIAS, all the best varieties, to name, thumb-pots, 4s. per dozen.
ADIANTUM CUNEATUM (Maidenhair), splendid plants, 4-inch pots, 12s. per dozen, £4 per 100.
ADIANTUM FARLEYENSE, nice young plants, 24s. per dozen.
PTERIS SCABERULA, good plants, 12s. per dozen.
,, SERRULATA, small plants, 3s. per dozen; plants in 5-inch pots, 5s. per dozen.
CARNATIONS, The Bride, Miss Joliffe, and La Belle, splendid plants, well rooted, 9s. per dozen.
CARNATIONS and PICOTEES, named varieties, 50s. per 100 pairs.
PANSIES, best named varieties, 25s. per 100.
,, best bedding varieties, 20s. per 100.
WILLIAM HEATH AND SON, Nurserymen and Seed Merchants, Cheltenham.

To the Trade.

F. W. COOPER has secured fine pure Stocks of Seed of the following CUCUMBERS, which he can offer at per ounce :—
ROLLISSON'S TELEGRAPH,
TURNER'S BLUE GOWN,
PEARSON'S LONG GUN,
MONRO'S DUKE OF EDINBURGH.
Florist, Huntingdon.

Cabbage Plants, Cabbage Plants.

W. VIRGO AND SON can now supply in any quantity good strong, healthy plants, viz., Early Battersea, Early Enfield Market, Early Nonpariel, and Sugar-loaf Cabbages, all at 3s. per 1000; Robinson's Drumhead, 3s. per 1000; Red Drumhead, 5s. per 1000; delivered free on rail. Post-office Orders must accompany all orders from unknown correspondents.
W. VIRGO AND SON, Wonersh Nursery, near Guildford.

STONE'S APPLE.—As Certificated by the Royal Horticultural Society, and shown at the Crystal Palace. A very handsome Kitchen Apple, of large size and a great bearer. True to name. Fine 2-yr. trees, 42s. per dozen. Trade price on application.
THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.
The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A person inspection earnestly solicited. Catalogues free on application to
R. AND G. NEAL, Chief Office, Wandsworth Common.
The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

Surplus Stock.

INDIAN AZALEAS, from 3000 to 4000 nice flowering plants of the best varieties, 15s. to 24s. per dozen. Descriptive List forwarded on application.
DAPHNE INDICA RUBRA, from 1000 to 2000 plants, 8s. to 30s. per dozen.
LILIUM AURATUM, home-grown Bulbs, that have borne from four to eight flowers each this season, 12s. to 18s. per dozen.
ISAAC DAVIES, Nurseryman, Ormskirk.

CHOICE WINTER FLOWERS.
RHODODENDRON MULTIFLORUM, 2s. 6d. to 3s. 6d. each.
,, PRÆCOX, 1s. 6d. to 2s. 6d. each.
AZALEA DAVIESII, 2s. 6d. to 3s. 6d. each.
,, HYBRIDA ODORATA, 2s. 6d. to 3s. 6d. each.
All the above are beautiful bushes, well filled with bloom-buds. Descriptive List of these and other Novelties forwarded on application to
ISAAC DAVIES, Nurseryman, Ormskirk.

To Large Planters and the Trade.

LIMES, Red-twigged, from 6 to 7, 7 to 8, 8 to 10, and 10 to 12 feet.
YEWS, English, well furnished, 2½ to 3, 3 to 4, and 4 to 5 ft.
CHESTNUT, Horse, 6 to 12 feet.
LAURELS, 2½ to 3, and 3 to 4 feet.
OAKS, Hedge-row, and Standard ROSES, &c.
Prices and sample dozens on application.
A. GODWIN AND SON, Ashbourne, Derby.

STRAWBERRY PLANTS, STRAWBERRY PLANTS.—Purchasers' selection from Fifty-five of the best sorts known. For LIST see large Advertisement in last week's *Gardeners' Chronicle*. 3s. 6d. per 100, our selection; 2s. 6d. per 100, 20s. per 1000, all true to name.
HARRISON'S MUSK, 2 plants 1s., 12 for 3s. 6d.
PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2s. per dozen.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

Winter and Spring Flowering Plants.

MESSRS. JOHN STANDISH AND CO.'S stock of these is unusually fine this season, and includes the following :—
AZALEA INDICA, bushy and well budded, in good variety.
BOUVARDIAS, good bushy plants.
CAMELLIAS, good plants and well budded.
CARNATIONS, Miss Jolliffe and others.
EPACRIS, good plants.
ERICAS, Hyemalis, Sindryana, Wilmoreana, ventricosa varieties, and others.
ROSES, Tea-scented and H.P.'s, in great variety.
POINSETTIA PULCHERRIMA.
SOLANUM, well-berried plants; and other plants.
They have also a great variety of PALMS and other plants suitable for decoration; also of ADIANTUM and many other FERNS, besides a varied stock of STOVE and GREENHOUSE PLANTS and GRAPE VINES.
CATALOGUES post-free on application.
Royal Nurseries, Ascot, Berks.

Alnwick Seedling Grape Vine.

D. P. BELL begs to offer young plants of the above Vine, the true variety as grown at Clive House, from which the only exhibit has been made, and for which he received the First-Class Certificate from the Fruit Committee of the Royal Horticultural Society, December 6, 1876, regarding which the report of the Committee, as given by the *Journal of Horticulture*, is as follows:—"The bunch is large and heavily shouldered, with a stout stalk. The berry stalks are stout, and the berries large and roundish oval, frequently with sutural furrows; skin quite black and membranous, covered with a fine bloom; flesh firm, tender, very juicy, and sweet. It was unanimously awarded a First-class Certificate. This is a far superior fruit to Alicante, and will no doubt prove to be a late-keeping variety of great value."
It is important that the public should know that this, the only certificated variety (and therefore the original), has been exclusively raised at Clive House, and cannot be had elsewhere.
Plants 15s. each.
The fruit now hanging on the parent Vine may be seen on application.

New Exhibition and Decorative Fuchsias.

JAMES LYE, Clyffe Hall, Market Lavington, Wilts, has the pleasure to offer the following fine new varieties of his own raising, unrivalled for their high-class qualities, excellent habits, and free-flowering properties :—

DARK VARIETIES.

Charming.	James Lye.
Gem of the West.	Royal Standard.
Mr. James Huntley.	Elegance.

LIGHT VARIETIES.

Beauty of Wilts.	Mrs. Huntley.
Letty Lye.	Delicata.
Blushing Bride.	Miss Lye.

The above fine varieties have been most favourably reported on in the *Gardeners' Chronicle* for June 9, and the *Gardeners' Magazine* for June 23. A coloured illustration of Mr. James Huntley, Letty Lye, Mrs. Huntley, and Royal Standard, appeared in the *Floral Magazine* for October.
A Descriptive List can be had on application. Plants are now ready, and Orders will be executed as received.
Price the set of twelve varieties, £1 10s.; per plant, 3s. Post-office Orders payable to
JAMES LYE, Market Lavington Office.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.
The New CATALOGUE, just issued, sent to applicants.

Rhododendrons.

ISAAC MATTHEWS AND SON have to offer the following RHODODENDRONS—100,000 fine bushy plants, thinly grown and well rooted, nice round plants :—
RHODODENDRON SPLENDIDUM, white, 1 to 1½ foot, 37s. 6d. per 100; 1½ to 2 feet, 50s. per 100; 2 feet, 60s. per 100.
,, CAUCASICUM PICTUM, scarlet, 1 to 1½ foot, 50s. per 100; 1½ to 2 feet, 60s. per 100.
,, JACKSONII, scarlet, 1 foot, 50s. per 100; 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, 75s. per 100.
,, WOOLLERII, scarlet, 1 to 1½ foot, 60s. per 100; 1½ to 2 feet, £5 per 100.
,, HYBRIDS, from all choicest named varieties, 1 foot, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100; 2 to 2½ feet, 60s. per 100.
,, PONTICUM, 9 to 12 inches, 50s. per 1000; 12 to 15 inches, 10s. per 100; 15 to 18 inches, 15s. per 100; 18 to 21 inches, 40s. per 100; 2 to 3 feet, 50s. per 100.
,, ,, very bushy, 3 to 3½ feet, 80s. per 100.
YEW, English, 6 to 9 inches, 40s. per 1000; 9 to 12 inches, 50s. per 1000; 12 to 15 inches, 70s. per 1000.
,, English, bushy, 15 to 18 inches, 20s. per 100; 1½ to 2 feet, 30s. per 100; 2 to 2½ feet, 40s. per 100.
,, English, very bushy, 2½ to 3 feet, 60s. per 100.
CURRANTS, Black, very strong, 10s. per 100.
GOOSEBERRIES, strong, 10s. to 12s. 6d. per 100.
CATALOGUES can be had on application to
The Nurseries, Milton, Stoke-on-Trent.

VIOLETS, SWEET VIOLETS.
MARIE LOUISE, double, light blue, white centre, flowers very free and continuous from September to May.
VICTORIA REGINA, large single Violet, very fine.
WHITE CZAR, the best white.
BLANDYANUM, large double Violet.
KING of VIOLETS, large double Violet.
REINE DES VIOLETS, large double white.
NEAPOLITAN, double lavender.
,, single lavender.
Strong clumps of the above 6s. per dozen, 40s. per 100, suitable for potting in 48-inch pots, or forming beds and masses in flower gardens. Now is the time to plant to ensure flowers all winter and spring.
BELLE DE CHATENAY, new double white, 1s. 6d. each.
PATRIE, new double blue, very free flowering, 1s. each.
One small plant of the ten varieties free by post 5s. 6d. Trade price on application.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Vines and Strawberries.

"Plant now to ensure a full crop of fruit next season."
FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3s. 6d. to 5s. each; strong Fruiting ditto, 7s. 6d. to 10s. 6d. each.
Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16s. to 20s. per 100; from the open ground, 3s. to 5s. per 100.
Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.
Sheen Nursery, Richmond, Surrey.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.
NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee :—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each. For Detailed List see BULB CATALOGUE.
NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10s. 6d. each. Extra sized fruiting plants, 21s. each.
B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.
Priced CATALOGUE sent post-free.
Address, HENRY SHEPHERD, Manager.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.
Hale Farm Nurseries, Tottenham, London.

Orchard Planting, &c.

H. F. SMITH AND SONS, SEED MERCHANTS, Selby, being about to give up their Nurseries, will offer the whole of their splendid stock of FRUIT TREES &c., at about half the usual price. It comprises about 10,000 Apples, Pears, and Plums; 10,000 Gooseberries of best sorts; 5000 Black Naples Currants; 6000 Northumberland Fillbasket Rasps (extra strong canes) &c., as well as fine stock of FOREST and ORNAMENTAL TREES, SHRUBS, CONIFERS, &c., all clean and healthy. One dozen or 100 sent as sample if required.

Florists' Flowers, and Roses.
Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.
Hale Farm Nurseries, Tottenham, London.

NEW HARDY RHODODENDRONS.—
MRS. MENDEL.
SIGISMUND RUCKER.
MARCHIONESS OF LANSDOWNE.
The above beautiful and distinct hardy Rhododendrons will be supplied for Three Guineas.
ANTHONY WATERER, Knap Hill, Woking, Surrey.

Kent—The Garden of England.

THOS. BUNYARD AND SONS offer the finest Stock in the Trade of
10,000 Standard CHERRIES,
15,000 Standard PEARS,
1,000 Standard MULBERRIES,
KENT COB NUTS, and other FRUIT TREES.
Prices of which may be found in their Trade LIST, just published.
Also cheap and fine AUCUBAS, 2 to 6 feet; trained PLUMS and PEARS, RHODODENDRON PONTICUM, SPRUCE, large; YUCCAS, ELMS, LIMES, and other FOREST TREES, CLIMBERS, &c.
THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

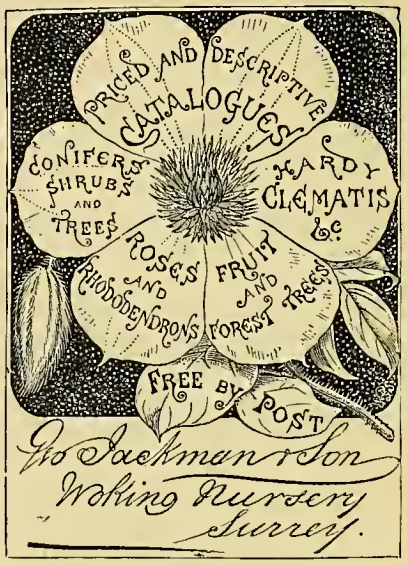
To Exhibitors and Others.

STOVE PLANTS.—Large specimens to be disposed of, on account of not having sufficient room to house them:—
PANDANUS VEITCHII, 4 feet high and 6 feet through, and 5 feet high and 6 feet through.
CROTON INTERRUPTUM, fine specimen, well coloured, 6 feet by 6 feet.
,, UNDULATUM, 5 feet by 5 feet.
ALOCASIA METALLICA, 3 feet by 4 feet.
MARANTA ZEBRINA, 3 feet by 6 feet.
,, VEITCHII, good half-specimen.
,, ROSEA PICTA.
Also the following healthy and useful WINTER FLOWERING PLANTS:—Solanums, Bouvardias, Libonias, Eranthemums, Linums, Gardenias, Erica hyemalis, gracilis, Caffra, and other varieties; Camellias, Azaleas, Cyclamens, Poinsettias.
Now being the time to obtain stock of the following Carpet Bedding Plants, W. MILES can supply Alternantheras, Antenarias, Arenaria, Achillea, Cerastiums, Leucophyton, Mentha, Mesembryanthemums, Nertera, Sagina, Santolina, Tecoma, Echeverias, Sempervivums, &c. All particulars and prices on application to
WM. MILES, West Brighton Nursery, Cliftonville, Sussex.

SPRING BEDDING PLANTS, BULBS, &c.

DAISIES, best red and white varieties in cultivation, and POLYANTHUS, 1s. per dozen, 5s. per 100.
SEDUMS, acre aurea, acre elegans, glaucum, lividum; SEMPERVIVUM tectorum and californicum; ANTENNARIA tomentosa; MENTHA gibraltaricum, 1s. 6d. per dozen, 8s. per 100.
ALYSSUM saxatile, ARABIS alpina and caucasica fol. var.; IBERIS coriifolia and Tenoreana; PHLOX frondosa and verna; SILENE pendula compacta; SAPONARIA ocymoides; STELLARIA graminea aurea; MYOSOTIS dissitiflora, sylvatica, and alba or rosea, 1s. 6d. per dozen, 10s. per 100.
SWEET WILLIAMS, 1s. 6d. per dozen, 8s. per 100.
WALLFLOWERS, 1s. per dozen, 6s. per 100.
PRIMROSES, double white or lilac; HEPATICAS, double red or single blue; GENTIANA ACAULIS, 4s. per dozen, 30s. per 100.
PRIMROSE, Double Sulphur, 3s. per dozen.
Choice named exhibition varieties of PANSIES, PINKS, PHLOXES, and PENTSTEMONS, 4s. per dozen, or 12 of each for 14s.
DELPHINIUMS, POTENTILLAS, PYRETHRUMS, PÆONIAS, fine named sorts, 6s. per dozen, or 12 of each for 21s.
CARNATIONS and PICOTEES, fine exhibition sorts, 7s. per dozen plants.
Bedding PANSIES and VIOLAS, in distinct colours, white, yellow, blue, purple, &c., named sorts, 1s. 6d. and 2s. per dozen, 12s. and 16s. per 100.
TULIPS, 1s. to 2s. 6d. per dozen.
CROCUS, 1s. 6d. to 3s. per 100.
Border HYACINTHS, 3s. per dozen, 20s. per 100.
Collections of 100 HERBACEOUS PLANTS, in 20 to 50 varieties, 16s., 20s., and 25s.
Collections of 100 CARPET BEDDING PLANTS, in variety, 8s., 12s., and 15s.
Collections of 100 SPRING FLOWERING PLANTS, in variety, 8s., 12s., and 15s.
Collections of 100 SPRING FLOWERING BULBS, in variety, 6s., 9s., and 12s.
Collections of 500 SPRING FLOWERING BULBS, in variety, 21s., 30s., and 50s.
Collections of BULBS for conservatory decoration, 21s. and 42s.
Collections of FLORISTS' FLOWERS for exhibition, 50 plants in 50 sorts, 15s., 21s., and 30s.; 100 plants in 100 sorts, 25s., 35s., and 50s.
CATALOGUE of Bulbs, Roses, Fruit Trees, Spring-flowering and Herbaceous Plants, &c., post-free.

WILLIAM CLIBRAN & SON,
THE OLDFIELD NURSERIES, ALTRINCHAM.



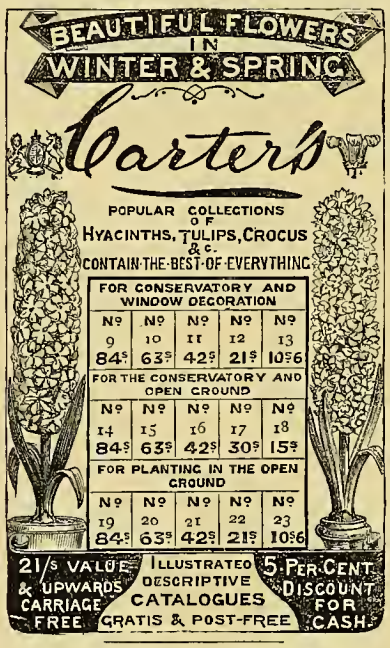
PLANTING SEASON.

FOR IMMEDIATE EFFECT.

JAMES IVERY & SON

Beg to offer well grown stuff of the following:—
LAURELS, fine bushy plants, 6, 7, and 8 feet.
YEWS, fine bushy plants, 6, 8, and 10 feet.
GREEN HOLLIES, fine bushy plants, 5, 7, and 9 feet.
TREE BOX, fine bushy plants, 5 to 6 feet.
IRISH YEW, fine bushy plants, 6, 7, and 9 feet.
CUPRESSUS LAWSONIANA, fine bushy plants, 10 to 12 feet.
LARCH FIR, 8 to 10 feet.
PINUS AUSTRIACA, 6 to 10 feet.
,, STROBUS (Weymouth Pine), 6 to 10 feet.
ARAUCARIA IMBRICATA, splendid specimens, 8, 10, and 20 feet.
PINUS EXCELSA, splendid specimens, 10, 15, and 20 feet.
SPRUCE FIR, splendid specimens, 8, 10, and 12 feet.
SILVER FIR, splendid specimens, 10 to 12 feet.
SYCAMORE, 10 to 15 feet.
BIRCH, 10 to 12 feet.
AILANTUS GLANDULOSA, 8 to 10 feet.
POPLARS, in variety, 6, 8, and 9 feet.
LIMES, very fine, straight stems, 10, 15, and 20 feet.
NUTS, various, large quantities, including many of Webb's new kinds, 4, 6, and 8 feet.
WALNUTS, standards, fine heads, stems 5 to 6 feet.
MULBERRIES, Standards, fine heads, stems 5 to 6 feet; probably the largest and best stock in the kingdom.
Also a large collection of GENERAL NURSERY STOCK too numerous to mention.

Prices on application at
THE NURSERIES, DORKING, SURREY.



THE QUEEN'S SEEDSMEN,
HIGH HOLBORN, LONDON, W.C.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.
CATALOGUES post-free on application.
Lion Walk, Colchester.

The Weeping Wellingtonia.
(WELLINGTONIA GIGANTEA PENDULA NOVA.)
Awarded the First Prize at the Carlisle International Flower Show for the "most distinct hardy Conifer of real merit."

LITTLE AND BALLANTYNE, NURSERYMEN and SEEDSMEN to the Queen, Carlisle, are now sending out healthy plants of their WEEPING WELLINGTONIA, which is allowed by all who have seen it to be the most graceful pendulous tree ever seen of its kind, and perfectly distinct in habit from any other. The original plant is now 8 feet high, and may be seen at L. & B.'s Nurseries, near Carlisle, where it was raised from seed in 1870.
Prices of plants in pots, from £2 2s. to £5 5s. each
Knowefield Nurseries, Carlisle.

Palms.—To the Trade.

OSBORN AND SONS are now offering:—
ARECA ALBA, in thumb pots, 75s. and 100s. per 100.
,, CRINITA, in 3-in. pots, 30s. per dozen.
,, HERBSTII, 60s. per dozen.
,, PURPUREA, 24s. per dozen.
COCOS WEDDELLIANA, in thumb pots, well established, 24s. and 30s. per dozen.
CHAMÆROPS EXCELSA, in large 60-pots, 12s. per dozen.
CORYPHA AUSTRALIS, in large 60-pots, 12s. per dozen.
SEAFORTHIA ELEGANS, in thumb pots, 40s. per 100, 6s. per doz.
PANDANUS UTILIS, 35s. per 100, 5s. per doz.
Fulham Nurseries, London, S.W.

To the Trade.

JOHN PERKINS AND SON beg to offer the following, the whole of which have been recently removed, and are fine healthy plants:—
ABIES DOUGLASII, 4 to 5 feet, 18s. per dozen.
ACER NEGUNDO, var., Pyramids, 40s. per 100.
ABIES MENZIESI, 4 to 5 feet, 18s. per dozen.
CEDRUS DEODARA, 2½ to 3 feet, 21s. per dozen.
HOLLY, Gold Queen, 1½ to 2 feet, 18s. per dozen.
LIMES, fine Standards, 10 to 12 feet, 12s. per dozen.
LAURELS, Common, 2 to 2½ feet, 12s. per 100; 10os. per 1000.
LAURUSTINUS, 1½ to 2 feet, 40s. per 100.
PICEA NOBILIS, 2 to 2½ feet, 30s. per dozen.
,, PINSAPO, 3 to 5 feet, 24s. per dozen.
,, NORDMANNIANA, 3 to 5 feet, 30s. per dozen.
PINUS EXCELSA, 4 to 5 feet, 18s. per dozen.
,, CEMBRA, 4 to 5 feet, 60s. per 100.
LAURELS, Portugal, 3½ to 4 feet, 70s. per 100.
THUJA AUREA, 1 foot, 50s. per 100.
Wholesale and Retail CATALOGUES on application.
52, Market Square, Northampton.

TO THE TRADE.

Dick Radclyffe & Co.'s

WHOLESALE BULB and SEEDSMEN'S SUNDRY LIST

HAS BEEN POSTED TO ALL CUSTOMERS.

Please apply if not received.

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SPECIAL OFFER TO THE TRADE.

FRUIT TREES.
EXTRA STRONG—BEAUTIFULLY TRAINED.

	2-yr. Cordons, Palmettes and Pyramids. Per 100.	3-yr. Palmettes. Per 100.
APPLES, on Crab and on Doucin ..	42s.	59s.
PEARS, on Crab and on Quince ..	50s.	67s.
PLUMS, on Prunus St. Julien ..	50s.	67s.

A List of the Names of the Fruit Trees gratis on application.

STOCKS for BUDDING and GRAFTING.

	Per 1000.
PYRUS MALUS, Crab-Apples	20s.
ROSE, Manetti	25s.
,, multiflora de la Grifferaie	25s.

HARDY PERENNIALS and FLOWER ROOTS.

	Per 100.	Per 1000.
CAMPANULA (PLATYCODON) GRANDIFLORA FL. ALBO	67s.	—
CAMPANULA (PLATYCODON) GRANDIFLORA FL. CŒRULEA	17s.	—
DELPHINIUM NUDICAULE	17s.	—
DIELYTRA SPECTABILIS	25s.	—
HOTEIA (SPIRÆA) JAPONICA.. ..	14s.	135s.
POLYGONATUM MULTIFLORUM ..	9s.	—

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

PICEA CONCOLOR VIOLACEA.

Of this beautiful and distinct Rocky Mountain SILVER FIR we are glad to be able to offer established Plants, received by us, direct from its native habitat, two years ago. Whilst possessing some resemblance to P. LASIOCARPA our plant is thoroughly distinct, the leaves being rounder or needle-like in form, and verticillate rather than pectinate. The colour also is of a uniform silvery glaucous hue, both above and beneath, and is very aptly described by the name it bears. To all cultivators of the choicer Conifers, or Planters for Landscape effect, this must prove a valuable introduction.

Plants in Pots, 3 to 5 inches high .. .. 10s. 6d. each.
Plants in Pots, 5 to 7 inches high .. .. 15s. 0d. ,,
Plants in Pots, 7 to 10 inches high, bushy .. 21s. 0d. ,,

JAMES BACKHOUSE & SON,

THE NURSERIES, YORK.

Our Collection of CONIFERÆ and other ORNAMENTAL TREES is extensive and fine, the Plants as a rule being well-grown and well-rooted.

CATALOGUES, NOW READY, WILL BE SENT ON APPLICATION.

DUTCH ROOTS.

CHARLES LEE & SON

Have received a large Consignment of

HYACINTHS AND OTHER DUTCH ROOTS,

FOR WHICH THEY HOPE TO BE FAVOURED WITH EARLY ORDERS.

Catalogues post-free.

ROYAL VINEYARD NURSERY AND SEED ESTABLISHMENT,

HAMMERSMITH, LONDON, W.

KENTISH FRUIT TREES, ROSES, &c.

THOS. BUNYARD & SONS

Will be happy to forward their DESCRIPTIVE LIST of the above on application, and refer intending Purchasers to the notice of their Nurseries in the *Journal of Horticulture*, December 4, 1873, pp. 442 and 443.

The Fruit Tree List contains all Particulars as to

APPLES, APRICOTS, BARBERRIES, CHERRIES, CRABS, CURRANTS, FIGS, COB NUTS, KENT FILBERTS, GOOSEBERRIES, MEDLARS, MULBERRIES,

PEACHES (RIVERS' NEW), PLUMS, NECTARINES, PEARS, QUINCES, RASPBERRIES, VINES, RHUBARB, STRAWBERRIES, WALNUTS, ORANGES.

The Trees, which are in the finest health and condition, and move with plentiful fibrous roots, may be obtained as Standards, Standards trained, Pyramids, Espaliers, Dwarfs, Dwarfs trained, Cordons, Maidens, and Bushes. APPLES can be had on Rivers' Paradise Stocks; PEARS on Quince, double-worked; CHERRIES on Mahaleb.

THE ROSE LIST CONTAINS—

NEW ROSES, HYBRID, PERPETUAL, NOISETTE, | TEA, BOURBON, CHINA, MOSS, and SUMMER ROSES,

As Standards, Dwarfs, Half-Standards and Pot Plants.

It is well known that Kent, "The Garden of England," is noted for its Fruit—notably CHERRIES and COB NUTS; and T. B. & SONS can supply the Amateur with his dozens of Trees, or the Market Grower with thousands.

THE OLD ESTABLISHED NURSERIES, MAIDSTONE, & ROSE NURSERIES, ASHFORD.

SEED POTATOS. — Snowflake, Bresee's Prolific and Excelsior, Brownell's Beauty, Eureka, &c. C. R. FREEMAN, Upper Market, Norwich.

To the Trade and Others.

SEAKALE and ASPARAGUS.—I am prepared to receive Orders for Seakale and Asparagus, for Forcing or Planting, in any quantity. Price on application to J. COOPER, Gardener and Florist, Belfour Cottage, Fulham Fields, S.W.

BEDDING VIOLAS and PANSIES.—The best of all plants for Spring, Summer, and Autumn Bedding. They require no special treatment, are perfectly hardy, and continue in flower from early spring till long after all other bedding plants have been removed. They are now so generally known and appreciated that it is unnecessary to do more than remind Planters that this is the best time to secure a stock. The Subscribers have an immense quantity of healthy, well-rooted plants of all the best varieties, that have been thoroughly tested, and in order to place them within the reach of all they make the following special autumn quotation (selection being left to themselves), post-free to any part of the kingdom:—

100, in 10 sorts, 16*s.* 6*d.* to 21*s.*
50, in 10 sorts, 10*s.* 6*d.* to 12*s.* 6*d.*
25, in 5 sorts, 6*s.* 6*d.*

Descriptive CATALOGUES and special Prices will be sent on application to the Trade or to those requiring large quantities or particular varieties.

DICKSONS AND CO., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place. New Nursery at Pilrig Park, Edinburgh. (ESTABLISHED UPWARDS OF A CENTURY.)

Important Notice to the Trade.

SEAKALE, ASPARAGUS, RHUBARB,
EXTRA STRONG ROOTS FOR FORCING.

H. THORNTON,

Having devoted great attention to the production of fine roots, and having an immense stock on hand, invites the inspection of large Buyers, or he will be happy to forward Prices for large or small quantities on application.

H. THORNTON, 12, Maxwell Road, Fulham, S.W.

WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1806,)

ROSE GROWERS,

TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS,

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Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

PEAT SOIL, PEAT SOIL.—Brown Fibrous, good quality, for Orchids, Pot Plants, Ferns, &c., £6 6*s.* per truck. Black, good quality, for American Plants, Rhododendrons, Azaleas, Heaths, &c., 17*s* per ton, or 6-ton truck for £4 10*s.* Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truck load. Cash with order.

HOLDER AND SON, Crown Nurseries, Reading.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per sack.

WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, newly made. Reduced price:—In 4 bushel bags, at 1*s.* 3*d.* (not less than 5 bags), or truck load (delivered free to rail in London) for 30*s.* J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

AMIES' CHEMICAL MANURE.

USED BY THE ROYAL HORTICULTURAL AND BOTANIC SOCIETIES.

This Manure, after six years' trial, is unapproached in its results by any other manure. It is suitable for all soils, and permanently improves the fertility of even the poorest. It provides the necessary foods for plants, creates a vigorous growth without over-stimulating, and it increases the produce. It is a powerful insecticide. It has been used with perfect success on

FLOWERS, SHRUBS, VEGETABLES, FRUITS, GRASS, VINES.

PREPARED IN A FINE, DRY, INODOROUS POWDER.

Price, £12 per Ton; 15s. per Cwt.; and in Canisters, 1s., 2s. and 4s. each.

Trial Orders of the Manure are invited, to be used in comparison with other Manures.

Write for Further Particulars to

AMIES' CHEMICAL MANURE CO. (LIMITED), 79, MARK LANE, LONDON, E.C.

DRACÆNA GOLDIEANA.

One of the most magnificent ornamental-foliaged plants ever introduced, and altogether unique in character and aspect. It is a native of Western Tropical Africa. The plant is of erect habit, and the stems are closely set with stalked spreading leaves, the petioles of which are of a grayish colour; the blade of the leaf is cordate-ovate acuminate, with a yellowish-green costa, and marbled and irregularly banded with dark green and silver-gray in alternate straight or furcate bands, the colours being about equally distributed. The back of the unfolded leaves is a pale reddish purple colour. It is without doubt one of the most superb of ornamental stove plants, and indispensable in all first-class collections.

Price, 7 and 10 Guineas each, according to size.

N.B.—THE FIVE-GUINEA SIZE ANNOUNCED LAST WEEK HAVE ALL BEEN SOLD.

BOWENIA SPECTABILIS SERRULATA.

This is a most distinct and remarkable plant, Bowenia being the only known Cycad having bipinnate fronds. It has a short thick caudex, from the crowns of which are developed its large and singularly handsome leaves. The petioles are long, slender, roundish, and of a dark green colour; the lamina is bipinnatisect and spreading, the pinnules are firm in texture, obliquely falcato-lanceolate with an acuminate point, differing materially from the normal and only other known Bowenia in having their margins distinctly and prettily toothed or serrated. Any description must fail to give an adequate idea of the distinct and striking character of this ornamental Australian plant.

Price, 2 Guineas each.

☞ *Mr. WILLIAM BULL has much pleasure in offering the above Plants, which are two most remarkable introductions, and from their sterling merit two of the greatest acquisitions he has ever had the pleasure to announce.*

WILLIAM BULL, F.L.S.,

Is also offering the following NEW PLANTS:—

ARALIA FILICIFOLIA
COLEUS PICTUS
CROTON HENDERSONI
CROTON REX
CURMERIA WALLISII
DIEFFENBACHIA CHELSONI
DIPLADENIA REGINA
DIPLAZIUM ARNOTTII
HIBISCUS (ROSA-SINENSIS) COLLERII
IRIS ROBINSONIANA
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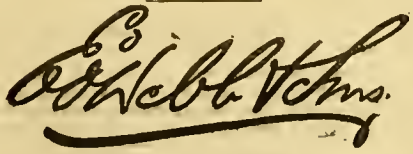

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

SATURDAY, OCTOBER 20, 1877.

HORTICULTURE AT MATLOCK AND DARLEY DALE.

A WEEK ago I set out from home for a short holiday, and I determined to make Matlock Bank my headquarters. Derbyshire is frequently supposed by those who know it only by name to be a rough, rugged, hilly, ungenial county, and "Stonyshire" (George Eliot's name for it in *Adam Bede*) is assumed to be a very just and appropriate *soubriquet*. And so in a sense it is; but it is something more, especially that part of it where I have passed my pleasant holiday. It is stony *plus* lovely vegetation. It is rocky, but clothed with beautiful and graceful alpines. Its very stone walls are covered with varied mosses, which enrich and adorn them. It is a county of natural rockeries, from which the student may glean many hints in building artificial ones at home.

The geology of the district is most interesting. At Matlock Bath, and all along the left-hand side of the Derwent as you walk towards Darley Dale, carboniferous limestone is the preponderating rock; on the opposite side of the river from Matlock Bridge sandstone or gritstone are met with everywhere. The characters of the hills on the two sides of the valley of the Derwent are consequently very dissimilar, not only in nature, but in appearance and products. It is chiefly to the sandstone side of the valley that I shall confine my remarks.

One of the first things which strikes the visitor is the cosy look of the houses, whether mansions or cottages, which are dotted over the wide-ranging landscape. The sandstone, of which most of them are built, after a few years' exposure, assumes a very pleasant neutral tint, which harmonises well with the rocks and their characteristic vegetation. There are very few cottages unadorned by climbers of some kind or other. Ivy is the favourite one, and I have noticed many lovely forms, the handsomest being a striking digitate variety which I have seen in several places. Cratægus pyracantha thrives amazingly, and I have rarely seen it so densely covered with berries as it is here. Its effect is much heightened by the background of dark grey stone in which it is trained. The same remark applies to the other climbers. Cotoneaster microphylla is a much used wall plant; occasionally one sees Cydonia (Pyrus) japonica, and Clematis Jackmanni, Honeysuckles, &c., and less frequently a Euonymus.

The cottage garden plots (I mean those in front of the cottages) are invariably occupied with old-fashioned herbaceous plants, while a few in which the owners have aimed at more display are less successful in the results achieved by means of Pelargoniums, Calceolarias, Lobelias and Dahlias. The prettiest gardens I have seen in front of cottages hereabouts are filled with hardy plants, and some of them are still (October 16) very gay with various coloured Clove Pinks. As to vegetable growing it is uniformly good. I have never before seen so many cottage gardens in any locality so well filled with green crops of first-rate quality. Scarlet Runner Beans have been most abundant and are still plentiful; Parsnips are excellent, so are Onions; while Cauliflowers and Cabbages are generally good enough for display at a village garden show. I was

gossiping with one of the cottagers of the district, and asking him if he was fond of his garden. "Well," said he, "I rather think I am. I took eleven prizes at last show." Potatos are badly diseased. I yesterday saw a hard-working man getting up his crops, on which he had built expectations for a winter supply, and more than half were irretrievably gone.

Walking one day up among the hills I got to a little valley somewhat unexpectedly. It was warm and sheltered, though some 700 feet above the sea level. I came to a neat cottage garden, in which were a number of plants in bloom. Surely they must be Auriculas I thought. I came to a stand and looked again, and sure enough there were hundreds of alpine Auriculas, many prematurely in bloom, forced, no doubt, by the long-continued moisture and the recent warm weather. It was dinner-time, and I saw the cottager chatting with a neighbour, so I made bold to admire his taste. I found him quite an enthusiast. He said they were all seedlings, and he would not let me pass on until he had plucked me a number of beautiful trusses. I do not think I ever enjoyed alpine Auriculas so much, or had previously thought them so beautiful.

Another day I walked over to Darley Dale, bent on seeing Mr. James Smith's nursery. I went in the expectation of seeing a little country nursery, where I might probably find a few acres more or less occupied. Fancy my astonishment when I found, not one nursery, but many; not a few acres, but over 130, devoted entirely to plant and tree growing, situated in every possible position, and at altitudes varying from 500 to 1000 feet above the sea level. Although a perfect stranger, I met with that courtesy and hospitality which are so common with our nurserymen. Mr. Herbert Smith took me under his charge, and conducted me to as many of the nurseries as I could spare time to see. After a look round the home one, which is situated in that part of Darley called Two-dale (otherwise Toodle, or Toad-hole, as I found it was variously pronounced), and where I saw a large and varied collection of hardy Ferns, we proceeded along a rapidly rising road, with lovely hills on both sides, empurpled here and there with Heather, and golden with autumn-tinged Bracken, until, reaching a height of some 1000 feet, we came to a nursery of about 30 acres, humorously called by its owner "Siberia." I suppose I ought to visit it in January to realise the full force and appropriateness of the name. Here I found the most extensive and interesting collection of hardy Heaths I have ever seen. There are acres of them, and if I had seen nothing else, I should have been well rewarded for my walk. Of Calluna vulgaris I saw no less than twenty varieties, all robust, and many of them eminently beautiful. I must particularise a few:—C. v. alba, C. v. Hammondii, C. v. rigida, C. v. Alportii (crimson), C. v. aurea, a really golden-leaved kind; C. v. flore-pleno, the flowers like little balls; C. v. Foxii, dwarfer, and in every way superior to pygmæa. Erica Tetralix Mackiana was very distinct and attractive, E. carnea was just coming into bloom, and to see such masses as Mr. Smith has growing together in full bloom early in spring would be worth a day's journey. I was told that the firm will shortly be able to send out a pure white form of this valuable spring bloomer. But I must pass on. I can only state that I saw immense quantities of all descriptions of American and other bog plants, Andromedas, Azaleas, Kalmias, Menziesias, Rhododendrons, acre after acre, Vacciniums, and last, though by no means least, a goodly quarter of that useful berried covert plant, Gaultheria Shallon, of which I was told one gentleman planted 15,000 plants last year. Conifers of various kinds I found in most thriving condition, though in such an exposed and elevated position. They are in almost as great profusion as Rhododendrons. I was told there was another nursery further on, but I was obliged to decline seeing it, as my time was short. So turning my face towards Darley, which we reached by a fresh route, we called at nursery after nursery, seeing others at a distance which I could not spare time to visit. I thus had a most unexpected treat. I saw almost every description of nursery stock grown at various altitudes, on different kinds of soils, and under varying conditions, and I returned to my lodgings with my ideas about hardy plant growing very considerably enlarged. *E. W. B.*

BEGONIA SPORTS.

Now that Begonias are becoming so popular, and are intercrossed so freely, we may expect to see some curious and valuable results in directions, perhaps, not wholly anticipated by the growers. Already we have double-flowered varieties, of which Messrs. Laing & Co., of Forest Hill, and Messrs. Henderson, of Maida Vale, have at various times kindly furnished us with specimens. In these the stamens of the male flowers have been completely, or almost completely, replaced by petals as regularly as in a Ranunculus.

While double-flowered varieties are thus assured certainties, some specimens with which we have been favoured by Mr. Swan, of The Gardens, Fallowfield, point to the possibility of our having a race of Begonias with the leaves and bracts coloured as brilliantly as those of the Poinsettia. The history of Mr. Swan's specimens is given in the following words:—

"The plant in question was raised from seed two years ago, gathered from amongst several tuberous Begonias which I had hybridised and sown soon after the seed was ripe. A number of plants came up and last summer flowered. This summer they are again in full bloom (July). The one from which the blooms were taken grew very freely, but no stronger than several of the others; but all last season, though it showed flowers of both sexes, it never opened one of the male blooms. As soon as the male flowers came to within about a day of opening they invariably fell off. This summer the plant is about 2 feet high by 18 inches through, and has shown flower very freely, and again only the female blooms open. I send you a spike with two flowers upon it. The male blooms fall until the largest of those I send appeared, when, instead of being a perfect bloom, it presented the singular appearance you will observe in the specimen. It seems to show a tendency to run into leaf, and then again it has thrown out fresh spikes, which are bearing flowers of both forms. Since the first one assumed this form another has appeared, which I also send."

In a subsequent letter Mr. Swan says: "I find that several more have since appeared on various parts of the plant, and though not so strong as those I first sent, still they show a very peculiar tendency to continue growing from the centre of the flowers, and also to form leaves in connection with some parts of the flowers."

The examination of the specimens forwarded by Mr. Swan showed that what under normal circumstances should have been a male flower was here replaced by an aggregation of scales, some of which were partly leafy and partly petaloid, others completely petaloid. From the axils of some these leaves originated branches with coloured bracts and imperfect flowers. Considered teratologically, then, we have here a prolliferous male flower with distorted and partly leafy segments. In the centre of this distorted flower are observable a few traces of stamens (one is shown in the illustration, fig. 95) and a branched inflorescence, the result partly of axilary, partly of median prolification. It would be very desirable to encourage and fix this variety, as we should then have a race of Begonias as remarkable as the so-called double Poinsettias.

New Garden Plants.

LOMARIA DISCOLOR *var.* BIPINNATIFIDA, *Müeller.* Fragm. Phytog. Australiæ, v. 121; L. DOBROYENSIS, *Hort. Bull.**

This most beautiful evergreen Fern has been exhibited both by Mr. Bull and Messrs. Veitch & Sons, and has obtained First-class Certificates both from the Royal Botanic and Royal Horticultural Societies. Mr. Bull's plant, grown from a small offshoot, has so far been more symmetrical in habit, the broader sterile fronds spreading from the crown, and what appear to be fertile fronds (being constricted like them) forming an elegant central tuft. These apparently fertile fronds have, however, in all cases proved to be abortive. The plants imported by Messrs. Veitch were older and stronger subarborescent caudices, and had a less formal mode of growth; but now that they are fairly established there can be no doubt of the identity of the two plants, which certainly take rank amongst the most ornamental of hardy greenhouse Ferns. Sometimes the abortive fertile fronds come broader in their parts than at other times, and they are then quite intermediate in aspect between the two extreme forms, or what one would at first sight call the sterile and fertile fronds.

These sterile fronds are fully 2 feet long and spread outwards in all directions; they are oblong-lanceolate, with a short dark brown stipes, the primary segments closely set, and the secondary ones densely developed, so that the parts overlap, except along the rachis when the secondary lobes are not developed. The fertile fronds, or at least those which simulate them, stand erect in the centre, and from the pectinate margins of the segments have a very elegant appearance; their barrenness perhaps renders the plant all the more ornamental, as there is no deposit of spore-dust such as occurs on many plants having the same general habit. This species of Lomaria comes from Australia, whence also the variety bipinnatifida has been imported—Messrs. Veitch's plants from Melbourne. Dr. Mueller's specimens were gathered in the neighbourhood of the Bunip-Bunip Creek, and also on the Dandenong Mountain *T. Moore.*

CATASETUM PHASMA, *n. sp.**

This is a queer plant, standing between Catasetum sanguineum and gnomus, but much nearer the last, which has been kept in good health several years in Hamburg garden (which is regarded now-a-days as quite exceptional, though in my youth the Cataseta were very common, quite persistent, and free-flowering in the stoves at Dresden under the management then used). It is very easily distinguished by the erect limb of the side lobes of the lip, which is nicely serrate. The callosities inside the lip and the middle lacinia too are very distinct. It bears a rich raceme of rather large flowers. Sepals and petals dark green, with numerous purplish brown spots. Limb of lip white; internal thickened limb of lip also white. Column light green, with numerous brown spots. It has just flowered in the Hamburg Botanic Garden. It was obtained with Eastern Brazilian species. *H. G. Rchb. f.*

THE BAGSHOT NURSERY.

MESSRS. JOHN WATERER & SONS may consider themselves fortunate men in having their famous American nursery situated in a locality which, according to the testimony of the late Sir James Clark, is the healthiest in Great Britain; and in having, in addition to great climatal advantages, a soil—light and sandy—which, if properly used, is in all respects so admirable for the rearing of a very wide and comprehensive range of arboreal subjects. That so enterprising a firm should have taken full advantage of such favourable circumstances is only what one would expect, and consequently we were not surprised to learn, on a recent visit, that they have now some 260 acres under nursery cultivation, besides about 120 acres of farm land, all of which, we believe, at some time or other have been reclaimed from "the Bagshot Sands." The firm, too, has always considered itself fortunately situated as to railway accommodation, being within easy reach of Sunningdale on the London, Wokingham and Reading line, Farnborough on the South-Western, and Blackwater on the South Eastern Railway systems; and we may now mention, for the benefit of future visitors, that a station will shortly be found even nearer at hand, in fact on the Messrs. Waterer's own land—the new station being on the Ascot and Aldershot line, now under construction and nearing its completion, which runs through the nursery.

The one great speciality of the nursery is, of course, the Rhododendrons, which are counted, not by hundreds, but by thousands, and if we said by tens of thousands we should not be far wide of the mark. They may be seen here in all sizes, from the grafted plants in pots to enormous bushes with heads measuring from 25 to 30 feet in circumference, and which lift with balls of earth

* Fronds bipinnatifid; both primary and secondary segments blunt, oblong, crowded; the segments of the abortive fertile fronds pectinately pinnatifid.

* *Catasetum phasma.*—(Aff. Cataseto gnomo.)—Labelli lobis lateralibus semiovatis erectis minutissime ac densissime serrulatis, lobo antico minute triangulo, calcari conico, ovarii pedicellati tertiam æquante, callo obtusangulo utrinque intus in pariete superiori sub limbo lobi lateralis. *H. G. Rchb. f.*

Fig. 95.—A curious seedling begonia.

weighing from 10 to 15 cwt. each; to say nothing of thousands of standards 3 and 4 feet in height, and measuring anything from 2 to 30 feet in the circumference of their heads, all healthy and cleanly grown, well set with flower-buds, and, what is of more consequence to the purchaser, all short-jointed and wiry, the indelible mark of careful and systematic transplanting. This regular transplanting of large nursery stocks is an enormous and costly work to the grower, but it pays for doing, and so it is done as a matter of course, but nowhere better that we have seen than in the Surrey nurseries—not the Bagshot one alone. There's no mistake about it, the Bagshot soil does grow Rhododendrons, and you find them here in marvellous quantities; and what a sight they are in June! Wonderfully floriferous, wonderfully diversified in colour, and equally as wonderful their numbers—the land is clothed in the leafy month with a beauty all its own, that any one may see for the trouble of going there, but which few, we imagine, would care to describe, and certainly we shall not attempt to do so. It is more interesting to us to hear Mr. John Waterer draw on his remarkable stock of Rhododendron lore—to hear that the first Rhododendron that was introduced was the pink-flowered R. maximum, which came from North America in 1756; that this was followed in 1763 by the extremely useful R. ponticum, from Armenia; and subsequently, in 1802, by R. kamtskhaticum; in 1803, by R. caucasicum; and in 1809, by the fountain of all goodness in Rhododendrons—the beautiful North American R. catawbiense. The colour of the catawbiense flowers consisted of shades of rose or rosy purple, and it was eagerly sought after and bought up at high prices by various nurserymen. The nurserymen, and the Surrey men especially, propagated them with a will, and they soon became great favourites with amateurs on account of their bold flowers, fine foliage, and hardiness of constitution. Some ten or eleven years after catawbiense arrived, and when it was becoming plentiful the magnificent crimson-flowered Rhododendron arboreum was introduced from Nepaul, but the Indian subject was not hardy, and therefore an effort was soon made to turn it to useful account in another way, *i.e.*, by fertilising it with the pollen of catawbiense in the hope of raising a race of seedlings possessing the hardy constitution of the last named, and the rich colour of the Indian species. The result of the cross, as we all know, proved highly successful, and thousands of seedlings have since been raised, out of which have been selected the vast number of splendid, nay, gorgeously coloured varieties that now adorn our gardens. Each year has

seen the addition of several novelties to the list, and still they come, as if distinct varieties of this splendid race of plants were quite inexhaustible. Nowhere has this hybridising process been more actively carried on than in the Bagshot nursery, and Mr. John Waterer claims, as we believe with justice, to have produced more distinct and desirable novelties within the past ten years than were produced in all the years intervening from the date of the first cross. So much for the past. An inquiry as to what was being done in the way of novelties now elicited the fact that the Messrs. Waterer have half-a-dozen new ones to send out this season, and of which they think very highly. These are Duchess of Edinburgh, the flowers crimson with a light centre, and the truss conical-shaped; Duchess of Bedford, an enormous trusser, also crimson with a light centre; Kate Waterer, clear rosy crimson, with a large yellow blotch, very distinct; B. W. Currie, brilliant crimson with a light centre; Sir Arthur Guinness, clear rose, and large truss; and H. W. Punchard, plum-coloured, with a yellow centre.

All the named varieties are propagated by grafting, and the common stock for all is the well-known Rhododendron ponticum, which, when they have attained the proper size, are lifted from the seed-beds in the open air, potted up, and worked at once, the "saddle graft" being the style followed. After being grafted the plants are kept under glass until the scion and stock have united, when they are gradually inured to stronger air, and finally are transplanted in the open ground, and left there to take their chance of the weather. July and August are the principal months in the year for grafting, but some sorts can be worked later on, and others again in spring. From the time they are first planted out it takes from three to four years to get them up into saleable size, in the case of bushes, and from five to seven years in the case of standards; and many of the largest specimens in the nursery have taken from twenty-five to thirty years to attain their present dimensions.

Next to the Rhododendrons the most interesting subjects are the coniferous plants, all the best of which we found represented in large numbers and in plants of all sizes. Amongst Abies we noticed specially fine quarters of amabilis, Douglasii, excelsa, grandis (of Douglas), nobilis (a specimen tree of this grand Conifer, some 50 or 60 feet high, is quite laden with cones), Nordmanniana, and orientalis, together with Abies Engelmanni, in a quarter of which are several of the silvery-leaved variety. Several fine seminal varieties of Cupressus Lawsoniana were also brought under our notice, including one named argentea, which originated here, and is remarkable for its silvery hue; another, named aurea, also raised here, which has been certificated, and is a beautifully golden variegated plant; and, what may seem anomalous, a weeping form, named pendula. Of course most of the Lawsonianas are pendulous to a certain extent, but this is thoroughly distinct from any other in that respect, and a very handsome subject to boot. All the leading Pines may be seen here in great form, but we have not space to particularise them. We must note, however, before leaving these, the Bagshot variety of Thujopsis borealis variegata, a very handsome golden variegated new Conifer, which keeps true to its character, and does not burn. Out of all the plants that are growing here not one has had a branch burnt by the sun during the past summer.

Japanese plants are specially well done here, and to judge by the extraordinary rate at which they are being multiplied it would appear that the Messrs. Waterer had great faith in their future; and certainly, to see the various kinds as they grow here, a more beautiful lot of hardy plants can scarcely be imagined. That most of them are hardier than the general public believe there can be no doubt whatever, and they are sure to make their way when better known. The Retinosporas, as they grow at Bagshot, are an especially beautiful tribe, and are to be seen here by the thousand, as well enough they might be. Handsomely grown specimens of Retinospora plumosa aurea stand in rows like pillars of gold—a truly beautiful sight—ay, and "they are as hardy as the common Yew," exclaims Mr. Waterer: a statement in which we entirely agree. Retinosporas pisifera argentea and plumosa argentea are also both very striking plants, and equally so is the new Retinospora obtusa erecta now being sent out, and which is distinguished by its neat erect habit and bright green colour—characteristics sufficiently well marked to thoroughly well entitle it to the First-class Certificate which it has received. Small plants of these Retinosporas, together with Osmanthus and other suchlike subjects, are becoming popular for winter bedding, for which they are eminently suited; and we noticed them planted out here as an illustration of the fact.

Great attention seems also to be paid to the rearing of standard trees of many popular subjects, besides Rhododendrons, such as Golden Yews, very striking ornamental subjects; common and variegated Hollies, and the famous Waterer's Golden Holly especially; Box, Portugal Laurels, Phillyreas, with very handsome, dense, close-growing heads; Guelder Roses, Scarlet Thorns, and Red Cedars, the latter trained into neat heads, on clean stems from 4 feet to 5 feet high. To these, of course, must be added such fine trees as Limes, Catalpas, Laburnums, Horse Chestnuts, and Spanish Chestnuts, Acers, Mountain Ash, Sycamores, Poplars and Tulip trees *ad infinitum*, which we need only mention.

Of hardy trees and shrubs and forest trees the Messrs. Waterer hold an enormous stock, but the usual character of such subjects is so well known that they need not be further alluded to, except it may be to pay a compliment to their fine thriving appearance. As regards the commoner kinds of shrubs, however, we should state that their numbers are legion. They are specially cultivated to the height of 3 or 4 feet; and of such subjects as Yews, Portugal Laurels, variegated Hollies, Aucubas, and Phillyreas, they are here in "drift" after "drift"—twenty, thirty, and forty thousand in each. Hollies are especially well done, and all the leading varieties are strongly represented, but none more so than Waterer's famous golden variety, which seems to be literally irrepressible. The Phillyreas are a grand lot. They are done well, and the larger specimens are particularly handsome objects.

A branch of the business which also claims a considerable amount of attention is the preparation and culture of several subjects for early forcing. The most popular amongst these, judged by the quantities of each under manipulation, appear to be various species and varieties of Andromeda, notably A. floribunda, Ghent Azaleas in colours, Rhododendrons, principally scarlet and white-flowered varieties; various Ledums, Kalmias latifolia and myrtifolia, Rhodora canadensis, Daphne Indica rubra and D. Cneorum, Hydrangeas Impératrice Eugènie, paniculata, and Otaksa; Deutzia crenata and gracilis, &c. Suitable subjects for planting in game preserves also form a feature in the establishment, and these we noted consisted in the main of the invaluable Rhododendron ponticum and seedling varieties of R. catawbiense, the excellent and free-growing Hardwicke variety of Box, the common Privet, and an oval-leaved variety, stated to be a strong and free grower; Berberis Aquifolium, which makes a fine cover for pheasants; the beautiful Cotoneaster Simonsii, the edible berries of which the pheasant is very fond of; Yews, common and Portugal Laurels, Hollies, &c.

The Messrs. Waterer & Sons have lately taken up the culture of Camellias on a large scale, and now annually propagate from 5000 to 6000 of that popular favourite—the old double white alone. We saw the young plants plunged out-of-doors in a sheltered situation, and a nice stocky, healthy-looking lot they were.

THE GENUS AGAVE.

(*Continued from p.* 398.)

53. *A.* (*Littæa*) *polyacantha*, Haworth; Jacobi, Monogr., p. 73; Nachtrage, ii., p. 83; *A. xalapensis*, Roezl; Jacobi, Monogr., p. 72; Nachtrage, p. 30; *A. uncinata*, Jacobi, Monogr., p. 104; *A. chiapensis*, Jacobi, Monogr., p. 235; Nachtrage, ii., p. 80.—Acaulescent. Leaves about 30 in a rosette, oblanceolate-spathulate, 1—2 feet long, $2\frac{1}{2}$—5 inches broad above the middle, narrowed to 2—3 inches above the dilated base, where it is $\frac{3}{4}$ inch thick, bright green, slightly glaucous only in an early stage, the dark brown pungent end-spine $\frac{1}{2}$—$\frac{3}{4}$ inch long, and decurrent a little down the border, the crowded deltoid dark chesnut-brown irregular prickles of the margin $\frac{1}{12}$—$\frac{1}{8}$ inch long, all subpatent, about half-a-dozen to 1 inch in the centre of the leaf, which is about $\frac{1}{8}$ inch thick. Flowering-stem 8—12 feet high, including the dense spike, which is 3—4 feet long. Perianth, including the ovary, $1\frac{1}{2}$—2 inches long; ovary oblong-trigonous, shorter than the greenish yellow limb; segments $\frac{3}{4}$ inch long, two or three times the funnel-shaped tube. Filaments more than twice as long as the segments; anthers $\frac{5}{8}$ inch long. Style reaching to the top of the stamens.

A native of Mexico, long known and widely-spread in cultivation. I cannot make out that there is any material difference between the four plants of which I have cited the names. It has often flowered, but has never been figured. It is marked in the group by the bright green colour of its leaves and crowded irregular deltoid-cuspidate brown teeth, the bases of which are quite confluent in the lower half or two-thirds of the margin.

54. *A.* (*Littæa*) *densiflora*, Hook. in Bot. Mag., t. 5006; Jacobi, Monogr., pp. 123—247.—Acaulescent. Leaves 30—40 in a rosette, oblanceolate-spathulate, 2—3 feet long, 3—5 inches broad above the middle, narrowed to $2\frac{1}{2}$—4 inches above the base, where it is 1—$1\frac{1}{4}$ inch thick, slightly glaucous when young, bright green when mature, with a brown, slightly decurrent, pungent end-spine $\frac{1}{2}$ inch long, $\frac{1}{8}$ inch thick in the centre, the crowded, deltoid, bright, chestnut-brown teeth $\frac{1}{2}$—1 line long, the upper ones ascending, the lower spreading. Scape, including the spike, 6 feet long, the lower bract-leaves ascending, the upper ones spreading. Spike dense, 2 feet long; pedicels very short; bracts and bracteoles lanceolate. Perianth, including the ovary, $1\frac{1}{2}$—2 inches long; ovary oblong-trigonous, $\frac{1}{2}$—$\frac{3}{4}$ inch long; tube funnel-shaped, $\frac{1}{4}$—$\frac{1}{3}$ inch long; segments under 1 inch long, falcate when expanded. Filaments inserted at the throat of the perianth tube, twice as long as the segments; anthers $\frac{1}{2}$—$\frac{3}{4}$ inch long. Style reaching to the top of the stamens; capsule oblong, 1 inch long.

A native of Mexico. It was described by Sir Wm. Hooker in the *Botanical Magazine*, from specimens that flowered at Kew in 1857. It flowered at Reigate in 1874, and at Kew as lately as the spring of 1877. It comes very near to A. polyacantha, but the texture of the leaf is softer, the colour is a brighter green, and the side spines are smaller.

55. *A. Salmdyckii*, Baker; *A. Keratto*, Salmdyck; Jacobi, Monogr., p. 127 and 249, not of Miller.—Acaulescent. Leaves 40—50 in a rosette, oblanceolate-spathulate, reaching a length of 4—5 feet, and a breadth of 5—6 inches above the middle, narrowed to 4—5 inches above the base, bright green, and for the group soft in texture, $1\frac{1}{2}$—2 inches thick at the base, the brown subpungent terminal spine 1 inch long, the crowded minute dark brown deltoid-cuspidate spines of the margin a line long. Inflorescence unknown.

A native of Mexico. My description is taken from a very fine specimen which has been for many years in the Kew collection, and I have seen it also at Reigate. Miller's Keratto, as already stated, belongs to the group Marginatæ. This finishes the series of species of the group Rigidæ. *J. G. Baker.*

LITTLE KNOWN DAINTIES.

Salsify and Scorzonera.—That Salsify and Scorzonera are still cultivated in many large gardens may be known by the fact that stray allusions to their palatableness find their way now and again into horticultural journals. Yet appreciated as they are by the few they are really unknown dainties to the bulk of the population. Judging from the writings of the last century, Scorzonera and Salsify were articles of much more universal consumption among our immediate forefathers than they are with us; indeed, in that cosmopolitan emporium for edible vegetables, Covent Garden, it is to be seen in two or three shops only; and we might well say of it, as Curtis did of Seakale in 1822, "That we hope soon to see the plant so generally known that in future the markets of the first city of the world will be again duly supplied with this most desirable article."

Scorzonera has a history of its own. It was introduced into this country about 1576, and the origin of its becoming known as an edible vegetable is supposed to have arisen in the following manner, and, in fact, gave the plant its well merited name of Viper's Grass:—

"Scorzonera was first known on account of its supposed medical properties about the middle of the sixteenth century, in Spain, where it was esteemed as an antidote to poison of a snake called there *scurzo*. A Moor, it is said, who had learnt in Africa that this plant possessed so valuable a property, availed himself of the knowledge in effecting many cures with the juices of the leaves and roots upon peasants who had been bitten by these venomous reptiles while mowing; but he carefully concealed the plant, that he might retain to himself all the honour and the profit attendant on the discovery. He was at last observed to gather it among the mountains, to which the name of Scorzonera was then given from the name of the snake, the venom of which it was believed to render innocuous."

Salsify is so like Scorzonera, both in appearance and flavour, that the two roots are treated after similar culinary methods. Salsify was considered by Evelyn to be an English wild plant, with an Italianised name, evidently making no distinction between Tragopogon pratensis and Tragopogon porrifolius, although the former bears yellow flowers and the latter purple, yet even Evelyn speaks of Salsify, or Salsifix, as being "an excellent salet root."

The culinary preparation of these plants is exactly similar; they may be boiled, having been first scraped, and dished, when tender, on buttered toast, with good melted butter poured over; or, having been boiled, the roots may be mashed, made up into small cakes, and fried in butter; or they may, when cooked, be cut into lengths of about 2 inches, dipped in batter, and served as a *friture*. It is said that Scorzonera and Salsify are excellent when roasted, having much the flavour of Chestnuts, but of this mode of cooking I cannot speak from experience, but the delicacy of flavour when boiled has earned for this dainty the well-deserved appellation of vegetable oyster. *T. S. J.*

A VISIT TO THE BIG TREES OF AUSTRALIA AND CALIFORNIA.

To the European traveller in Victoria one of the chief attractions is, without doubt, the enormous size of some of its forest trees. Individual specimens were a short time ago reported to have been measured and found to attain a height of 500 feet or more, but the writer of this paper, having made enquiries in Melbourne as to the accuracy of this statement, was informed by the best authority in the colony that it had been made public under a misapprehension as to the reliability of the evidence on which it was based, and that, therefore, it had been retracted. But, notwithstanding the retractation, Victoria still lays claim, and with justice, to the possession of the loftiest trees in the world. Last year the writer had the good fortune to spend several days among the Mountain Ashes and White Gums at Fernshaw, and also to pay a visit to the Sequoias or "big trees" of California (commonly and erroneously called in England Wellingtonia), and therefore a few words about these, the most gigantic vegetable products of the Southern and Northern Hemispheres, may not be uninteresting.

The Australian Eucalyptus.

Fernshaw is situated at a distance of some 45 miles to the north-east of Melbourne, in a little valley closed in by granitic mountains that rise, on one side at least, to an elevation of 4600 feet. The mountain slopes are steep, but not precipitous, and the soil that covers them is composed of the *débris* of disintegrated granite, mingled with vegetable mould, to the depth of several feet. Both valley and mountain side are densely clothed with magnificent trees, that seem to thrive almost equally well on the exposed slopes and in the protected hollows. In many places there is a dense undergrowth of Australian Hazel, through which it is difficult to force one's way, and which, by effectually preventing the sun's rays from reaching the ground, preserves the surface in a state of continual humidity. In other spots considerable groves of Tree Ferns are met with, and the village derives its name from this feature in the vegetation.

On taking up my quarters at the somewhat miserable little inn—the only one which the village possesses—I proceeded to question mine host as to the whereabouts and the dimensions of the biggest trees in the neighbourhood. I soon, however, found that his somewhat pardonable colonial pride in the natural wonders about him was so great and that he had no idea of putting any limits whatever to the magnitude of the trees and that 100 or even 200 feet was as nothing in his estimate of them. I thus gained some idea as to how the exaggerated stories about these trees had arisen, and if I had not made further inquiries I should probably have left the spot believing that many specimens were to be found of between 500 to 600 feet in height and over 100 feet in girth. On questioning the villagers, however, I found that not one of them would acknowledge that he had even seen a tree 400 feet long on the ground. I found too, that all the biggest trees in the neighbourhood were well-known and I had no difficulty in finding my way to them. I measured the girths of some that were pointed out as the largest, and found that in no case did they reach 40 feet, at a height of 5 feet from the ground, the girths of three of the largest being 38 feet 8 inches, 39 feet, and 39 feet 9 inches respectively. Two Sequoias, and these not the biggest in the Mariposa Grove, California, I found to be over 70 feet in circumference at the same distance from the ground. As the trees grow very closely together it requires a considerable amount of labour and care to take an accurate measurement of their heights; but from the fact that I stepped eighty paces along the trunk of one that was prostrate, which did not appear at all extraordinary in size, being only 5 feet in diameter, and from other considerations, I came to the conclusion that considerable numbers must attain a height of over 300 feet, but that none, at least in this neighbourhood, reach 400 feet. The chief feature of these trees, and in marked contrast with the "big trees" of California, is the extraordinary gracefulness of their stems. In the case of one of the tallest trees that I saw, probably considerably more than 300 feet in height, and the most graceful timber tree I had ever met with, the girth at 5 feet from the ground was only 13 feet. This tree had evidently been drawn upwards to the sunlight by the shade its neighbours cast upon it, and the trunk had through this cause been for a long time devoid of branches for about two-thirds of its length, until either accident or the axe of the woodcutter had let in the light, when many branches of foliage had burst from the stem, one or two of them being at no great distance from the ground. From the branches great lengths of bark were hanging, justifying the title which is sometimes applied to these trees, viz., "stringy-bark." They are, however, more commonly called "Mountain Ash"—their scientific name being Eucalyptus obliquus—but the same colonial names are so indiscriminately applied to different trees that it is often impossible to know what species is intended.

I was somewhat surprised to find wood-cutters licensed by the colonial Government hard at work cutting down any and every tree that seemed likely to repay the trouble of turning it into palings, and I was informed that already many of the finest trees had succumbed to their attacks. Only those that are too small or that will not split escape. It seems a pity that such beautiful scenery and such splendid forest—the capabilities of a most delightful summer resort—within a few hours ride by coach from Melbourne should be so unappreciated that the inhabitants do not care whether one of the most attractive spots in the colony is utterly spoilt or not.

On the flats along the banks of the Watts River, and within two miles of Fernshaw, may be seen a number of White Gums, so called on account of the whiteness of their bark, which have been considered by some to be rivals of the Mountain Ash. The largest of these trees that I could find measured only 25 feet in girth, and was not much if at all over 200 feet in height.

Since writing the above I have received a communication on the subject of the "big trees" of Australia from Mr. Ellery, the Government astronomer at Melbourne, and through him from Baron Von Mueller, to both of whom, for their ready kindness and assistance during my stay in Victoria, I have every reason to be grateful. Mr. Ellery, referring in his letter to a conversation with me in regard to these trees, speaks of "One measured near Mount Sabine, in the Cape Otway ranges, and selected from among numerous other giants to dispose of some doubts as to dimensions expressed by the late Professor Wilson, of our university. This one was 375 to 378 feet long from the ground to where the top had been broken off long before by the wind, the 3 feet being doubtful on account of the uneven nature of the ground at the base. It was estimated by our surveyors that 40 feet at least had been broken off the top, that is, it would have been 40 feet longer if the tree had been intact when it was felled. The average diameter just above the spurs or buttresses was 17 feet 3 inches, and 15 feet 3 inches where it was cut through for felling. This is not considered as one of our largest trees. In the Dandenong ranges, for instance, Baron Mueller got one measured which was 420 feet high, and I have this moment got the following from him in reply to an inquiry I made in order to be quite sure of his experience. He says, 'The highest Eucalyptus actually measured in Dandenong was 420 feet high, and I got one measured nearly as high at the Upper Yarra and the Upper Goulburn River, the trees being Eucalyptus amygdalina var. regnans. A Eucalyptus at Dandenong also was 295 feet to the first branch, and 365 feet to where the top was broken off, the diameter of the broken part being 3 feet.' Some higher measurements are on record, but I doubt if they can be relied on. So much for 'big trees.' In Gipps Land, inland from Wilson's Promontory, there are the largest trees I have ever seen, but I have unfortunately no measurements yet."

It will be seen from the above that the "big trees" of Victoria overtop the Sequoias of California by about 100 feet, the tallest of these latter being only 325 feet in height. It will, too, I think be considered that the question as to there being trees in existence 500 feet high or more is finally and decisively answered in the negative.

The Californian Sequoia.

The "big trees" of California are in marked contrast with those of Victoria. Forming along with the Redwood of the coast, a genus of their own (Sequoia), they are only to be found in isolated groves in the midst of the Pine forests on the slopes of the Sierra Nevada, and at a considerable distance from and elevation above the sea. Thus the Mariposa Grove contains 365 trees on an area of about 200 acres, at an elevation of 6500 feet above sea level, and at a distance of about 120 miles from the sea; whilst the Calaveras Grove contains between 90 and 100 trees on an area of about 50 acres, at an elevation of about 4700 feet above the sea, and at about the same distance as the Mariposa Grove from it. The Mariposa is the most southerly of the eight groves in which Sequoia gigantea is found. It contains by far the biggest trees as regards girth, the Big Grizzly, the largest of all, being 93 feet 7 inches in circumference. The loftiest trees, however, are in the Calaveras Grove, where four of the tallest attain to over 300 feet in height, viz., 325 feet, 319 feet, 315 feet, and 307 feet; these trees are 40 feet, 45 feet, 61 feet, and 47 feet respectively in circumference. The height of the Big Grizzly, the largest of solid timber trees, I suppose, in the world, is 260 feet, and one at least of its branches is 6 feet in diameter. The loftiest tree in the Mariposa Grove is 270 feet in height, and 81 feet 6 inches in girth. The former of these trees is terribly shattered at the top, either by wind or by lightning, as indeed are a great many in this grove, and their appearance as regards beauty of form contrasts most unfavourably with the trees around them — the Pitch and Sugar Pines (Pinus ponderosa and Lambertiana), the Douglas Spruce (Abies Donglasii), White Fir (Picea grandis), and Bastard Cedar (Libocedrus decurrens), the latter of which bears a considerable resemblance to the Sequoias, but is a much more elegant and perfect tree; indeed, the trunk of a Sequoia gigantea can scarcely be said to be beautiful in any sense, so far as regards its shape. It tapers regularly from the roots to the very top, and approaches in the form of its trunk so distinctly to a conical shape—as indeed is seen in many of the young Sequoias in England—that it is almost painful to the eye. The bark of the "big trees" is of an exceedingly rich brownish-red colour, which causes them to contrast strongly with the more sombre trunks of the surrounding trees. It is also very irregular, the vertical clefts in it, produced by the natural growth of the trunk, being often 12 to 15 inches in depth. The wood is remarkably light when dry, red coloured and very like Cedar. Some of the trees mentioned as associated with Sequoia gigantea attain a great height, indeed not far short of the tallest of the "big trees," and their trunks being not more than 8 feet or 9 feet in diameter their appearance is extremely elegant and beautiful.

The climate in which many of the "big trees" grow is one of wide variations, on account of the elevation of their habitat. In winter the snow is deep about their roots, and the cold is intense, on account of the rarity of the atmosphere. In summer the heat of the sun is equally intense, and the atmosphere exceedingly free from humidity, but the trees seem to have a vigorous vitality, and neither cold, nor fire, nor drought appear to injure them so much as the wind does.

It is a curious fact that the soil of the Mariposa Grove, in which the biggest of the trees are found, is granitic, and apparently resembles very closely that on which the big trees of Victoria are found. It may be mentioned that the only species extant that is closely allied to S. gigantea is S. sempervivens, or Redwood of the Californian coast. This tree, I believe, grows only within the limits of the sea-fogs, and thus forms a belt of irregular width along the coast for some hundreds of miles. It attains a height of close on 300 feet, and a circumference in rather a rare cases of 45 feet to 50 feet. Most of the houses in San

Francisco are built of the timber of this tree. *R. Abbay.*

Note.—The writer is indebted for most of the details given above to Professor Whitney's book on the Yosemite Valley. These details may be relied on as representing the only accurate measurements of the "big trees" that have ever been made.

FIGS, THEIR CULTURE AND COMMERCE.

The Fig tree produces a double and in some climates a triple crop, whence the great value attached to it in Eastern countries, where it bears fruit through a considerable portion of the year. The first ripe Figs come to maturity about the end of June, the second crop or summer Fig is that which is dried, the third often hangs and ripens upon the tree after the leaves are shed.

Two principal varieties may be distinguished—that which produces two crops a year, and that which yields but one. The former includes the grey or purple Fig, which is the best, the white Fig and the golden Fig, the latter being the finest in appearance, but not in quality. The main variety, which bears only one crop a year, supplies the greatest quantity of Figs for drying, among which the Marseillaise and Bellona are considered the best. The Barnissotte and the Aubique produce delicious large fruit, but they must be dried with fire-heat and are usually consumed fresh. The ordinary drying is effected in the sun.

There are two kinds chiefly worth cultivating, the true White Smyrna or Lisbon Fig, and the Black Fig, the fruit of which is purple from the skin to the core. The latter is much relished by beginners in Fig eating, because it is sub-acid and not so luscious as the white variety. Out of these, by hybridising, have come all the pinkish varieties, with names very various. The natural habit of the white Fig tree is to form a large open spreading tree, its great branches striking out at almost a right angle to the trunk, at a distance of from 8 to 12 feet. It is a handsome, rapid-growing tree, and a huge bearer. Of course it bears two crops—a very light one, numerically speaking, ripe in Portugal by June 24, hence called St. John's Figs. These are great coarse-looking things, of an indescribable colour, between dark red and green, and bear very little resemblance to the crop of pure white or golden-yellow, which do not come in until the middle and latter end of August. The second is the true crop, and usually one of such quantity that, despite all that may be gathered, thousands fall from the trees and are spoiled.

It is extremely difficult to form any estimate of the European consumption, but large as it is, it is greatly inferior to the consumption at the seats of production, especially in Turkey, where dried fruits form so important a part of the ordinary food of the people. In most countries the imports of dried fruits are summarised, so that it is impossible to separate or individualise the several kinds. Formerly when subject to duty Figs were separately enumerated by the Board of Trade, but now Currants and Raisins are the only dried fruits specified, and the consumption has doubtless increased since the removal of the duty. It may, however, be interesting to give an idea of the imports, which are nearly all taken for consumption here.

In 1840 the consumption here was not more than 40,000 cwt.; in 1855 the receipts were 44,725 cwt.; in 1860, 92,109 cwt.; in 1866, 95,721 cwt.; and in 1870 (the latest year for which we have official details), 106,504 cwt. were received: upwards of £152,000 being paid for this fruit. Our supplies come almost exclusively from Portugal, Spain, and Turkey.

The imports of Figs into Great Britain from Turkey have been as follows of late years:—

	Quantity.	Value.
	Cwt.	£.
1870	67,543	127,944
1871	73 755	135,751
1872	92,050	172,626
1873	80,421	177,408
1874	63,214	136,662
1875	96,629	213,615
1876	138,936	285,398

This is three times the quantity we used to receive fifteen years ago. From Spain we only receive a few thousand cwt. of Figs, although in 1872 10,000 cwt., and in 1873 16,500 cwt. were imported.

The export of Figs from Greece ranges from 100,000 cwt. to over 200,000 cwt. per annum. In 1871 207,067 cwt. were shipped, in 1874 only 143,040 cwt. The crop of Figs at Calamata in 1874 reached about 8000 tons, at an average cost of £15 per ton, giving a value of £120,000. The skin of these Figs is very tough, so that only small, indirect shipments are made to England; the bulk being sent to Russia by the Black Sea, or to Trieste for consumption in Germany. Figs are the object of an extended commerce in Asia Minor and the South of Europe, and the varieties are very numerous, including the Calamata of the Morea, the Fracazzani of the Ionian Isles, the small varieties of Dalmatia and Istria, and the large yellow of Genoa, the red of Sardinia, and those of La Pouille, Calabria, and Sicily. The finest, however, are generally those of Spain, Portugal, Turkey, and France. They are grown about Malaga, Seville, Alicante, Adra, and Valencia. The large "cornadres" of Algarva are surpassed by those grown at Aidin, Cyprus, and Aleppo.

Many varieties of the Fig are cultivated in Sicily; the dried Fig is exported. The Fig tree springs up in every soil, but it prefers a somewhat calcareous and rocky ground. The wild Fig tree grows on old walls, in the crevices of rocks, &c. It is evidently quite indigenous.

The centres of production in France are Ollioules, Ciotat, and Cadiere, where the Marseillaise kinds known as "peloises" are grown; Toulon, Cuers, and Salurs, where the large white Marseillaises are produced; Salernes, noted for its fat Figs; Roquevaire, for its large bluish species, with their skin and red flesh; Antibes, Frejus, Grasse, and Cannes, for their "bellonnes," "mantegrasses," and "meselisses; and finally, those grown at Comtat, in Avignon, known as "blanquettes," of which there is a large export to Bremen and Hamburg. The Figs of Dalmatia and Istria are small, of a round form, slightly elongated, of an excellent flavour, but will not keep well.

The Figs of Smyrna, so much sought after in Europe and America, come chiefly from the plains of Aidin. The quantity which is raised annually at Smyrna to be sent to foreign countries may be taken at 26,000,000 lb., of the value of £200,000. The shipments to France, which in 1872 were only 416,000 kilos., of the value of 302,000 francs, in 1873 rose to 765,000 kilos., of the value of 445,000 francs. The whole valley of Aidin, from Naslii to the sea, produces Figs of the finest quality. These are divided into two classes, "elemé," or those picked by hand, and merchants' Figs. There is a smaller sort sent to Scala Nuova for the Greek islands. The Sugar Fig, or "Sheker-injiry," is used for eating first, as it will not preserve for export. *P. L. S.*

AERIDES CRASSIFOLIUM.

We have to thank the Messrs. Veitch & Sons, of the Royal Exotic Nursery, Chelsea, for the opportunity of illustrating (fig. 96) this rare Indian species, which Professor Reichenbach characterises as "the king of all the Aerides." It is a dwarf, dense-habited plant, with broad, thick, purple-dotted obliquely-bilobed leaves. The flowers, which are borne on long and drooping spikes, are large—larger than those of A. falcatum, which they resemble in form, and have the segments tipped with rich purple or amethyst, the centre or throat of the flower being ivory-white. The plant is one of the many fine subjects introduced from India by the Rev. C. Parish, and appears to have been first flowered in this country by R. B. Dodgson, Esq., of Blackburn, in 1873, as recorded at p. 633 of our vol. vii., new series. It appears to come near A. falcatum, since Professor Reichenbach hesitated to receive it as a species until he had seen living specimens, by the aid of which he was enabled to pronounce it as distinct (see vol. vii., n.s., p. 590). Compared with A. falcatum, the spur is here bent under at an angle, while in that plant it is straight; the side laciniæ of the lip are much broader and shorter in the present plant, and the two keels on the lip here stand close together at the base, and become divergent, whilst in falcatum they are distant at the base and become convergent near the middle of the lip. These technical peculiarities may serve to facilitate its recognition, while from its ornamental qualities it cannot but be much sought after. The Messrs. Veitch obtained a First-class Certificate for the plant of this species shown by them at the meeting of the Royal Horticultural Society at South Kensington on July 3, and which is represented in the accompanying woodcut.

Natural History.

Shooting Wild Birds.—That my remarks upon the cruel practice of wantonly shooting rare wild birds have provoked replies from two correspondents who claim to be sportsmen is so far satisfactory, inasmuch as it shows that the shot told home. The assumption that there is a connection between rare birds and game is simply absurd. Game birds are food, and in a small way form part of the food supply of the nation—they are in fact preserved to be shot, whilst rare birds would seem to be shot to be in a different sense preserved. All lovers of Nature who have in their breasts other feelings than a mere selfish desire to possess a choice collection of stuffed birds, will agree with me that the wilful and wanton destruction of rare and beautiful wild birds is deserving of severe condemnation. Only recently, when the foolish fashion of wearing birds in the headdress by ladies was so prevalent, an universal condemnation of the practice arose from the Press, because it led to their possible entire destruction. Of course it was "maudlin sentiment," but that sneer is ever flung by the ignorant at humane efforts. A "Subscriber" is exceedingly unfortunate in his exhibition of anatomical knowledge. The human mouth is almost the widest possible removed in living Nature from that common to the carnivora, whilst it is most nearly allied to that despised race of beings which is naturally strictly frugiverous—the monkeys. Our lords of the creation who carry guns will perhaps hardly relish that unhappy fact, but such is the case despite the teaching of "Subscriber." In conclusion, let me invite your correspondents to give a short time to studying the *Essay on Man* by that celebrated poet and philosopher, Alexander Pope, as in it they will find these lines—

"Is it for thee the lark ascends and sings?
Joy tunes his voice and elevates his wings.
Is it for thee the linnet pours his throat?
Loves of his own and raptures swell the note."

A. D.

A Pet Gander.—I have read of numerous kinds of pets, have seen many, and must confess my own weakness in having possessed many such. My first attentions were devoted to toads, and very few persons can believe how much an unprepossessing creature of this kind can be taught. I had five; they knew me perfectly, they knew their own names, &c. I believe there is hardly any bird or animal that will not show some recognition when submitted to a treatment of kindly attention. Until lately I had never seen a gander reformed into a decent member of the community; but I have seen one quite a gentleman in everything but his voice. That is loud, but not sweet, and he will speak out of his turn; but he walks about with his master, comes with him into the town, looks into the shop windows as he proceeds, and makes sundry remarks in his own language, which is unfortunately not intelligible to us. But he seems to be thoroughly attached to his master, and to enjoy his presence. *William Payne, Taunton.*

Colias Edusa.—The clouded yellow butterfly, Colias Edusa, has been very abundant this autumn in this neighbourhood (Ealing). I never remember to have seen it so plentiful in any preceding year. *E. T. M., Ealing.* [Also most abundant at Richmond (*W. F.*), and generally near London, and in Northern France. Eds.]

The Villa Garden.

Autumn is Here.—How rapidly, and almost imperceptibly, the deep green of the matured summer leaf foliage on the trees changed to the decaying golden red and orange tints of the autumal season. A sharp frost or two wrought the change, hastening the decay, just when we were hoping soft, balmy, sunny weather would repay somewhat the loss of much of the glory of the summer. But it is not to be.

"Through the tall trees the biting wind blows keen,
Whirling the dead leaves from their summer bowers;
Not singly, but in clouds they now are seen,
Piling up graves above the faded flowers."

And so the summer of 1877 passes away, and is numbered with the things that once were.

Exterior Window Boxes and Plants.—Alas! the glories of these have in a great many cases long since faded. A great deal of the exterior window gardening of London is of an evanescent character. During May and June the aspect is one of pleasant effectiveness, and then London society, like a bird of passage taking its annual departure, flits away to other scenes; the shutters are closed, the houses well-nigh deserted, and in a few weeks exterior window-boxes become sad and sorry sights. One is sometimes tempted to climb the area railings, and give the plants the water so much needed at the roots, or haul the miserable-looking boxes down into the area below, so offensive are they to one's notions of the fitness of things. A kind of lamentable wail appears to go up from the neglected plants as in sorrowful protest against so much cruel disregard. People who do their gardening in this sorry fashion have missed the enthusiasm which respects and ministers to the wants of plants.

Boxes of the usual flowering plants have had a bad time of it, even when well attended to, the sun was chary of its invigorating, brightening beams, dull weather can hardly be anything else than hostile to London gardening. In all probability the plants are scarcely hardened off enough before being placed in the boxes; and by the time they have recovered the effects or the check, the summer is advanced and the floral service is necessarily short. Any one walking about the London streets can hardly fail to be struck with the great advantage of the hardy evergreen plants we have so often advocated as most deserving of use for filling window boxes. Aucuba japonica, for instance, is bright with variegation, and clean and effective in appearance, while Pelargoniums have their leaves either sere and yellow, or else spotted or riddled by green caterpillars. Where these little ravaging Bashi-Bazouks of the insect world come from is to many a matter for wonder, but there they are, in Cavendish Square and Bethnal Green alike, to the sorrow of window gardeners.

These little brisk evergreens suitable for winter decoration can be grown planted out in boxes or in pots. They are very accommodating, if kindly considered. If neglected, they resent neglect, and take on a melancholy cast of leaf expression. Plants are social beings, and are impatient of the cold shoulder: and with true instinct pine away and decay, and presently "the languid waste of life" is found *in articulo mortis*. Area-courts are sometimes nearly brimful of such plants, that look as if they were vegetable suicides starving themselves to death.

The London costermonger, knowing that the summer denizens of window-boxes are *in extremis*, is already hawking about the streets small specimens of evergreens in pots. We inspected a barrow of these recently in Connaught Square. There were Rhododendrons, Bays, Aucubas, Euonymus, Box, Retinosporas, Thuja, Arbor-vitæ, &c., on the whole nice little stuff, brought from nurseries and potted up for sale. But such potting! It must have been the coster's own handiwork: the rough had left his own impress on the performance. The pots must have been a cheap lot; they were of divers patterns and various sizes, uncouth in build, and seriously chipped on the edges of the rims. The soil looked as if it had been purloined from some hedgerow not the freehold of the operator. It was thrust in about the roots loosely and in an unworkmanlike fashion. A crockboy in a respectable nursery would have stood appalled at such a spectacle. We were asked if we wanted to buy, and by a supreme effort withheld speech and passed on. Many of these plants will exist, a few may flourish, but the imperfect work seen in the potting must operate as a disadvantage to plants grown in London windows.

Mr. Wildsmith, of Heckfield Place Gardens, and others have shown us how much harassing these plants will stand when used solely for winter gardening. Planted out in beds at the end of October, and lifted again in the middle of May, and placed in nursery plantations for the summer, the plants yet keep fresh and nice; they make but little growth, because the roots are trimmed a little at each time of planting, and if they do grow out somewhat they bear cutting back with perfect equanimity; and in the case of being planted in exterior window boxes they might be replanted each year in autumn—say, in October, placing some good soil about the roots, trimming them as necessary, cutting back a leading shoot here and there, and pressing the soil firmly about the roots. A box of sufficient width—say, 15 to 18 inches inside—might be made in two divisions, with a partition running lengthwise. A space of 8 to 9 inches in width might be given at the back for evergreens, and another of 4 or 6 inches in front for a few bulbs, Primroses, &c., for winter and spring; and a few suitable flowering plants for summer. In planting the evergreens a little care in mingling habit of growth, shape, and character of leaf, &c., would secure a pleasing effect, varying to some extent with the season of the year. There need be no mere uniformity. There is play for the skill of

Fig. 96.—Aerides crassifolium.

the artist in arranging a window-box of plants. That quaint old poet, Herbert, wrote :—

"Who sweeps a room as in Thy sight,
Makes that and the action fine."

Common things may be refined by the touch of genius, and the genius is not unmindful of the lowly. A window-box may just as well be a pretty, pleasant picture as its inartistic and undesirable reverse.

Foreign Correspondence.

Canadian Notes.—The late summer was a very hot one (with the thermometer ranging in July sometimes 87° in the shade and 110° in the sun), and also extraordinarily dry, and the power of the winter Wheat to flourish with a small quantity of rain has once more been satisfactorily proved, inasmuch as from the time the snow left us in April until July 31, when the reaping commenced, we had not more in the amount of fall than three days' rain, and yet the harvest was exceptionally abundant, except on low grounds, where an unusual frost inflicted considerable damage. The spring crops, however, of course suffered materially for want of moisture.

It may not be uninteresting to direct attention to the rapid growth of plants here, as compared with England, as shown in the progress of the winter Wheat sown at the end of August and the beginning of the present month, which in every instance made its appearance on the fifth day, was up on the sixth, and nicely out of the ground all over the fields on the seventh day after sowing. A similarly proportionate speed of growth takes place generally also in the Grape vines.

Our gardens are affording us an abundance of Grapes and Plums, of Potatos and Indian Corn, of Citrons and Pumpkins, and of Cucumbers, Melons, and Tomatos. Apples, with the exception of Crabs, are a casual crop, and many orchards have scarcely any.

There seems to be a great deal of difference of opinion on your side with reference to self-sown Potatos. We happened to have a good many on some new ground, and they turned out to be the earliest and finest we had on that description of soil, which is a fine sandy loam. Our crops of Potatos are better this year on clay loam, as they have stood the drought nicely.

It has been an amusing and pleasing spectacle for some time past to see the children coming from the woods and lowlands, loaded as heavily as at all practicable with Butternuts, Grapes, and Elderberries, all of which are exceedingly plentiful this season.

We were much surprised on reading a recent issue of yours to find that Italian Bees are scarcely in fashion with you yet, as they have been gaining ground here these two years past; and now most of the apiarians have supplied themselves with queens from the United States (at prices varying in the spring and fall of the year from 4 dollars to 1 dollar each respectively). For the benefit of those who have not yet tried the Ligurian bee it may perhaps be as well to say that our experience as to its superiority over the common one quite agrees with that of your correspondent, as expressed in the article above alluded to. *John Morren, Elm Farm, Minesing, Ontario.*

Yackandandah, Ovens District, Victoria: *April* 10. — During a recent trip up the Murray River the weather was extremely hot (about 100° in the shade). I had been in the saddle for some hours in the scorching heat, the perspiration was rolling freely from every pore, and I really felt as though I was getting gradually smaller and "beautifully less." My eye naturally sought some place where I could fling myself on Mother Earth at full length and doff my tolerably broad-brimmed hat without fear of *coup de soleil.* I was unsuccessful in this respect; for fine a climate as we have, together with many other benefits, yet we are strangely devoid of shade trees. The shape afforded by the generality of native trees is not all that one could desire. Even some of our gigantic Gums, grand as they are as timber trees, afford but a poor retreat from the sun's rays, for really the only shade these trees give us is that thrown by the trunk, and this, of course, is all the time shifting round, so that if one, fatigued and heated, seeks protection here, and, as is often the case, falls asleep, he is apt to wake up and find himself baking, while the shade he fell asleep in has shifted a yard or so on one side. But I am digressing. I said I was unsuccessful. I was so: but taking things as coolly as I could under the circumstances, I continued my way for a mile or so, when, upon rounding a point of the range, I saw what I had been so devoutly wishing for—shade, ay, and dense shade too. The road here was cut in the side of the range, which was steep and rocky, and just at the top of a steep grade, and at a sharp turn in the road grew in its usually peculiar place a Corrijong tree. To get off my horse, pitch my hat aside, and stretch out did not take so long as it does to write it.

The Corrijong is a peculiar tree in its choice of spot to flourish in. Wherever you see one growing there you will find rocks (I only know of one or two instances to the contrary), and really in some cases it seems part and parcel of the granite. A tolerably good-sized tree will grow out of an opening, a mere crack in the rocks, and as it grows it folds its wood over sharp edges and points, and seems as though it was unwilling to leave its rugged friend. Then as it grows and frees itself from the distorting influence of its birthplace its trunk assumes an uniform shape, and the branches alone represent above what it was below in point of knots and twistiness. The leaves grow in thick clusters close together, and afford a dense shade, and through which old Sol is puzzled to send a spark of light. The bark is, as nearly as I can remember, similar to that of the common Box (Buxus sempervirens), but of a darker colour.

Pardon this lengthy description, although I would I were better able to do more justice to a true friend in summer, and an ornament at any time. If it was only from the fact of its flourishing in such rugged places and on such apparent barrenness, one cannot help but appreciate it for its eccentricity.

I enclose a sketch of the leaf and seedpod. [A species of Acacia perhaps. Eds.] The flower I have neglected to obtain.

June 20.—Since I have been in this country it has always been a matter of regret to me, when noticing the scenery, to find so little variety in the foliage of the trees; and especially is it more marked when viewed from a distance. The configuration of the country where I am located is generally hilly. Looking from a higher range over the vast expanse of country that lies before you, though the hills are clothed with timber of four or five different kinds, yet their foliage is so similar that, but for an occasional glimpse of the blanched trunk of the Eucalyptus, you might take them all either for the Stringy Bark or the Messmate. Then it is that one sighs for relief.

I have often thought that if the trees of this country were not evergreen, but shed their leaves as the majority of European trees do, what a glorious sight our hilly country would be in the fall. But now the Poplar and Willow are common with us in settled parts, and it was during this last fall that I noticed more particularly how brilliant the yellow dying leaves of the Poplar looked against the indigenous tree-clothed hills as a background. But the Poplar does not deserve all the praise. The Vines, the Peach, the Quince, and other fruit trees in the gardens, all contribute their many tints to relieve the scene, to please the eye; and last, not least, to remind us of Old England's woods.

Then, again, how grand are our sunsets. I think one of the finest sights I know of is witnessing the reflection of the setting sun on the distant hills. Magenta is the only colour I can liken it to.

"The sun from his golden bed
On the far-off hill-tops shed
Rays, amber and crimson-red,
And the day was almost dead." *C. E.*

Since I have learnt to appreciate these pleasing effects, I have ceased to grumble at the sameness of our foliage. *Charles Edmonds, Jun.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—Achimenes and Gloxinias, the tops of which are now dead down, should be stored away for the winter with the soil in a completely dry condition. With beginners in the cultivation of these plants it frequently happens that an erroneous impression prevails as to the usage the roots should receive whilst in a state of rest, through which they are subjected to cooler treatment than they can bear. The result of this is that when examined at the time they are required to be started, they are found in a mouldy, rotten condition, or, if not quite dead, so weakened that they are of little use. This treatment comes through a mistaken conception of the nature of the plants. It should ever be borne in mind that they are indigenous to hot countries, and, although in a dormant state through the winter, yet nevertheless their nature is in no ways changed under artificial cultivation; and that their roots, even when at rest, cannot bear a temperature very much lower than what they would receive in their native countries, especially when such a reduction of heat is made in company with any damp. The treatment we give these and many other plants, the tops of which die down in the winter, is directly opposed to that which they undergo in a state of Nature. In their native countries the rest often occurs during a season when the heat is as great, if not greater, than that which they experience whilst in active growth, rest being induced by the perfectly dried, parched-up condition of the soil, to such an extent, it may be said, as to subject them to a forced inactivity through an absence of moisture, such as prevents the possibility of active growth. A little reflection upon this will point to the treatment that in some measure we ought to imitate. Where there is room to stow the pots away, laid on their sides on a shelf, or in any position where they will receive no moisture, either directly or from absorption, in a temperature of from 50° to 55°, it will answer for them.

Caladiums, the leaves of which are now beginning to show discoloration, must have water gradually withheld, so as to induce the foliage to die down. The exact condition will in a great measure depend upon the time they were started in spring, the earliest grown plants, of course, being the first to lose their leaves in autumn. It is not well to withhold water altogether as soon as the cessation of growth indicates a disposition to go to rest, as where the drying-up process is carried out too quickly it kills the leaves at once, instead of submitting them to gradual maturation, from the effects of which the roots suffer, often shrivelling to a considerable extent, the result of which is they start weakly in spring. The roots of these also keep best in the soil in which they have been grown, yet, as in the case of the Achimenes and Gloxinias, where room is an object, they may be taken out of the pots and transferred to paper bags filled with dry sand so as to exclude the air from them, otherwise they will shrivel. Tuberous-rooted Gesneras of the Cooperii section that have been treated so as to induce their coming into flower early in the spring, will now be approaching a state of rest. They should be kept in the pots in which they are grown quite dry, and stored at the coolest end of the stove or intermediate house; these plants are of a most accommodating nature, and by the use of a sufficient number may be had in bloom at the opposite ends of the year, as by resting at a different season some can be had in flower from this time till Christmas. These late-grown plants should occupy a light situation near the glass, and be kept quite free from the insects that molest them, the worst of which are thrips and mealy-bug. Should they get affected with the latter there is no remedy but sponging, as the leaves are too soft to withstand the application of any dressing strong enough to kill the insects. Gesneras of the Nægelia section grown for winter flowering should have every attention paid them, so as to retain their finely-marked leaves in a healthy condition from the base upwards. Not only is this necessary to enable them to produce the full complement of flowers, but when a portion of the foliage is lost or becomes discoloured, half the beauty of the plants for decorative purposes is destroyed. From the hairy nature of their leaves, care should be taken that they do not get infested with mealy-bug, as any washing and sponging, however carefully performed, is almost certain to destroy their lustrous appearance.

The first-potted Roman Hyacinths, where their flowers are wanted early, should, as soon as they have made sufficient roots, be placed in a little warmth, and if possible where they can be plunged in a gentle bottom-heat, with their heads somewhat cooler and close to the glass. To effect this, I have found nothing so good as a hotbed made up of leaves and well sweetened manure, with 8 inches of old potting soil in a moderately dry state in which to plunge the pots laid on the top, covering the whole with a frame. Here the top-heat can be so regulated by the admission of air as to prevent the plants becoming in the least drawn, from which cause, if affected in this way, they suffer so as to spoil their appearance. By thus keeping the bottom-heat higher than the top the roots will be in advance of the leaves and flowers, thereby strengthening their blooming.

Summer flowering stove climbers, where grown on the roof, should now be cut in freely, to give as much light as possible to the plants underneath—rendered necessary by the shorter days and decreasing sun power. It is especially needful where considerable quantities of winter flowering subjects are grown. When such climbers are confined to the rafters alone, they do not so much affect the plants underneath, but nevertheless, all that are about completing their blooming may with advantage be freely cut in. Any

that have been affected with insects should be loosened from the wires, and immersed in a strong solution of insecticide, allowing them to remain in it for an hour or two, which will be much more effectual than syringing or the usual sponging, besides effecting a considerable saving in labour. Whatever is used for the destruction of insects may now be applied much stronger than when the plants are growing freely. Cuttings of stove plants put in to strike some weeks back will by this time be sufficiently rooted for potting off. They will require less root-room than spring-struck stocks, from the slower growth they will make through the winter time; but there is a considerable advantage with these autumn-struck plants, as they start off with the first increase of temperature in the early months, and keep through the season a good deal in advance of those that are struck at the other end of the year. *T. Baines.*

Orchids.—Plants of the hardy section of Cypripediums, more particularly those of C. spectabile, must now be stood in the frames, where it is advisable they should remain during the winter months. This superb species, after flowering during the early summer months, should have been, as advised, set outdoors on an ash border in such a position that whilst receiving plenty of light they would not catch much strong sunshine, this causing them to dry so rapidly that they often suffer in consequence. The blooms being over, the remaining part of the season is taken up in ripening the growth already made, and the formation at the base of the old bulbs of a number of new buds that apparently remain dormant for several months, but which, under the influence of the genial warmth and moisture of spring, start again into life and growth, and in due time enrich our cool structures with flowers of a most interesting form, and at the same time rich and pleasant colours. The growths will now have died down, and should be cut off an inch or two above the soil, and on examining the surface a number of prominent eyes will be observed around the base of the growths. Every care must be taken of these, for when stood in the cold frames the slugs, which seem to have a special liking for everything that is choice, are very apt to get upon them and just eat off the top; this, of course, taking away entirely the next season's growth. A little dry lime spread on the ashes of the frame is a good preventive. Here they should remain till about March, when they may, by being moved into warmer structures, be brought on a little more quickly as they may be required. Whilst in the cold pit a few leaves pushed in amongst the pans, and also spread over the plants, will be of great service in protecting them from sudden and severe frosts.

Dendrochilum glumaceum, a plant that is usually grown in the East India-house, and started into growth early in the spring that it may flower by March and April, will be better just now if it is stood in the Cattleya-house. Here it should remain for about two months, and have less water given at the roots. This will insure the ripening of the growths made this season, and at the proper season cause the breaks to start away more freely, and at the same time in greater numbers. When, however, the buds are showing their rosy coloured points, it must again be stood in the East India-house; then as the growths push up, and the new roots that quickly follow enter the soil, the supply of water must be much greater, and a sprinkling overhead will help to keep down the red-spider, to which the Dendrochilum is subject.

Cypripedium Piercei and caudatum in the Cattleya-house must now be well supplied with water, the latter more particularly just now growing very vigorously. In the warmer houses, C. Stonei, Lowi, Parishii, villosum, and the barbatum section, that are also in active growth, must not be allowed to suffer for the want of the same necessity. C. insignis will now in most cases be in flower; this may be grown very well in the Odontoglossum-house, but during the summer it is better for a little more warmth; the growths are stouter, the flowers are a little earlier, and of a larger size, than if it is grown altogether in a cool house. Several varieties of this are worth growing, Maulei, when it is obtained true, being very pretty; the most desirable, however, is violaceum punctatum, the size of the blooms and the bright markings of the sepals and petals giving this a most attractive appearance. This, however, is even more rare than Maulei. The collection now will require careful treatment in regard to moisture. An excess will cause damp and spot at the same time. If the stages and walks are kept too dry, thrips and red-spider will soon get into the hearts of the plants, and cause many a new growth to be permanently disfigured. Endeavour to ward off both evils. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

As soon as the bedding plants become unsightly and no longer fit to occupy the flower beds they had better be cleared off and wheeled to the rubbish-heap; or such of the sorts as are wanted as stock for another season should be potted and stored away for the winter. Any contemplated alterations may be proceeded with. Trees and shrubs should be planted, and the work pushed forward with as much energy as possible, but I do not mean that the work should be carried on with undue haste, for nothing is gained by hurrying on work of this kind, where so much care is required in its being properly performed. All sorts of trees and shrubs should be lifted and transplanted with the greatest care, preserving as many of the roots as possible: nothing looks so unworkmanlike as to see a number of the best roots broken and mutilated—it is also injurious to the future well-doing of the plants. Wherever the roots are bruised in lifting they should be cut back to a sound part. Where the soil is not suitable for the healthy growth of the trees requiring to be planted good fresh material may be used, care being taken not to plant too deep. Roses may now be planted at any time. Manure the ground well, and if the natural soil be light give it also a good dressing of clay, and trench 2 or 3 feet deep; top-dress and double-dig all beds and borders which are cleared of plants, leaving the surface rough, which will expose it to the action of the winter frost. As the leaves are falling and being blown in all directions the lawns and walks will require extra attention to keep them clean and orderly. The broom and roller must be kept at work, so as to have the grounds as enjoyable as possible. The weather has been favourable for killing weeds, which should not be troublesome this autumn, for a better time for their extermination is seldom experienced at this season of the year.

This is, perhaps, the best time for propagating shrubby Calceolarias. They root well in light soil, with half an inch or so of sand on the surface; level and firm with the back of a spade, filling the boxes or frames to within 8 or 9 inches of the glass. After the cuttings are all in they will be the better for a slight watering to settle the soil, and for some days will require to be shaded and the lights kept close. Protect from frost in sharp weather. After the cuttings are rooted give air on every favourable opportunity. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Peaches and Nectarines.—In the foremost division in this department the leaves of the trees will have completed their functions and dropped off. Should, however, any of these still hang on they should be removed by hand, so that the usual requirements which are annually and absolutely necessary in the way of cleaning be proceeded with, and a riddance of insect pests, which are sure to be present in some degree and form of development, be effected. It is a customary practice with us to take the lights off the peacheries when the buds are tolerably well developed, and in the case of the early started trees it is usually done at about the middle of September, and these are replaced again towards the end of October and later on in the case of successional houses. Under any circumstances an abundant supply of air is highly essential during the dormant period. Pruning, which is a most important operation, should only be done by a practised hand, and still the manner of execution differs materially in some points. With many it is customary to shorten back the shoots considerably—a plan which we adopt in later houses, but in the case of early started trees we elect to retain, as far as practicable, the growths in their entirety, because, under the pressure of advanced forcing operations, the woodbuds sometimes do not break forth so regularly as is desirable, and, moreover, fruit is by these means sometimes secured which otherwise would have been defective from this cause, and, still further, if necessary, it gives the advantage of disbudding so as to meet circumstantial requirements. An intelligible indication in practice is observable with trees which are well studded with spurs, as such rarely fail, with proper attention, to give a good supply of ripe fruit, and therefore the formation of these on the trees should be encouraged in this way, as frequently indicated in this Calendar—by stopping the growths which are not required to run during the growing period. Set out the growths sufficiently to admit of those of the forthcoming season having ample space to develope themselves perfectly. If any trees be at all infested with the brown-scale, a common enemy to these subjects, the safest and most certain way of eradicating it is by separating it from the shoots by means of a short stiff-haired brush, after which apply a dressing of the ordinary composition, to which should be added some strong tobacco-water and a little Gishurst Compound. After the trees are retied to the trellis, remove all the loose materials about the borders and also any inert soil; for this substitute fresh material, at the same time do not neglect the opportunity to examine the state of the borders, as at this period the soil about the roots should contain plenty of moisture. As the leaves fall from the trees in later houses they should be collected and removed, and the ordinary requirements as indicated for early houses in like manner carried out. Where several peacheries exist a partial lifting of the roots or shortening them back is almost sure to be required. This operation should not much longer be deferred, as the sooner it is carried out the better. *George T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

The dry sunny weather with which we have of late been favoured has had a most beneficial effect on all fruit trees in ridding them of much crude watery matter, and assisting them greatly in the process of ripening their wood. In order to derive all the advantage from what little solar heat we are now likely to get, Peaches and Nectarines should be lightly brushed over with a new twiggy broom, so as to remove any leaves that hang loosely on and are of no further service in nourishing the buds. Although attaching the fullest importance to preserving the foliage of trees up to the latest period possible, still in the case of the above trained to walls, with the leaves depending over the branches in the way they do, and completely covering them up from the influence of sun and air, it is necessary to assist Nature in her work, the more so as the walls form a shelter from winds and frost that act as Nature's handmaids and strew the leaves when their season's work is done. The brushing, however, should be of the gentlest kind, and carried on from the base of the tree to the summit of the branches, and not in the reverse direction, as some of the buds would thereby be destroyed or injured and the leaves forcibly detached from their hold.

October is, or ought to be, to the intelligent fruit gardener the busiest month of the whole year, as in it there is much to be done by way of trenching and preparing for planting, the season for which is now close at hand. In the case of large trees that simply have to be moved from one part of the garden to another to fill up gaps, the operation should be taken in hand forthwith, as from the short space of time the roots are exposed there need be no fear of their taking any harm, or that the bark of the branches will become contracted in the way it does when the wood is not thoroughly hard and ripe and they are long out of the ground in coming from a distance. By transplanting thus early they get to work at once, and make considerable progress before the cold winter rains set in, and are therefore ready to respond to the call made on them when the time arrives for them to push forth their buds. During the process of filling in, the roots should be carefully spread out at different levels, according to the positions they previously occupied in the border, and as soon as fairly covered should receive a good watering applied with some force to wash the soil well in around them. After standing a few hours to subside the soil will be in a fit condition to receive the remainder, over which a thick mulching of hal rotten manure should be scattered to keep out frost and maintain a uniform condition in regard to heatf and moisture.

Not only is the present time the most favourable for transplanting all kinds of fruit trees, but it is equally so for overhauling and renovating old borders, and for carrying out any root-pruning that may be necessary, an operation that is often productive of most satisfactory results, and one that does not receive the attention it ought. Those who have seen trees in market gardens cannot fail to have been struck with their fruitfulness—a condition brought about not so much by any treatment the tops are subjected to as by the constant root-pruning they receive under a system of deep cultivation. Unfruitfulness is generally brought about through the roots, when left to themselves, penetrating deep down into soil that is cold and wet or otherwise unsuitable, and from having a deficiency of fibre, the effect of which is at once seen in the strong sappy shoots they form, and in the absence of flower-buds. If these deep-seated roots are severed and brought nearer the surface, the feeders are increased a hundredfold and this tendency to unruly growth checked in a very simple and easy manner and without going to much labour. In the case of large trees, it is best to operate on one side only and leave the other till next autumn, as then there will be no risk of endangering their health, which there might be were the whole of the roots severed at once. For old decrepid trees or such as have got into a weak unsatisfactory state, it is surprising what a little fresh soil will do by way of bringing them round, especially if fresh cut turf is used without any admixture whatever. I have some now that have been entirely regenerated in this way that had suffered from having leaf-soil dug into the borders. The necessity of cropping these often leads to undecomposed vegetable matter being dug in, and which is in dry seasons very inimical to healthy root action, and its use should be avoided as much as possible. *J. Sheppard, Woolverstone.*

A Sense of Property.—Botanical old Gent (in the Brighton Gardens): "Can you tell me, my good man, if this plant belongs to the 'Arbutus' family?" Gardener (curtly): "No, sir, it doan't. It b'longs to the Corporation!" *Punch.*

THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 20, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Oct. 22—Sale of Dutch Bulbs, at Stevens' Rooms.
WEDNESDAY, Oct. 24 { Sale of Stove and Greenhouse Plants and Dutch Bulbs, at Stevens' Rooms.
SATURDAY, Oct. 27—Sale of Dutch Bulbs, at Stevens' Rooms.

MR. SMITH'S paper on a FOSSIL FUNGUS, which we print in another column, together with illustrative figures, will undoubtedly excite much interest, and cause, probably, a great deal of speculation. Lepidodendron is a genus of trees which abounded in this country in the so-called Carboniferous epoch untold ages before red sandstone or oolite, chalk, or drift were deposited—when Tree Ferns spread their fronds over Yorkshire dales, and big Cycads and towering Conifers kept them company. The Lepidodendron itself may be said to have been a gigantic Lycopodium. The spores and fruits which have been found in association with them prove this. The mode of growth and the internal structure further substantiate the proof.

The climate and general conditions under which plants grew here in those times must have been considerably different to what obtain now, though probably less so than was at one time imagined. Then, as now, fungi played their appointed functions of preying upon decaying tissues; then, as now, their spawn tubes penetrated wherever suitable food was presented to then; then, as now, they increased and multiplied. All this is abundantly proved by the fungus which forms the subject of Mr. SMITH'S illustration. Several years since Mr. CARRUTHERS, our leading authority on all that pertains to fossil plants, detected similar growths and found the mycelial or spawn threads of a fungus among the tissues of a fossil Fern allied to our Osmunda. The fungus was so like the Peronospora that Mr. CARRUTHERS classed it with that genus. But the fungus threads on the Osmundites were mere babies compared to those which have formed the subject of Mr. SMITH'S observations. Osmundites grew in the muddy shores of the Thames in Eocene times, that is after the chalk hills were laid down. The time that must have elapsed between the deposit of the Coal Measure rocks and those of the London Clay period is so vast that the human mind can form no adequate idea of it, and yet whether it be Peronospora, whether it be Pythium, whatever its lineage in fact, the truth remains that in those two inconceivably remote periods a fungus closely allied to that causing the Potato disease of the present time existed. How insignificant appear man's works and their duration by the side of this lowly fungus. MOSES may have set eyes on Cleopatra's Needle, now it is to be hoped, after its abandonment in the Bay of Biscay, on its way to our shores, but what is the interval that separates our times from those of the Pharaohs in comparison with that which separates us from the time when tropical trees lined the banks of the Thames, and, still more remote, when our coal deposits took their origin from the overthrow of primæval forests? The fixity and constancy of so simple a form will at once attract attention, but this may readily be explained by the circumstance that so so long as the plant was in harmony with the conditions under which it lived, so long would it live and multiply. As to the conditions, we know that many plants, especially among the more lowly organised ones, can make themselves at home under widely different conditions. Ferns, as Mr. CARRUTHERS has shown us, formed starch in their tissues in Eocene times as now. The structure and appearance of the fossil plants of all epochs show that the essential processes of life were carried on then just as they are now—ceaseless change, unvarying constancy side by side.

Tempting as the subject may be, we cannot enter into the many speculations which this fossil Peronospora is calculated to excite. The adherent of the view of one original creation from which all living organisms are the direct descendants, will find his views strengthened by this tiny fragment of Palæozoic fungus. On the other hand, the evolutionist who adheres to the view that Creative Wisdom and Creative Power, so far from having been exerted once for all, have been exercised throughout all time and are still in operation will not find the fungus irreconcilable with his views. But these are questions into which we cannot here enter. One word, to conclude, will bring us back to the region of daily practice. When, in 1847, the Potato disease first appeared, the notion among the general public was that it was a new disease. When Diptheria first began to be talked of as distinct from croup and scarlet fever, it was called a new disease. When a naturalist finds a plant or an animal previously unknown to him and science, he calls it in a conventional sense a new species, but Mr. SMITH'S fossil Peronospora is one more illustration that there is nothing new under the sun.

—— WE regret that, on account of a delay wholly unavoidable on our parts, we are obliged to postpone the issue of the COLOURED PLATE of "True and False Mushrooms," announced to be presented to our readers with the present number.

—— As a further contribution to the history of CASIMIROA EDULIS, figured in our last issue, the following description, sent with some seeds of the plant to the Kew Museum by Mr. SUTTON HAYES some years since, may be worth recording. The fruit is described as being known throughout San Salvador, Guatemala, and probably also in Honduras, under the name of Matasano. It grows to the size of a large Apple, and was indeed mistaken for an Apple the first time it was seen by Mr. SUTTON HAYES; this was near San Vicente in San Salvador. The taste is said to have a strong flavour of turpentine, which renders it very disagreeable to those unaccustomed to its use. The fruits are found for seven or eight months of the year in great abundance in nearly all the market-places throughout the above countries, and appear to form a large part of the food of the natives and other miserable people. The better classes seldom use them. The fruit in the higher parts of the country does not often perfect more than two or three seeds, and has less of the Terebinthine taste; that of the hottest localities is very large, generally with its five parts well and fully developed. Mr. HAYES remarks that it is strange that a fruit so much eaten by so many people should be so little known, even the most intelligent people, he says, in the countries where it grows seem to know nothing more about it than that it is very common in the market-places a great part of the year.

—— The best ASTERS now in flower in the herbaceous ground at Kew are A. longifolius, A. multiflorus, A. Chapmanni, A. turbinellus, A. lævis, and A. dumosus. Among other noteworthy herbaceous plants in flower are Stachys arenaria, with pretty pink spikes reaching to less than a foot; Alonsoa acutifolia, bearing a number of rich orange flowers; Lithospermum orientale, clear yellow; Convolvulus mauritanicus, still with blue flowers in profusion; Erica Watsoni, Senecio elegans, a useful annual, with "double" flowers in several colours; the so-called green-flowered Dahlia (from the leafy scales of the receptacle); Diplopappus rigidus, with Aster-like flower-heads, in foliage much resembling a Heath; Sedum spurium, Erodium Maniscavi, Gaura Lindheimeri, Loasa lateritia, and Schizostylis coccinea. At the rockwork are Zauschneria californica, Lithospermum prostratum, Polygonum capitatum, P. Brunonis, Allium pulchellum, and others less attractive in point of beauty.

—— Our contemporary, the *Gardeners' Magazine*, takes us to task for having, in a leading article on the INTERNATIONAL POTATO EXHIBITION, misquoted an opinion previously given in that journal as to the proper size of exhibition tubers. We have no intention to shelter ourselves behind the somewhat vague expression "elsewhere suggested," as we admit at once the source of the quotation. Its appearance in an editorial, presumably penned by such an accepted authority on all that relates to the Potato, was our only reason for giving it special prominence. It was not said by our contemporary that 10 ounces in weight was a fair average size for an exhibition Potato, but that "10 ounces in weight should be the maximum size;" but as no mention of any minimum size was made, and therefore no guide offered as to what should be esteemed to be the "fair average," we concluded (as, perchance, did many more readers of the sentence) that 10 ounces was esteemed a fair exhibition weight, otherwise that weight would not have been so prominently mentioned. However, it is gratifying to find that our unfortunately misguided remarks have elicited such a definite expression of opinion from our contemporary, who tell us that he looks upon the 10-ounce average proposal as a "dreadful thing;" and we may henceforth confidently reckon upon his support to our previously expressed opinion, that tubers weighing three to the pound were of a fitting size to put upon the exhibition table, and a useful and profitable size for ordinary cooking purposes.

—— A nurseryman in the North of England writes:—"Owing to the wet summer VIOLAS are to be very popular in gardens in the North. Pelargoniums have this season been a miserable failure." This remark applies to other bedding plants also. But Violas have been just the reverse of this, for they have flowered freely and continuously. They may be said to have saved the floral credit of many a flower-garden, and the continuous soaking rains which washed out the life and gaiety of Pelargoniums appears to lend a new lustre to the Violas.

—— We learn from the *Daily News* that one GILES COLLINS, a labourer, in Wells, was fined 5*s*. on Tuesday last for keeping a live COLORADO BEETLE in his house. Who was the detective who identified the insect?

—— A flowering shoot of the beautiful and interesting violet and white-flowered SALVIA LEUCANTHA has been sent us by B. PIFFARD, Esq., Hill House, Hemel Hempstead, Herts. Mr. PIFFARD brought the plant last year from the Botanic Garden at Draguinan, and describes it as a large, bushy, free-growing plant, and easily propagated. Our correspondent will send cuttings to any one who may desire to possess it, if they will apply before it is cut off by the frost.

—— We hear sad accounts of the destructive effects of the gale which swept over the country early on Monday morning last, and which appears to have been the most severe which has been experienced during the last two years. According to the report issued from the Royal Observatory, Greenwich, the wind attained its greatest force at a quarter past two o'clock in the morning, when a pressure of 23 lb. on the square foot was registered, the direction of the gale being, until nine o'clock, S.S.W., S., and S.W.; afterwards, W., S.W., and W. So violent was the storm that the communication which is established for meteorological purposes with the Meteorological Office and the various ports on the south and western coasts was entirely interrupted. Trees seem especially to have suffered severely; and perhaps the most noteworthy case that has come under our notice is the uprooting of nearly twenty of the grand old Elm trees that have for so long been an ornament to Christ Church Walk at Oxford. Former Oxonians, and boating men especially, may also be interested to know that the famous Willow tree by Salter's Yard has also been laid low. A correspondent of the *Times*, writing from Budleigh Salterton, Devon, says:—

"A gale of terrific violence and unusual character passed over this part of Devon on Sunday night, culminating between the hours of 10 and 1 o'clock on Monday morning. Besides being of a force that none can remember its equal, it had all the characteristics of a genuine sirocco. The change over the appearance of

gardens and landscape on rising on Monday was of a magical nature, the former being hopelessly withered up, as though baked in an oven, while the latter has all the trees browned and dried up to a dirty brown paper appearance. Most houses have suffered, especially the thatched ones, and the boats were much damaged on the beach by the violence of the wind. This dry gale is a fit sequel to a summer of wonderful dryness here, there having been only twenty-seven days on which rain exceeding 3-100ths of an inch fell in the last 137, viz., from the beginning of June. Unfortunately, however, the corn harvest-time was wet."

The Truro correspondent of the same journal states that Saltash suffered severely, and Dr. Row's vinery, "said to be the largest in England," was entirely destroyed.

—— We regret to state that during the violent hurricane which swept over Bristol and the west of England on Sunday evening last, very heavy loss was sustained by Messrs. Maule & Sons, nurserymen, at their Stapleton Road Nurseries. The destruction of property all over the city was immense, but of all the sufferers Messrs. Maule are the largest. Three large houses were utterly destroyed; one of these contained a large and noted collection of Orchids, another the finest collection of tree and other Ferns in the neighbourhood, whilst the third was their large vinery—the whole being found in one confused mass on Monday morning. Other houses and pits are much damaged, and it is calculated that the aggregate damage amounts to nearly £3000.

—— Cleopatra's Needle on its way to our shores had to be cut adrift in the Bay of Biscay, not before five lives had unfortunately been sacrificed, but according to the latest telegrams, received as these lines are passing through the press, has been recovered and may still furnish material for the battle of the sites, if it survive that of the elements.

—— We have received from Mr. McLean, gardener to Viscount Holmesdale, Linton Park, Maidstone, a flowering specimen of that singularly interesting botanical curiosity, Colletia cruciata, or C. Bictonensis, the name by which it is better known. The plant is not often met with, but on account of its horny Ruscus-like habit and small bell-shaped flower, together with its perfectly hardy constitution, it should be planted in mixed collections more freely. Mr. McLean also sent a branch, bearing fruit, of Colletia horrida, which it will be remembered the late Mr. James Barnes, of Bicton, believed to be the parent of the first named.

—— We note in the last issue of the *Irish Farmers' Gazette* a lengthy report of the recent International Potato show, taken from the columns of *Bell's Messenger*, and, according to the honourable practice of our Irish contemporary, duly credited to that Journal. We also note that, with the exception of the first and four last paragraphs, the report is the same as that which appeared in the *Gardeners' Chronicle* of October 6.

—— On the morning of Friday, the 12th inst., Inverary Castle, the seat of the Duke of Argyll, and one of the most princely residences in Scotland, was partially destroyed by fire, and many thousands of pounds will have to be expended before the splendid edifice is restored to its former pitch of elegance, while it is to be regretted that many precious heirlooms are lost for ever. The fire broke out shortly before 5 A.M. at the top of the great central tower, which, with its Gothic casemates, lights the interior of the building; and so sudden was the alarm that all the noble ladies of the family, including the Princess Louise, were hurried out into the open air barefooted and bareheaded in their dressing-gowns, with a rug thrown hastily about them. Fortunately the storm of rain and hail had spent its fury, and the ladies were speedily conveyed to the Argyll Arms Hotel by the Duke and his son, the Marquis of Lorne. An account of Inverary will be found in our columns, 1876, pp. 742, 777, 836.

—— We understand that the *Villa Gardener* is in future to be conducted by Mr. William Earley, of Valentines.

—— The Shropshire Damson is said to be quite popular in Central and Southern Ohio, and, according to the American *Gardeners' Monthly*, there are few Plums but Damsons to be seen in the Cincinnati markets, but these are abundant. Our contemporary remarks that this variety is "said to be in some respects superior to the common Damson." With us it has larger and more distinctly oval-shaped fruit than the common Damson, but is not so prolific. It is, however, the best of the two in all other respects.

—— The Borough of Hackney Chrysanthemum Society, finding its former place of exhibition—the Town Hall, Hackney—too small for its requirements, have decided to hold its thirty-first annual show on November 20 and 21, at the Royal Aquarium, Westminster.

—— On Tuesday last Mr. Robert Foulis, gardener, forester, and estate overseer, at Fordel, Fifeshire, was entertained by a number of his friends at a dinner given in his honour at the Albert Hotel, Edinburgh, and presented with a gold watch and a purse of sovereigns, on the occasion of his having completed his fiftieth year in the service of G. W. M. Henderson, Esq. He was also presented with a handsome gold brooch for his wife. Bailie Methven occupied the chair, and Mr. Dunn, of the Dalkeith Palace Gardens, was croupier. The Chairman in proposing the health of Mr. Foulis said, they had met on a very rare occasion indeed, for it was seldom that any one was found who had served for fifty years in one place as their friend had done, and with so much honour to himself. He had been nominally a gardener, and connected more especially with horticulture, but he had not confined himself to that branch of science alone. He had taken a deep interest in arboriculture, and had left his mark on the Fordel estate, which was noted throughout Scotland, and he might say in Great Britain, for all kinds of hardy plants. He had also taken a deep interest in geology, and had done much to communicate the knowledge he had acquired to younger men. He first became acquainted with Mr. Foulis in 1835, and since that time he had always had a kindly feeling towards him. He had great pleasure in making the presentations to Mr. Foulis, and hoped that he might long be spared to enjoy his retirement. Mr. Foulis, when returning thanks, said it was gratifying to him to think that, after having lived amongst friends for fifty years, at the end of that period he was esteemed and respected by them. He felt that the merit attached to the position in which he was now placed was principally due to Mr. Henderson, who had proved a most excellent, kind, and indulgent employer, and one who had done a great deal to improve his estate. Although he had been a long time at Fordel, he had not attained to the length of service of his predecessor, who was gardener and forester there for sixty-three years, making 113 years in all between them.

—— Now that the Pea Season is nearly over, many persons will be glad to know that an excellent substitute for use in soup may be found in the young tender tops, which may be had all through the winter by sowing a few pans or boxes at short intervals. The Peas should be sown in light, loose soil, and as soon as they show through be placed in narrow pits or frames near the glass, where they can get plenty of light to impart the requisite colour and flavour. Choice garden Peas are too dear and scarce to use for the purpose, but the field kinds will do almost equally well, and may be had at such a price that any one having the convenience of growing a few need not be debarred from enjoying soup almost as delicious as any that can be made in the summer. The canning process, so successful in the case of meats, appears a failure with vegetables, especially green Peas, the skins of which are hardened thereby, and the fleshy part done to a pulp, while their wholesomeness as an article of food is questionable, whereas there can be no doubt as to the nutritive properties of the young green tops, which are tender and succulent, and very digestible. The sowings may be made thick, so that little room need be occupied at any time; but as the germinating power of Peas is at a low ebb at this season, especially in the case of old seed, very careful watering is necessary, or they will be found to rot off.

—— A correspondent writing with reference to "the Oponopodoli or Duck's-mouth or Masamo," referred to by Professor Reichenbach at p. 424, remarks that if he were not afraid of exposing his ignorance, he would ask who, or what, or which they are? The answer is that these are the native indigenous names of Cattleya (violacea) superba! How much better vernacular names are than those crack-jaw words which botanists make!

—— The charming Primula Munroi, singularly distinct as a species from most others of the large family of Primulaceæ, is seldom met with in collections, and is too of tenpronounced miffy and impracticable. Perhaps this defect may have arisen from too much care and attention, too much coddling, or it may be that the original plants were deficient in that robustness and strength that have developed in some seedling forms. That these are strong and robust, and can rough it with any others of the family, we have had ample evidence this season; usually producing flowers of small size and of a rosy white hue, these seedling plants have large pure white flowers that might well be mistaken for those of P. nivalis, which they closely resemble. Primula Munroi has foliage not unlike a large form of Sorrel, throws its blooms up in a truss upon a stem of a few inches in height, and is so distinct that it ought to be found in every collection of hardy Primulas.

—— A cursory examination of Hardy Fruit Trees shows that the bloom-buds for next year are plumping up in great abundance, the recent spell of dry and comparatively warm weather greatly assisting in their development and in ripening the wood. Whatever may be the outcome of next season's bloom, there is no doubt but that it will be exceedingly abundant. It is, therefore, well just now to observe to what extent the growth on the trees generally bears evidence of maturity, or otherwise, for should another failure of crop result, we shall then be in a better position to judge whether that failure is due to possible spring frosts or to unripened wood. Perhaps it may not be out of place to caution growers that it will hardly be wise to inflict too great a check upon trees that have borne little fruit for two years, and therefore have produced a robust growth, by pruning hard, as it inevitably results in the reproduction of more barren wood. A moderate thinning is the most useful service to be rendered to hardy fruit trees this ensuing winter.

—— To those who have to meet heavy demands for cut flowers—and their name is legion—we can strongly recommend a dwarf race of early flowering Bedding Chrysanthemums, which are making their way into the nurserymen's lists. Mr. Parker, of Tooting, has been working at them for some time, and has got together a very choice collection, which we saw when in bloom. They prove to be fine border flowers, having a low bushy habit, are lavish in their production of flowers, come into bloom about June, and continue in blossom until frost puts an end to their beauty in autumn. If propagated by cuttings in spring, and grown on under liberal treatment, they make sturdy plants about 15 inches high, and some of the sorts about the same through — invaluable plants for cutting from, and, if grown in quantities in pots, would prove very serviceable substitutes for failures in the bedding-out. A good dozen to begin with will be found in the following sorts, all of which are of the dwarfest and earliest blooming types, and give a good variety of colours:—Delphine Caboche, Illustration, Cassy, Frederick Pell, Jardin des Plantes, in three varieties, pink and white, yellow, and white respectively; Madame Peconl, in two varieties, light and dark rose; Nanum, Scarlet Gem, and Precocity.

—— The *Journal of the Central Horticultural Society of France* tells us that the name May Duke, as applied to the Cherry, should properly be written My Duck!—that having been the original spelling of the name.

—— Cut spikes of Gladiolus ramosus, Ville de Marseilles, are now reaching London from Jersey. The flowers are pure white, with a rosy purple flame on the petals, and it is exceedingly pretty and distinct. It appears like a form that it would be advisable to cultivate in pots in this country, to prevent the delicate beauty of the flowers from being injured by vicissitudes of weather. It is an early-flowering form.

—— Colchicum speciosum is now blooming finely in the bulb grounds of Messrs. Barr & Sugden,

at Tooting. It is the deepest coloured of all the Colchicums, the flowers large, stout, and well formed. A variety of C. hyzantinum named longipetalum is also a desirable form, with much distinctness of character.

—— A new dwarf LARKSPUR, which originated with Messrs. F. SANDER & Co., seed growers, St. Albans, promises to take a foremost rank among the new plants of the year. It has been somewhat inappropriately named EARL OF VERULAM, instead of receiving a designation which expresses its exceedingly dwarf and compact character. It grows to a height of some 4 or 5 inches, the compact foliage being in the form of a ball, and it throws up several spikes of flower from each plant, the spikes being dense, and the flowers of a rich ultramarine-blue on the guard petals; the central florets being violet-purple. It is continuous in bloom also if the decaying spikes be removed, blooming from July till October. It is a selection from some dwarf-growing form. It is recommended that the seed be sown where the plants are to flower, and if they be thinned out so as to stand some 8 inches or so apart the plants will fill out and form a continuous line or mass. The examples of this charming Larkspur which we have seen were of such a character as to lead us to predict for it considerable popularity. The past summer has brought some fine additions to the class of hardy annuals.

—— Now is the time for potting or planting out in beds the beautiful forms of IXIAS which Messrs. HOOPER & Co. and others are in the habit of exhibiting at one or more of the London exhibitions. They are not difficult to cultivate, and it is just possible that more failures result from what may be termed "coddling" the plants than from any other cause. They can be successfully grown and bloomed in pots in a soil made up of light loam, leaf-mould, and a good proportion of rough sand. The pots require to be well drained. The best time to pot is early in November, and any sized pot may be used, provided there is plenty of drainage at the bottom. When potted, they may be placed in a cold frame, or any such suitable place, and kept rather dry till the bulbs break into growth. Some water may then be given, to hasten development. When the flower-stems begin to appear the pots may be placed on the shady side of the greenhouse to flower. Babianas, Cyclobothras, Sparaxis, some of the pretty early-flowering Tritonias, and others, may be successfully grown and bloomed in this way. It is not wise to attempt to force these hardy bulbs into flower; they should be left to the promptings of Nature in a suitable temperature. What enjoyment can be got out of a cold house in early spring and summer suitable for the culture of such interesting things as those just alluded to! A selection of Ixias well suited for cultivation in pots will be found in Aurora, Bucephalus, crateroides, Diana, Golden Drop, hybrida longiflora, maculosa, magnifica, Pallas, Plantus, Titus, and viridiflora.

—— Is it incorrect for a gold-laced POLYANTHUS to be represented as having the pip, or individual flower, divided into six segments? asks a correspondent. In looking through some of the old floricultural works containing coloured illustrations of florists' flowers the Polyanthus is represented as having, in some instances, five, and in others six segments to the pip. In the edition of MADDOCKS' *Florists' Directory*, published in 1792, a description of the properties of a fine Polyanthus is given, and it is set forth:—"The pips should be large, quite flat, and as round as may be consistent with their peculiar beautiful figure, which is circular, excepting those small indentures between each division of the limbs, which divide it into five or six heart-like segments." The diagram of a Polyanthus bloom given by MADDOCKS has but five segments. Thirty years later, in an edition of THOMAS HOGG'S *Treatise on Florists' Flowers*, published in 1822, there was published a coloured illustration of a Polyanthus, and the flowers appeared with six segments each. Other illustrations given in various floricultural serials about the same time had in some cases five in others six segments to the flowers. GLENNY, in giving the properties of the Polyanthus, states distinctly:—"The single pip, or flower, should be divided in six places, forming six apparent flower-leaves, each of which should be indented in the centre to make it a kind of heart-shaped end; but the divisions must not reach the yellow eye." Thus the testimony of leading florists, who, it may be reasonably supposed, knew perfectly well what they were writing about, favours the idea that experience and personal observation have both pronounced in favour of Polyanthus blooms with six segments. But this has been questioned as a matter of fact by some who assert they have grown the Polyanthus for years, and never seen a flower with more than five segments. Looking at the matter from Nature's own point of view, five is the correct number.

—— We recommend to the notice of our readers a little pamphlet which has just reached us, entitled HYDRO-INCUBATION, by means of which all kinds of poultry and game eggs may be inexpensively hatched and successfully reared all the year round (Christy & Co., Fenchurch Street). Villa gardeners and gardeners generally are so often interested in poultry, that we strongly commend this pamphlet to their notice, feeling assured that they will thank us for so doing. The subject-matter of the pamphlet is sufficiently indicated by its title.

—— Some time ago we had the pleasure of announcing the honours received by Dr. H. R. GŒPPERT, Director of the Botanic Garden at Breslau, on reaching his fiftieth anniversary of taking the degree of Doctor of Philosophy. On completing his hundredth course of lectures at the university last summer he was heartily congratulated and presented with a magnificent album of photographic views, and portraits of colleagues and former and present pupils. The album was bound in velvet and embellished with massive silver work in the Renaissance style. A wreath of Oak and Laurel leaves in beaten silver encircles the arms of the University of Breslau. The album contained no fewer than 554 portraits. Dr. COHN, as the oldest pupil on the committee, made an eloquent speech on the merits of the recipient.

—— Mr. WOODROW, the superintendent of the botanical gardens at Gunesh Khind, Poona, has published a list of the DRUG-YIELDING PLANTS cultivated in the garden. The list includes about one hundred different plants, with their popular and technical names. The demand for many drugs being very slight, and not of a steady nature, it is often difficult to procure them fresh in the markets; and this list has been compiled with a view to such as are grown in the botanical gardens being utilised by the public.

—— To the St. John's Worts already in cultivation will shortly have to be added a perfect gem in the rare Hypericum acaule, which produces its small golden-yellow blossoms in long dense spikes. Mr. PARKER has the only plants that we have seen.

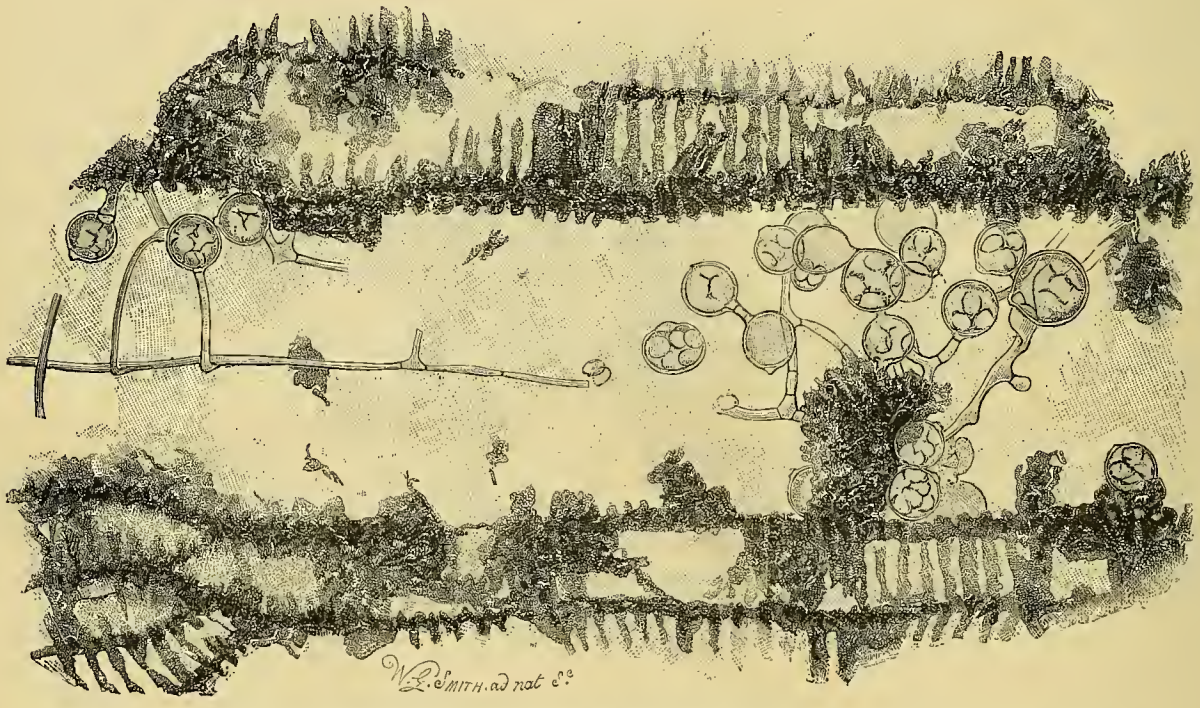

FIG. 97.—A FOSSIL FUNGUS (PERONOSPORITES ANTIQUARIUS), WITH ITS MYCELIUM, GROWING AMID THE VASCULAR BUNDLES OF A LEPIDODENDRON FROM THE COAL MEASURES. (ENLARGED 250 DIAM.)

A FOSSIL PERONOSPORA.*

(Peronosporites antiquarius, W. Sm.)

The fungus preserved in a fossil condition, and belonging to the Palæozoic age, came under my notice in the following manner:—Mr. William Carruthers, F.R.S., keeper of the Botanical Department of the British Museum, first observed this or a similar parasite some years ago in a slide belonging to the Museum collection prepared to show the nature of the vascular axis of a Lepidodendron. By the permission of Mr. Carruthers I have examined this original slide, which contains mycelium and oogonia; and I believe the fungus to be the same with the one now under description, although far less perfect, and without zoospores. The newer slide, part of which is now illustrated, enlarged, in fig. 97,250 diameters from the original, was lent to Mr. Carruthers a few months ago by Mr. J. T. Young, F.G.S. Shortly after this time Mr. Carruthers placed the section (with two others) in my hands for careful examination. The slides were seen when in the British Museum by Dr. Rostafinski, and this gentleman expressed his belief (from a hasty examination only) that the parasite in the vascular bundles belonged to the genus Pythium.

It may be stated here that not only was Mr. Carruthers the first to detect the fossil fungus now being described, but he was the first to observe and illustrate certain mycelial threads seen by him amongst the cells of a fossil Fern (Osmunda) from the lower Eocene strata of Herne Bay. The fossil Fern was named Osmundites Dowkeri, and the parasitic threads were referred by Mr. Carruthers to the genus Peronospora. Silicified mycelia have been known for some time; Mr. Darwin informs me that fungus threads in a fossil state were shown to him in silicified wood more than forty years ago by Mr. Robert Brown, a predecessor of Mr. Carruthers in the Department of Botany at the British Museum.

So far as I am aware no perfect fruit has hitherto been detected upon any fossil mycelium. Mr. Carruthers has, however, directed attention to the wonderful fact of the cellular tissue of the Osmundites, the starch granules within the cells, and the very walls of the mycelium itself being perfectly intact, in the sense of the original forms being exactly reproduced to their minutest details by a deposit of inconceivably fine silica.

I believe that the fungus I have named Peronosporites antiquarius, in the scalariform axis of the stem of a Lepidodendron from the Coal Measures, has up to the present time only been examined in a somewhat slight manner, and has never been searchingly looked into. No description, except that of a Mucor, also from the Coal Measures, has hitherto been published of any well defined fungus belonging to the Palæozoic series of rocks. It is, however, possible that a paper in the *Annals and Magazine of Natural History*, 4th series, vol. iv., 1869, p. 221, and tabb. ix. and x., describes and illustrates a fungus of a somewhat similar nature with my Peronosporites. The paper in question is communicated by Messrs. Albany Hancock, F.L.S., and Thos. Atthey, and purports to describe five species of "Archagaricon" from the Cramlington black shale. The authors state that the fossil fungus has been found at Newsham and in other localities. They, however, describe "lenticular swellings" with a "reticulated surface," which I have never seen, and spore-like bodies within the mycelium, which is clearly an error of observation. The authors also refer their plant to Sclerotium stipitatum, and they say they can find no "important difference" to distinguish this latter plant from their coal fungi. Of course Sclerotium is not a fungus at all, but a mass of condensed mycelium, and the Cramlington plants do not resemble Sclerotia. Plate x. might pass for Peronosporites drawn by a bad draughtsman unacquainted with fungi, but as the descriptions are imperfect and do not give critical dimensions, no one can say what Messrs. Hancock and Atthey really had in view.

One of the most instructive groups of threads and fruit, or, more properly speaking, mycelia and zoosporangia (or oogonia), as seen within the vascular axis of the Lepidodendron, is shown in fig. 97, enlarged 250 diameters. Beginning with the mycelium, a close examination of this shows that it is furnished with numerous joints or septa. If, therefore, any reliance is to be placed upon the modern distinguishing characters of the now living species of Peronospora and Pythium, as furnished by a septate or non-septate mycelium, then the fossil parasite belongs to Peronospora, and cannot belong to Pythium or any of the Saprolegnieæ. The oogonia do not agree with those of Cystopus. Within many of the fossil oogonia of the group illustrated, the differentiation of the protoplasm into zoospores is clearly seen; but if any doubt could exist as to the exact nature of this differentiation, then other oogonia (or zoosporangia) on the same slide show the contained zoospores with a clearness not to be exceeded by any living specimen of the present time. One of the most perfect groups of these Palæozoic bladders containing the once mobile spores is shown in fig. 98, enlarged to 400 diameters, and the wonderful fact becomes manifest that the bladder is exactly the same in size and character with average oogonia of the present day, especially with the same organisms belonging to Peronospora infestans. The contained zoospores are, moreover, the same in form and dimensions with the zoospores of Peronospora infestans when measured to the ten-thousandth of an inch. For comparison an oogonium and group of free zoospores enlarged 400 diameters, and belonging to the fungus of the Potato disease, is illustrated in fig. 99. On examination it will be seen that the organisms are apparently identical. The average number of zoospores in each oogonium is also the same, viz., seven or eight. The aërial condition of the fungus has not yet been observed.

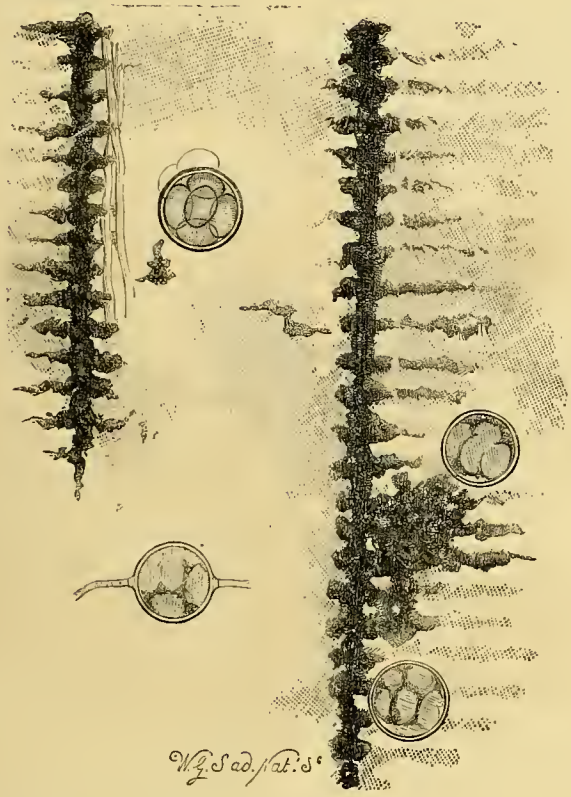

Fig. 98.—The fruit of a fossil fungus (Peronosporites antiquarius) containing zoospores *in situ* as seen amongst the scalariform vessels of a Lepidodendron from the Coal Measures. (Enlarged 400 diam.)

Fig. 99.—Fruit of the Potato fungus (Peronospora infestans), from the tuber of a Potato, to show uniformity in size with the fossil fungus. (Enlarged 400 diam.)

Several years ago Mr. Carruthers pointed out the extraordinary and exact agreement in form and size of the macrospores and microspores in the Palæozoic Lepidodendra, as found in the genus Triplosporites, with recent species of Selaginella, and the occurrence of microspores only in the Palæozoic genus of Lepidodendra named Flemingites, in exact agreement with the habit of the members of the genus Lycopodium of the present time. The agreement in habit, form, and size of the Palæozoic parasite with the parasites of to-day adds an additional and important item to Mr. Carruthers' valuable observations.

In Peronosporites antiquarius we then probably have one of the simple primordial plants of the great family of fungi. The Peronosporeæ are closely allied to the Algæ—so closely, indeed, that De Bary says the species of the former may with reason be compared with the species of one group of the latter, named the Saprolegnieæ; other botanists place the Saprolegnieæ amongst true fungi. If Peronospora is, therefore, an Alga (and its extremely close relationship is doubted by none), we have in Peronosporites antiquarius a plant which, from its extreme antiquity, lends some favour to the views of Sachs and other evolutionists. These observers place the lower Algæ amongst the primæval plants from which fungi and all other cellular Cryptogams have branched. This position is hardly invalidated by the presence of the more highly organised vascular Cryptogams living at the same period of time with the primordial Alga or fungus, for although the vegetable kingdom may have now reached a generally much higher development throughout the world than in the Palæozoic age, yet this fact does not make the supposition unreasonable that the lowest forms of life may even now be springing from no-life—may be under the process of creation, or under the process of being evolved from still lower forms of life beyond the reach of our microscopes or comprehension. The lower forms of life of to-day are probably destined for development into

* A paper read by Worthington G. Smith, F.L.S., at the meeting of the Woolhope Club, Hereford, October 4, 1877.

diverse forms for future ages; but this is no reason why the well-spring itself should stop at its source, whatever that mysterious and unknown source may be.

The evolution of animals and plants is quite comparable with the ages of stone, bronze, and iron with reference to the different tribes of the human family. Because the stone age dates back to dim antiquity it does not follow that it has entirely vanished from off the face of the earth. When Britain was in the stone age the chipping of flints had given place elsewhere to the manufacture of instruments of bronze, and even now, when the age of iron and steel has been reached, many tribes of the human family still live in the age of stone. One state of things (without itself completely dying out) gradually gives rise to another. But throughout Nature it will be seen that in one way or other the old source, be it Palæozoic or Palæolithic, still exists at the same time with the objects of that source's highest development. It is clear that the law which called the Peronosporites into existence countless ages ago is in force now, and that this law produces the same results now as then. Whatever changes may have taken place in the external aspects of natural objects the fact clearly remains, that the great law which first called these objects into being has from the most remote ages remained perfectly unchanged.

Home Correspondence.

The Late Potato Show at the Aquarium.—I observe a note in the *Gardeners' Chronicle* with the above heading signed "A Committeeman," in which the writer complains of the treatment he received by the manager. After reading the note, I said to myself "Serve Mr. Committeeman right; surely the promoters could have found a more suitable place in which to hold the exhibition than the Westminster Aquarium;" but my main object in writing is to denounce a principle which seems to be encouraged by people who ought to know better and who one would think were capable of taking a broad view of the situation, and I cannot help thinking but that vanity lies at the root of the whole matter. Tulip, Auricula, Gooseberry, Potato and a host of other societies relating to horticulture are established, committees formed which have not got the means or organisation to carry out the work themselves, and therefore either go to the saloon at Westminster or to the one kept by Messrs. Bertram & Roberts at Muswell Hill and ask assistance at their hands, assistance which is given with the view that probably this Potato or Carnation society may bring some people together to drink some gin. I hold that it is an incongruous, degrading, and unholy alliance, and one that all lovers of horticulture ought strenuously to oppose. And then we hear these said committeemen wondering how it is that the Royal Horticultural is not a success. I hold that one reason why the Society does not succeed is in consequence of the action taken by these little societies; if they would only throw in their influence with the parent society we should certainly have a stronger central one: but then Messrs. Brown, Jones, and Robinson would not be prominent individuals, and that being of more importance than the promotion of horticulture we find the present unhealthy state of things prevalent, and it is to be hoped that the next time the Potato, Carnation, or Rose Society seeks the support of gin and beer the "committeemen" may not only be hustled out but also their exhibits. Horticulture ought to have nothing to do either with the public-house or joint-stock companies. *A. B.* [Our correspondent expresses himself strongly, but in principle we entirely agree with him. Eds.]

Three Days' Shows and Saturday Terminations.—I wish to endorse every word that Mr. Coleman has written on this subject at p. 467, and by recording my own experience as an exhibitor at the shows he more particularly refers to, strengthen, if possible, his position by way of inducing the authorities to avoid three days' shows, and more especially Saturday night terminations to them. The Alexandra Palace show did not close till 8 P.M. on Saturday, at which hour the tables were densely surrounded with visitors, many of whom were eager to buy fruit, but many still more eager to beg it; and what with the hubbub and crush it was a sheer impossibilty to pack up expeditiously with, as in my case, a view of catching a certain train. I however did succeed in catching the train leaving Paddington at 12 midnight, reaching Reading at 2 45 A.M., and, having then to drive 9 miles, reached home at 3.30 on Sunday morning. Now when it is remembered that I am only about 50 miles from the Alexandra Palace, it will be seen (and I hope by the authorities admitted and remedied) how inconvenient it is for such distant exhibitors as Messrs. Coleman, Bannerman, Goodacre, and many others. The Crystal Palace show, closing as it did at 5 P.M., was somewhat better, but even in this case distant exhibitors could not get home the same evening. *W. Wildsmith, Heckfield.*

—— I am very much pleased to see that Mr. Coleman has brought the subject of three days' shows, terminating on Saturday evenings, under your notice. I quite agree with him in all his remarks; and from the conversation which I had with a great number of the principal exhibitors at the Alexandra Palace show, I feel sure that, unless these kinds of shows be discontinued, exhibitors from a distance will not attend them, and then indeed they would cut a sorry figure in the future. I am of opinion that two days' shows are quite long enough at any time of the year, and that they should begin on any day other than Monday. There is one more subject which I should like to call the attention of secretaries to prior to the getting out of their schedules for next year, and that is, the objectionable practice of exhibitors selling their produce at the termination of the show, which is not only objectionable, but very much interferes with those who wish to pack up their fruit to take home. I think those who wish to sell their fruit should remove it from the premises, and not turn the exhibition into a sale-room. If you will kindly find me a space for these few lines in your next issue, and assist us in getting our grievance removed, you will not only confer a personal favour upon myself, but also confer a great boon upon all gardeners. *W. G. Pragnell, Castle Gardens, Sherborne, Dorset.*

—— There are very few exhibitors who do not feel more or less the great inconvenience and loss attending the present system of holding shows on the three last days of the week, and mostly extending the closing time till a late hour on the finishing Saturday night, making it almost impossible for exhibitors to remove their produce till the following Monday. This practice makes it most inconvenient to exhibitors one and all, and it is to be hoped that Mr. Coleman will receive every support in his courteous appeal to the promoters of our great shows: they will see at a glance the unnecessary inconveniences and expenses it involves, and sometimes the entire sacrifice of perishable exhibits. Employers generally object to long shows on account of the sad condition of tender exhibits when brought home—they are in nearly every case unfit for use. Committees are to be commended for their kind consideration of the working classes, but where there is a will there is a way, and I think the working classes could conveniently attend before the late hours on a Saturday, when it very often happens, unfortunately, that the visitors prove rather unruly and reckless. *J. H. Goadacre, Elvaston.*

New French Roses.—Referring to your remarks in last week's *Gardeners' Chronicle* about the annual issue of new French Roses I find that, although you have shown a considerable amount of knowledge of the merits of these Roses, I perceive, upon reference to the French catalogues, that your information, as far as regards numbers, is very incomplete. Instead of 165 varieties being offered during the last five years I find there are no less than 309, thus leaving 144 to be identified either as good, indifferent, or bad. Perhaps some of your Rose-growing readers can give us some account of the qualities of the 144 which you seem to have overlooked. *S. X.*

How to Keep Nuts.—I can strongly recommend the system that Mr. Ward advocates for keeping nuts. The plan I have adopted for some years is very similar, the difference being that I use no bricks, or salt to keep the nuts fresh. I gather the nuts on dry days, and having some 9 and 12-inch pots dry and clean, place a piece of slate over the drainage hole, fill the pots with nuts, and place another piece of slate over the top of pot, and bury them about 8 or 9 inches below the surface of the soil, placing a small stake to denote where the pot or pots are. We gathered our 1875 crop in the last week of September, and stored them away as above described; and I sent the last dishes of those nuts in for dessert (beautiful and plump) in the first week of November, 1876, and they were pronounced by my employer's guests as "excellent." The hot weather of July, 1876, did not affect them in the least, although they were on an open border in the kitchen garden, the ground being exposed to the sun from morn to eve. *Jas. Batters, Gr., Chilworth Manor, Romsey.*

Eucharis amazonica as a Cool Greenhouse Plant when in Flower.—It is seldom one sees this finest of all the white Lily-like plants in the cool greenhouse or indoor garden. Few plants, however, are better adapted for such positions. It bears the cold of common greenhouse treatment with impunity, and continues in flower for at least two months under such conditions. As soon as the flowers fade take the plant into the stove, or, better still, a close pit, with a bed of tan or leaves or other fermenting materials for bottom-heat. Plunge the plants in this hotbed and subject top and bottom to a bottom and surface temperature of from 65° to 80°; water liberally with clear guano or soot-water or house sewage, and soon the plants will make fresh growth and produce another splendid crop of bloom. They may thus be gradually hardened off and planted again in cool quarters. These pressures and changes of temperature may be so managed as to command three or more crops of bloom in the season. Under a cool *régime* less water is needful and manure-water should be dispensed with. In fact, as a rule, all such stimulants should be banished from the conservatory and indoor garden, as the ordure of the mansion, even when used in a liquid form, is a very incongruous accompaniment to the sweet perfume of the flowers. By these sudden alternations of heat and cold these may be bloomed in 6 or 8-inch pots, and those small plants are among the most beautiful and useful of all for the decoration of the indoor garden, the filling of small vases in houses, &c. *D. T. F.*

The "Beauty of Glazenwood" Rose.—I see in the nurserymen's lists of Roses mention of "Porteous' Briar, or Beauty of Glazenwood," as a new Rose, or at least an old variety revived. May I give the history of this "revival"? In 1870 I was at Meran in the Tyrol, and there I saw this Rose in bloom. I obtained two buds, sent them home in a letter, with their ends inserted into pieces of raw Potato to prevent escape of sap, to the gardener at Hedingham Castle. One of the buds took, and the Rose bloomed well on a south wall at Hedingham. I called the Rose "Meran," and as such it was known by our friends, so much so that we had the usual stamped zinc labels in use for it. Last autumn I saw in Messrs. Paul's list a new Tea Rose advertised as sent out by Mr. Woodthorpe, called the Beauty of Glazenwood! From the description I felt sure that it was our "Meran" Rose. It proved on inquiry to be that Rose, which had been propagated from a bud of the Rose first tried at Hedingham. I want to claim for it the name by which it ought to be known, "Meran." In its way it is singularly beautiful. *Severne Majendie, Drumlanrig Castle, Thornhill.* [The Floral Committee came to the conclusion that the so-called "Beauty of Glazenwood" and the old Fortune's Yellow Rose, were one and the same thing. Eds.]

Astilbe rivularis.—This fine plant resembles the Spiræas, and among the herbaceous kinds may be considered the emperor. Its enormous leaves resemble the fronds of some Tree Fern, or the foliage of some Smilax, but when it throws up its immense panicles of thickly-clustered creamy-white flowers, it is a most telling object. It is not fit for the herbaceous border, throwing out underground stems from 4 feet to 6 feet in length, which at the apex throw up masses of such foliage as no one would attempt to destroy. It would soon monopolise a whole garden, and such a garden would be a noble sight—quite a tropical jungle. It is just the plant for thin or neglected shrubberies, where it would fill all gaps and open spaces with foliage and flowers such as no shrub possesses. Where coach roads or drives pass through open groves or woods the plant would soon be naturalised; and would form thickets like the common Bracken, even in damp, swampy places, where the Bracken would not live. *Thomas Williams, Ormskirk.*

Arundo Donax.—The merits of this as a hardy ornamental plant to use in the sub-tropical garden or as a single specimen on lawns appear to be almost entirely overlooked, for excepting one or two places I do not remember to have met with it anywhere but here for many years past. We have it in the background of shrubbery borders and a strikingly ornamental object it is in such a position, relieving as it does the regularity of outlines that generally prevails more or less among such things as Aucubas, Hollies, Laurustinus, &c., that are generally used pretty freely when planting such places. Much glass-room and valuable time is occupied in raising tender subjects annually that perish with the first frost, while there are many that are equally as beautiful and more serviceable, inasmuch as they require no further care or attention when once they get a fair start, and this Arundo is one of the best. Planted in very small clumps a few years ago they are now bold masses, with stems from 9 to 12 feet high, that with their elegant drooping leaves wave to and fro by the slightest movement of the wind in the most graceful manner, this rendering them very attractive. For planting on small islands in lakes, or near the margin of the same, they are unsurpassed by any plant I know, excepting the hardier Bamboos, with which they associate well and form quite a distinctive feature in positions of that kind. It often occurs that the banks of artificial ponds are bare and formal-looking, when by arranging a few groups of such suitable plants as the above a natural look would at once be imparted that would improve as time wore on, and allowed Weeping Willows to get into size. The best time to plant in such situations is early in spring, just as they are starting

into growth, as then they emit fresh root with the young shoots they send up, and there is no risk of losing them as there would be if removed during the winter while in a dormant state. In planting the Arundo Donax near lakes, the best effect is produced by having the common Sedge next to it in the water, and the Arundo on the bank, so as to form a continuation of the same kind of vegetation; this will be the more striking from the great height the latter attains. Again, the Pampas-grass or Arundo conspicua, with their gracefully recurved leaves as a foreground, blend well with the elegantly arching Bamboos, the latter of which are not half as much appreciated or used in ornamental planting as their great worth for such purposes entitles them to. All the above do best in loose, moist soil, although they will thrive anywhere; but before planting the ground should be well broken up, and if stiff, have plenty of leaf-mould or peat and sand worked in to keep it open, so as to allow the roots to ramify freely. *S. W.*

Hydrangea paniculata grandiflora.—When on a recent visit to the nurseries of Messrs. Roger, McClelland & Co., Newry, Ireland, I saw some beds of this grand shrub flowering most luxuriantly, with many of the trusses of its pinkish white flowers measuring 12 inches long and 8 through at the base. In favourable spots this ought to be more generally cultivated, for it is well worthy the attention of those who require flowering shrubs at this season of the year. *A. Outram.*

Vine Mildew.—A correspondent states at page 304—"It is a somewhat remarkable fact that Vine mildew seldom displays itself on Vines grown in the open air." Likewise "we have lately seen in rural districts large quantities of Grapes produced on cottages, yet not a trace of mildew could be found." Thus, he concludes, the pest displays itself only on tender Vines under glass. But if he was in this locality he might see hardy Vines on the front of cottages affected by mildew as badly as those in hothouses. In fact, how can it be otherwise when the fine dust or mildew spores are wafted about and root on plants suitable for their growth? Those who have studied this subject consider that such spores underlie the brown spots on Vine shoots of the current season, which open in spring, and give out clouds of invisible seed, and thus renew the pest with more or less vigour, according to the state of the atmosphere. That agrees also with the curious way other kinds of mildew, commonly called blights, are bred. I refrain from going into mildew cures, though I have tried some of them having high-sounding testimonials, which have given poor results, owing greatly to the mysterious growth of the parasite. For instance, a healthy Vine may be covered unseen with its spores till the visible mildew suddenly appears rooting on the skins of the berries, sickening to one who knows that the enemy can only be grappled with at the risk of spoiling a house of Grapes. Since the above was written, I have seen M. Bréhaut's account at p. 374 respecting "a badly mildewed crop of Grapes being cured by wiping the berries about once a-week for six weeks." I have tried the plan, but as he says truly, at the loss of bloom, because the wiped berries shine like black Cherries. Such a loss, however, is a gain, as the spores of mildew vegetate only on the waxy varnish which protects the foliage and fruit from injury; the same acts against mildew washes, causing them to drip off like water from a duck. Again, the fumes of sulphur can only be applied with great danger. Many have "burned their fingers" by such. Supposing otherwise, the berries turn rusty and crack—in fact, are more unsightly than when they are sponged with clean water, say only once, because mildew does not display itself after the bloom is gone. *J. Wighton.*

Evergreen for a Churchyard.—In a recent number of the *Gardeners' Chronicle* your correspondent "J. A. E. A." begs a suggestion of some small bright plant that would keep green all the winter, low and compact in habit, for placing on a memorial stone in a village churchyard. Would not some of our hardy Heaths be perfectly adapted to the purpose? By placing the Erica carnea close to the stone the branches would spread over it, and its rose-coloured blossoms in early spring and deep green foliage, invariably trim and neat throughout the year, would be always pleasing. If a larger plant was admissible the E. vagans, the Cornish Heath, in its white variety, would be very appropriate in the long enduring and perfect purity of its white blossoms, and the almost imperceptible disorder of their fall. *O.*

Phlox Drummondii grandiflora.—Phlox Drummondi has been a special favourite for many years, but is now eclipsed by a much larger variety, called splendens grandiflora, that is destined ere long to drive the old kind out of cultivation. Its name conveys an idea what the flowers are as compared with its prototype, and is really not an exaggeration, as they are both splendid and grand, being exceedingly brilliant in colour and of large size, perfect in form and of great substance. The plant, too, has altogether a more vigorous habit, with stouter stems, and is less procumbent, and therefore better adapted for filling large beds or growing for cutting—a purpose for which it is particularly suitable, owing to its light appearance and the great length of time it lasts in water. Although looked on as an annual the Phlox Drumnoodii may be perpetuated by cuttings—and it is often worth while to do this when anything special occurs among a batch of seedlings. In order to winter them safely they should have a little heat, such as is afforded to fancy Pelargoniums or plants of that class, and be stood on light, airy shelves near the glass, where damp is not likely to affect them. From the free manner in which some that were sown late are now flowering, I am inclined to think that they would be most valuable to grow in pots for greenhouse decoration, to bloom at and after this time; or if sown now, or grown on from cuttings, to do so early in the spring—a season when they would be even more useful to blend with the pale flowers of Lily of the Valley, Spiræas, &c. As bedding plants, either in mixed or separate colours, they make a fine display, especially where they can have a rich, deep soil afforded them, and a slight mulching of old Mushroom dung or anything of that kind to keep the ground shaded. The present season has been particularly favourable for them, and while Pelargoniums and other plants outdoors have lost most of their flowers, Phlox Drummondii grandiflora is still as bright as ever, and looks likely to continue so till destroyed by the frost. *J. S.*

Dimensions of Trees in Banffshire.—At p. 435 you gave the circumference of the largest specimens of trees growing in Aberdeenshire, as found by Dr. Dickie in 1843. I don't know what may be the exact size of the largest trees to be found in Aberdeenshire at present, or what may be the increase in size of those referred to, if they be still standing; but from measurements which I have made of trees growing here, and which I contrast below with those furnished by Dr. Dickie, I am inclined to think that Banffshire, although further north, can boast of larger trees than Aberdeenshire. There is, I think, one thing at least remarkable about these trees—instead of being found in different localities and on soil specially suited to the different varieties, they are all growing within a radius of 300 yards round about Rothiemay House. The measurements were taken at a height of 4 feet above the ground:—

	In Aberdeenshire.			At Rothiemay House.	
Larch	Mar Lodge ..	10 ft.	1 in.	10 ft.	11 in.
Silver Fir ..	Strichen ..	10	11	14	0
Elm	Craibston ..	9	8	16	0
Sycamore ..	Glenkindy ..	11	1	12	6
Gean	Edinglassie ..	7	6	8	3
Aspen	Invercauld ..	6	10	13	9
Horse Chestnut	Crathes ..	9	0	10	0
Lime	Aboyne ..	9	8	11	9

There is also within the same radius a Laburnum which measures 8 feet 8 inches 4 feet above ground, and a Wellingtonia gigantea measuring 4 feet 3 inches 2 feet above ground. *Alex. Lawson, Gr. to W. J. Tayler, Esq., Rothiemay House, Banffshire, Oct. 13.*

Seedling Begonias.—In Messrs. Roger, McClelland & Co.'s nurseries at Newry there is perhaps one of the finest collections of seedling Begonias to be seen. Some thousands of different sized plants are grown in perfection, and many of them are quite new in colour, as well as showing great improvements in habit. These for general decorative purposes cannot be excelled. Those who visited the Carlisle show in September will recollect the fine display of seedlings exhibited by this firm, many of which were worthy the attention of growers. Mr. Smith, the manager of these nurseries, and to whom the credit of raising many good varieties is due, has several planted out-of-doors, and on October 6, when I was there, they were in great perfection, far surpassing the beds of Pelargoniums close by, which is sufficient to convince one that in favourable climates these will prove very valuable for the decoration of our flower gardens in the autumn. *A. Outram.*

An Easy Method of Growing Grapes.—Few presents are more acceptable, nor often more useful than a nice bunch of Grapes, and to be able to grow such a luxury, to place such a delicacy on our own table, is something to be proud of; but the difficulties that stand in the way seem disheartening to a non-professional, when in reality they are easily overcome if right means are employed, and this can be accomplished by a comparatively inexpensive process, which I submit to your readers, as seen in the garden of H. Badcock, Esq., Broadlands, Taunton. In a corner of the kitchen garden, south aspect, stands an old forcing pit, with pigeonholes in the walls, such as were used before hot-water made its horticultural mark. Behind this pit, against a wall, there is growing a Vine of the Bidwill's Seedling, which has on it a very heavy crop, but these cannot now ripen, the season has been so cold throughout. Branches have been detached from the outside on the wall and introduced into this pit, the shoots trained about 2 feet from the glass. The air is freely and continually passing through the perforated walls, and so giving a thorough ventilation, which seems to suit the Vines admirably, as they are free from mildew or insects, and are robustly vigorous and healthy. There is no heat given beyond that from the sun, no richly prepared Vine border, no bountiful and costly supply of phosphates and nitrates. The Vines are planted in the garden border, and there is now hanging thereon a capital crop of Grapes, well ripened, well coloured, and of good flavour, many of the bunches being 2 lb. in weight. Mr. Kimmins, the persevering and industrious gardener, with small trouble here secures a nice succession crop of Grapes, to save his later houses. The process is so simple, the result so certain and satisfactory, that many amateurs might find a corner in their garden where at a very small cost they might enjoy the pleasure of eating Grapes of their own growing. *William Payne, Gr. to J. Marshall, Esq., Belmont, Taunton.* [Bidwill's Seedling is generally very indifferent in flavour. Eds.]

Magnolia Campbelli.—There is growing in the garden of John Marshall, Esq., Belmont, Taunton, a plant of the above Magnolia. It is planted out in ordinary garden soil, improved by a mixture of sand and peat, eastern aspect, trained and nailed against a wall, situation moderately sheltered and shaded. It is growing most rapidly, making shoots 2½ to 3 feet long, with fine large foliage of a light green colour. I have never had the pleasure to see this variety in flower, and I am very anxious to know if any one has bloomed it in an open situation, such as above described. *William Payne, Belmont.*

Telegraph Cucumber.—I, too, like your correspondent, Mr. Rust, often wish that I could have the strength of mind to keep only to one variety of Cucumber and Melon, for as regards the latter, if I had done so, it would this year have saved me much disappointment and vexation, as in growing so many sorts they have got mixed from crossing, and are scarcely equal to those they originated from. The favourite here is the Sultan, a Melon much resembling the old Bramham Hall, very handsome, and of first-class quality, and I have cut matters short by throwing away all others, with the hope that I may depend on having a pure stock in future. As regards Cucumbers, I grow nothing else but Sion House or Lord Kenyon's for winter, and Telegraph for summer use, and none better can be had or desired. For crispness and flavour Lord Kenyon's is unsurpassed, and the standard in those respects of what a good Cucumber ought to be. *J. S.*

Gunnera scabra.—We cut to-day a spike of fruit of Gunnera scabra, weighing 10 lb.; length, including stem, 2 feet 3½ inches, very evenly grown, and the pips quite orange-yellow. Is this above the ordinary size and weight? I may add, the plant is growing near water, and appears to be a gross feeder. *A. S. Kemp.* [This appears to have been a well-grown sample. Eds.]

Tuberous Begonias. — The statement that Begonia tubercules can be stored away dry out of the reach of frost to take their rest in winter, sheltered from its severity in an outhouse or on a greenhouse shelf, which Mr. T. Smith, of Newry, pronounces to be "all wrong," is not mine, but the late Van Houtte's; and, as I presume the aim of the *Gardeners' Chronicle* to be not so much to prove who amongst its correspondents is right and who is wrong, as to elicit what is right in gardening matters and what is wrong, I hasten to express my belief that Mr. Smith's instructions to winter the tubercules in pots are quite right, and the best that can be recommended. Not only may plants that have been grown in pots remain therein, but my limited experience proves that plants which have passed the summer in the open ground are best repotted for the winter. The degree of dryness or dampness to be maintained is a matter of judgment and common sense, either extreme can be avoided. If the potted tubercules get too dry in their outhouse, or on their greenhouse shelf, there are few gardens, public or private, where a little water is not to be had. In the August number of *London Society* I had the pleasure of writing of tuberous Begonias, "Their great recommendation to household horticulturists is, that the varieties which hibernate do so frankly and completely. About November they will flag, and their stems will spontaneously part from the root, as if they were dying; it is no such thing, they are only going to sleep. Then is a good time to re-pot them (in light rich soil, half leaf-mould or spent Cucumber-bed and half fresh loam) in larger

pots if required. The plants increase in beauty with age and with the increasing size and strength of the tubercules. You thus get specimen plants with just pretensions to exhibition. The quality and freshness of the soil are mentioned on account of their importance, although in large cities it is often easier to procure new plants than good earth to repot old ones in. If no other source is available, it must be obtained as a favour from some benevolent nurseryman. When repotted, let them take their repose in any snug corner or shelf where it does not freeze. Light or darkness is all one to them then. Keep them dry rather than moist, but not absolutely dry as dust. Too damp they may rot [some varieties rot more readily than others], while excessive dryness will retard their starting in spring. The judicious amateur will hit upon the happy mean, which reminds me of the regretted Van Houtte's recommending for Genetyllis tulipifera (a greenhouse shrub with box-like foliage, bearing large cream-coloured foliage striped with red) plenty of air and 'intelligent waterings.' There, indeed, he hit the mark, and gave to the world a golden rule. By 'intelligent' measures great things may be done in the plant way as in other matters." Mr. Smith will see, I hope, that the results of my own small practice scarcely differ from his wide experience. Only I should fear that a cellar would be too damp; but then, again, there are cellars and cellars. Moreover, it is never too late to learn, especially when the teaching is administered with courtesy. Perhaps, therefore, he will confer the additional favour of giving instructions as to the best mode of raising Begonias from seed. And I trouble you with these remarks because the beauty and usefulness of tuberous Begonias is even yet far from generally known. A recent visit to Bordeaux, Bayonne, and their environs, showed carpet-bedding and vegetable mosaics (favoured by the climate) indulged in to one's heart's content, with plenty of the eternal Coleus, Achyranthes, and so on (not to be despised in their way), but not even in the well-kept public and botanic garden at Bordeaux were tuberous Begonias to be seen. A border of the old B. discolor and another of B. Saundersii, or something like it, were the only outdoor representatives of the family. Two years ago, in the Amsterdam Zoological Garden, a few Belgian varieties were tried as an experiment. *E. S. D.*

Lapageria alba.—On September 1, 1875, I being then gardener to J. Marshall, Esq., Belmont, Taunton) exhibited a collection of cut blooms, not for competition, at the Bath Horticultural Society's show, and received a First-class Certificate. Among them were two bunches of bloom of L. alba, one bunch having thirteen large flowers of great substance, the other eight. The plant from which they were taken was growing in a slate box about 8 feet by 2 feet by 1 foot 6 inches, with a plant of L. rosea, and covered the roof of a lean-to house. My experience is, that L. alba under good treatment grows much stronger and quite as freely as L. rosea, and when grown together as Mr. Westcott states, has a very beautiful effect. Rough peat, charcoal, very little rough loam and leaf-mould, with plenty of water and liquid manure during the growing season, I found suited it admirably. Mr. Marshall's was certainly the best plant I have seen, the foliage being much larger than that of L. rosea, much of it being 2 inches to 3 inches across. I moved both plants about four years since from the back wall to the front of the house in which they are growing, after which they made splendid growth, the shift not injuring them in the least, though the roots were disturbed a good deal. *A. Price.*

Is There a Rising Sap?—We tap Maples to rob them of their sap to make sugar. Cut down a Maple while the sap is flowing, and sap continues to run from the trunk. Very little, if any, rises from the freshly-cut stump. Let a frost check the flow, and another thaw will bring very little sap from either stump or trunk. When a Maple is tapped and sap flows at all, the fact is unmistakable that nearly all of it comes from above—little if any from below. The talk of a foreign wiseacre has induced the *Rural New-Yorker* to head its editorial leader, "Is there a Descending Sap?" Andrew Murray may "talk like a book," but—

"Why call that poor fellow a saphead?—
Does his blood all rise through his toes?
What marvel if then it hath hap'ned
That sap through his hair overflows!"

I can send you a slip from a plant, if you wish it, that will live for months on the sap which it gathers through its leaves—having neither root nor soil nor water from which to receive it. You can place it in your sanctum, suspended by a thread from a nail or peg, only being careful to keep it from dry winds, sunlight, and excessive cold or heat. Has that plant an ascending sap? Possibly you or Mr. Murray may be able to show another plant which will afford as positive evidence of no descending sap. But if you should, neither your example nor mine would prove that all plants are devoid of circulating sap. *S. Folsom, Attica, N.Y., in American Paper.*

Ampelopsis Veitchii.—It might be worth while to mention that the influence of light has a great deal to do with the bright colouring of the leaves of this plant when on the point of decay. A gardener who visited this place a few days ago was much struck with the bright colour of this plant on a wall, and said it did not colour like that near London, as he had not seen it so fine there. I made mention of the situation (an open east aspect) as having a great deal to do with the colour, taking him to see another plant in a more shady place, which was more like what he had seen; the leaves on that plant are still in a green state, and will, no doubt, fall off without ever assuming the fine red tint. It might also be noted that this plant in its growth upon a wall is greatly influenced in the direction it grows from the light—sometimes growing instead of upwards in the main, as one would suppose, it takes somewhat of a sideways direction. Some of your correspondents may have observed the same thing. Your correspondent, "J. S.," says that, were this an evergreen, it would lose one of its principal charms—the fine autumn colouring. There is no doubt about this; but the fine colouring will in no respect as a decorative subject, I venture to say, compensate for its periods of bareness. In the spring certainly, this Ampelopsis is very pretty just when the young buds are showing themselves red all over the bare shoots of the plant. This plant will probably in time be as much or more grown on walls about towns as the ordinary Virginian Creeper is; and for low walls it is much better than it. Your correspondent, "J. S.," says that with him it does not want the slightest attention as regards nailing. Now his experience differs from mine, for although this often clings closely to a piece of the smoothest stone, I have every now and again had to nail shoots that have got from the wall to keep the plants in trim order. I know that some growers, of fancy Ivies for example, cut away every point when it gets away from its moorings, leaving only the shoots that stick firmly of themselves to the wall, thereby doing without nailing. Of course the circumstances of the case should decide whether it is the best plan to cut the points off or nail them in. *R. Mackellar, Abney Hall, Oct* 15.

Polyanthus Flowers Destroyed by Sparrows.—You have told us lately how to treat Polyanthus plants, but I should be greatly obliged to you or any one for telling me how to remedy the following trouble. I have a garden in Cheshire quite in the country, but near a farmyard. Three or four years ago I began growing Polyanthuses. I bought choice seed and raised a very respectable crop of some thousand plants, which made with other spring flowers a gay display. But unfortunately the sparrows noticed the novelty, and the first year pulled many of the flowers to pieces; the second year they attacked them in bud, and the third year they picked the heart out of the plant directly the buds showed. They even extended their depredations to the common Primroses in the shrubberies, which they had never touched before I grew Polyanthuses. I have tried white cotton all round the plants without effect, then white feathers, which they pull up to line their nests with. I have gibbeted sparrows, which the birds do not mind, and the cats steal. I have even put paraffin and gas-tar on the plants, but the sparrows avoid it, and eat where the plants are clean. I have done all I can by shooting and trapping and taking nests, but the little pests fairly beat me, and I am quite at a loss what to try next, and should be most thankful to any one who would suggest a remedy. *C. W. Dod.* [Chain up a cat, giving it a good wire run, near the plants, *à la* Wilson. Eds.]

The Potato Crop.—Thanks to the past spell of dry weather we have here succeeded in lifting our crop of many varieties of Potatos in splendid condition. The two last lots lifted in the week ending on the 13th—Rector of Woodstock and Lapstone, both kinds that usually take the disease severely—are remarkably sound, probably not more than 5 per cent. being diseased. This has been our experience this year with nearly all sorts as grown here in soil of moderate quality and of a light porous nature—in fact, better and cleaner stocks have never been lifted here at any time. On the other hand samples selected with all possible care from the seed stocks, and planted up in rich and retentive soils for the production of fine tubers, resulted in much disease, and in few cases were the samples so good as those produced in the open field. Of kinds that have done remarkably well I may particularise International Kidney, undoubtedly the handsomest and finest white kidney in cultivation; Excelsior Kidney, specially a favourite with the market gardeners for early lifting; Magnum Bonum, a grand late-crop kidney this year, and one that should eventually occupy a high place as a market variety; Schoolmaster, a robust growing white round, of fine quality, and which produced a splendid crop; Blanchard, a very handsome coloured round, and a capital cropper; Rector of Woodstock, the gentleman's table Potato *par excellence*; Lapstone, ever a good and useful kind; Early Market, the earliest and best of all white rounds; King of Potatos, a really fine, useful main-crop Potato; Garibaldi, a heavy cropping and handsome red kidney; Covent Garden Perfection, a much earlier form of the Magnum Bonum. Late American Rose, Scotch Blue, Onwards, and Porter's Excelsior are but a few that have done remarkably well. This is the third year of culture in the same soil, which lies fallow in the winter, and receives but a moderate dressing of manure. The great purpose is to grow clean medium-sized seed samples, and it never fails; but curiously enough, whilst our neighbours' Regents have been heavily hit with disease, we have suffered in but a very minor degree. *A. Dean, Bedfont.*

THE ROCK SAMPHIRE.

We read in Syme's beautifully illustrated *English Botany* that the warm-tasting and aromatic Samphire is frequently used as a pickle. All English persons, a few years in their teens, have heard of it growing on Shakespeare's cliff, for in *King Lear* Edgar says to poor old Gloucester:—

"Come on, sir; here's the place:—stand still. How fearful
And dizzy 'tis to cast one's eyes so low!
The crows and choughs, that wing the midway air,
Show scarce so gross as beetles. Half way down
Hangs one that gathers Samphire,—dreadful trade!
Methinks he seems no bigger than his head:
The fishermen that walk upon the beach
Appear like mice."

The Rock Samphire grows along the south and west coast from Kent to Ayrshire, and on the rocks of more southern shores. It was long since dedicated to the fisherman Saint Peter, and whence its English name by contraction of the Italian *Herba di San Pietro*, to Sempetra. The old and more correct spelling was Sampere, or Sampier, from the French Saint Pierre. We beg pardon for all this, which cannot much concern the reader. One of these days there is to be a holocaust of all the stuff hitherto written, except so far as the writings of a few poets and men of science are concerned. We shall then cease to pilfer for awhile and shall have to draw our information as to Samphire direct from the coast. Meanwhile Gerarde says of this plant, which was much used as a condiment in his day, "the leaves kept in pickle and eaten with oil and vinegar is a pleasant sauce for meat, wholesome for the stoppings of the liver, milt, and kidnies;" and Culpepper is of opinion that "ill digestions and obstructions are the cause of most of the diseases which the frail nature of man is subject to," and that they might "be remedied by a more frequent use of this herb." That is what Culpepper says, but whether he copied or wrote from experience we know not. Other writers have recommended the bright green leaves of the Samphire, Crithrum maritimum, as a pickle. The plant has been described as "glabrous, green, and very slightly glaucous," its stems are flexuous and fleshy, and the leaves, steeped in boiled vinegar and well spiced, are aromatic and agreeable.

The Samphire has naturally been linked by the circumstances of its growth with stories of shipwreck, for besides fringing the edges of storm-beaten precipices, and growing on the front of cliffs and in the clefts of rock, wherever the dash of the briny spray can reach it, the Samphire is occasionally found on sunken rocks, which at flood tide are almost covered. Its roothold is invariably found near the water, but never in it; it never grows where the submergence is complete. During a violent storm in November, 1821, a vessel passing through the English Channel was driven upon Beachy Head, a rival chalk promontory to Shakespeare's Cliff at Dover. The ship struck and went to pieces, and four only of the crew escaped immediate death by clinging desperately to the partially submerged fragments of the cliff.

During the dark hours of the night the waters boiled round their place of shelter, and the tide appeared to be gaining on them, while the violence of the storm forbade the hope of rescue. For several hours the shipwrecked men listened to the roar of the breakers, awaiting the fate of their companions who had already perished; but the rock they were on produces on its rugged point a few plants of Samphire, and in a moment of terrible suspense one of the poor fellows being on his knees, and grasping the rock to secure himself more firmly, laid hold of the "glabrous,

green, and slightly glaucous" plant, which is so good in pickle, and so intolerant of complete submergence.

"Hitherto shalt thou come and no further," was the promise the Samphire offered to those shivering men, and they were not deceived. The tide reached its limit; they heard its hollow sound as the wind fell; light broke, and they saw it retiring; then they saw a boat coming off from the shore; and no doubt the flavour of pickled Samphire recalled to the fancy of these jovial sailors for many a long day the pickle they had themselves been in when soaked with brine on the Sussex coast. *H. Evershed.*

PLANT PORTRAITS.

Aloe tricolor, *Botanical Magazine*, t. 6324.—A dwarf form, with lanceolate white-spotted leaves and panicles of showy red flowers. The flowers are about 1½ inch long, constricted in the middle. Oxford Botanic Garden.

Anemiopsis Ludovici Salvatoris, *Gartenflora*, t. 911.—A botanical curiosity, with tufted, stalked, oblong obtuse leaves, pilose on the under surface. The flowers are borne on short spikes provided at the base with a ring of white bracts. Nat. ord., Saururaceæ. Native country, California.

Anthurium trilobum (E. André), *Illustration Horticole*, t. 283.—A tufted stemless species, with long ascending red channelled leaf-stalks thickened at the top, and ovate deeply cordate three-lobed leaves, the central lobe much longer than the lateral one. The plant has not yet flowered, and is supposed to have been introduced from Columbia.

Aquilegia californica hybrida, *Floral Magazine*, tab. 278.—One of Mr. Douglas' beautiful crosses between the scarlet A. californica and A. chrysantha. The flowers are large, with scarlet sepals and yellow petals, terminating in long and slender spreading red spurs. The flowers are very handsome.

Arthropodium neo-caledonicum, *Botanical Magazine*, t. 6326.—A Liliaceous plant, with tufted, linear-lance-shaped leaves, barred with black linear markings near the base. The flowers are small, white, and borne on a much-branched, many-flowered panicle. It is a native of New Caledonia, whence it was introduced by Messrs. Veitch.

Begonia metallica (W. G. Smith), *Gartenflora*, t. 909.—The same species as figured in the *Floral Magazine*, 1876, t. 197. It is a small pink-flowered species, with obliquely cordate, ovate, lanceolate acute pilose leaves. It has been some years in cultivation, but has recently been brought into notice by Mr. B. S. Williams.

Buddleia asiatica, *Botanical Magazine*, t. 6323.—A graceful shrub, with lanceolate, finely serrate leaves, and long dense racemes of small white flowers, resembling those of some of the hybrid shrubby Veronicas. It is sweet-scented, and very desirable for stove cultivation. It is a native of India, and was introduced by Messrs. Downie, Laird & Co., of Edinburgh.

Fritillaria dasyphylla and F. acmopetala, *Botanical Magazine*, t. 6321.—Two Levantine Fritillarias, already described in our volume for 1875. Interesting to lovers of hardy bulbs.

Fuchsias, *Floral Magazine*, t. 277.—The following varieties are figured and described. Mr. Huntley, flowers large, bold, and of the finest form, red tube and sepals, dark violet-purple corolla. Letty Lye, a light variety with delicate flesh-coloured tube and sepals, and deep carmine corolla tinted with purple. Mrs. Huntley has a white tube and flesh-coloured sepals and a large brilliant carmine corolla. Royal Standard has coral-red tube and sepals, and a pale plum-purple corolla. These varieties were raised by Mr. Lye.

Gloire de Dijon, *Journal des Roses*, Oct., 1877.—Were it not for the name on the plate, we should be at loss to know what was the Rose intended.

Gymnogramma Heyderi (Lauche), *Monatsschrift d. Ver. z. Beford. d. Gartenbaues*, 1877, 421, t. 4—A new hybrid gold Fern, raised by Herr Lauche, and named in compliment to Herr Heyder, between G. chrysophylla and G. Laucheana, and remarkable for its broad pinnules and the rich golden colour of the under-surface of its fronds. It is apparently of dwarfish habit, the fronds ovate, with ovate-lanceolate blunt pinnæ, and broad oblong ovate blunt pinnules, the lower of which are pinnatifidly lobate. The colour of the under-surface is a rich golden colour. It comes somewhat near to G. Lauchesna, but is much broader in its parts; indeed, except in its dwarfer habit, it exactly corresponds with the G. Laucheana gigantea raised in 1869 by M. Stelzner, of Ghent.

Ixiolirion Pallasii (Fischer), *Gartenflora*, t. 910.—An Amaryllidaceous plant, with erect stem, some 18 inches high, having linear lanceolate leaves, and producing tufts of stalked pink flowers, each about 2 inches in diameter, composed of six oblong-lanceolate segments. Native of Southern Russia.

Lobelia Lilac Queen, *Floral Magazine*, t. 280.—A seedling of the compacta type, sent out by Mr. B. S. Williams. The habit is very dense and cushion-like, the flowers abundant, and of a bright lilac colour. Presuming the representation to be a faithful one, this plant will be very valuable in the flower garden.

Microstylis Josephiana, *Botanical Magazine*, t. 6325.—An Orchid with oblong pseudobulbs, broadly ovate greenish-brown leaves, and terminal racemes of small yellow flowers. It is a native of Sikkim, and is interesting, rather beautiful.

Nectarine Lord Napier, *Florist*, October, 1877.—The popular Nectarine of the day. The fruit is large, roundish oblate, dark red next the sun; flesh pale, highly flavoured; of fine constitution and a good bearer. Under glass it is "the earliest and best Nectarine introduced." It was raised by Mr. Rivers.

Odontoglossum triumphans and var. labello albo, *Florist*, October, 1877.—O. triumphans is well appreciated, and the white-lipped variety only needs to be more known to be equally sought after.

Oncidium euxanthinum, *Botanical Magazine*, t. 6322.—A showy yellow-flowered Oncid, described in our columns in 1869, p. 1158. It was introduced from Brazil by Messrs. Veitch.

Peach, Princess of Wales (Rivers), *Revue Horticole*, October 1, 1877.—Fruit globose, of medium or large size, cream-coloured, rose-pink next the sun. Flesh white, vinous, and of pleasant flavour. A freestone. A fine late Peach.

Pear Passe Crassane, *Bulletin d'Arboriculture*, September, 1877, p. 273.—A fruit of middle-size, rounded-ovoid form, russet-coloured, with yellow spots. Flesh fine, melting, of very good acidulous flavour.

Pelargoniums, Zonal, *Floral Magazine*, t. 279.—The varieties figured are Polyphemus, Tom Bowling, and Leveson Gower—all varieties raised by Mr. Postans, of Brentwood, and distributed by Mr. Burley. Polyphemus is scarlet, with a white eye; Tom Bowling, orange-scarlet; and Leveson Gower, "perhaps the best salmon-coloured zonal yet raised." All three are fine exhibition varieties.

Sphærogyne? imperialis (Linden), *Illustration Horticole*, t. 284.—Probably a species of Miconia, with noble cordate ovate acute leaves, having depressed nerves, prominent on the under surface. The colour is brownish green above, pinkish beneath between the nerves. A very fine stove foliage plant, which has not yet flowered, and whose lineage is, therefore, uncertain. It is clearly Melastomaceous. Introduced by M. Linden.

Tacsonia insignis, *Revue de l'Horticulture Belge*, p. 217, 1877.—The finest of the Tacsonias, originally published in our columns in 1873. The present figure hardly does justice to the beauty of the plant; the blue colour of the central corona is not sufficiently brought out, or it may be that under some circumstances it is not produced. In any case we are glad to find our verdict confirmed.

NEW ANNUALS.

There is no lack of new forms of annuals, though they do not appear to be so numerously produced as they were a few years ago, owing to a declining interest in their culture. No doubt a great deal of rubbish has been put into circulation from time to time, but the chaff has not been unmixed with corn, and some good things have been brought to notice, to the great gratification of lovers of these common flowers. Leptosiphon rosaceus, Godetia Whitneyi, Malope grandiflora rosea, Godetia Lady Albemarle, the fine new Campanula macrostyla, among others, are cases in point. The season now drawing to a close has brought before the public some things of a highly meritorious character in the way of annuals. Special mention may be made of the glorious Eschscholtzia Mandarin and E. crocea flore-pleno, obtained by Messrs. James Carter, Dunnett & Beale, and awarded First-class Certificates by the Floral Committee of the Royal Horticultural Society. Mention has already been made of the fine form of E. alba flore-pleno, which is also in the possession of Messrs. Carter & Co., and which will no doubt be seen next summer. Then there are some fine forms of Dianthus, of which some four or five varieties were awarded First-class Certificates at Chiswick. It may therefore be said of new annuals, that they have moved on with a prodigious stride during the year of grace 1877.

New annuals in a few cases come to us as foreign introductions; some are raised from seed in this country, but in all probability the greater part are obtained in this country as "selections." Messrs. Carter & Co.'s three fine Eschscholtzias are all the results of selections extending over a few years. Great patience and persistency of purpose are required in bringing up these sports to a point when they become fixed types. Sometimes, after three or four years' patient labour, they will flash forth with a brilliancy full of promise for the future, and the next year revert to the original form, and be wholly lost. But many substantial rewards are obtained nevertheless, and labour is sweetened by the valuable results obtained.

Messrs. James Carter, Dunnett & Beale have long made new annuals a speciality, and from their seed farms at Dedham and St. Osyth many new sports among annuals have originated. The men who are constantly at work among the huge masses of annuals are so far observant as to detect any tendency in an annual to sport into a new character. It is immediately marked, the surrounding plants are cleared away, and the attention of the responsible foreman is directed to it. If successive flowers show a continuance of the sport the seed is carefully saved, and the following year it is sown on "stetches," as they are termed, set apart for proving these new forms. Here a further selection is made, and this goes on, it may be, for three or four, six, ten, or twelve years, until the new character is sufficiently fixed to admit of its being distributed.

An inspection of the "new stetches" at the Dedham and St. Osyth farms on two occasions during the past summer afforded opportunities for estimating to some extent the value of some new things growing on them, and for the sake of convenience they are given alphabetically. Calendula pluvialis sulphurea, a selection from C. pluvialis, is a very pretty type, and in it we have, instead of the dark ring round the eye on a white ground, a golden centre, and the reverse of the petals, instead of being dark, is of a clear sulphur. It is a cheerful and effective annual, and it may be remarked the Calendulas are not so much grown as they deserve to be; Clarkia pulchella, Tom Thumb minima, is a singularly dwarf and compact form, about 4 inches in height, and forming a nice little bush covered with flowers. It is of a pale lilac or fleshy pink colour, and it will make a capital edging to later growing annuals. A counterpart of this in habit, but bearing white flowers, has also been selected. Clarkia elegans rosea, double, with rosy salmon flowers of a charming tint, is an improvement in colour on the pretty Salmon Queen, and is very fine and effective. Chrysanthemum bicolor is one of the pretty annual varieties, white, with a yellow centre and orange ring round the edge; it is very free and striking, and a capital addition to these pretty flowers. Gilia rosea is a selection from G. tricolor, in which the rose colour takes the place of purple, which gives it a much more effective appearance. Of Godetias several new selections have been made; they are Godetia Dunnettii Tom Thumb, which is rather dwarfer than the parent from which it is selected, and the flowers are of a deeper and more pleasing shade of colour; the habit of the plant is also much improved, and instead of blooming in irregular spikes of varying heights it is of a compact nosegay form, displaying its flowers much better. Then of G. reptans, a somewhat prostrate-growing form obtained from Texas, the following new selections have been obtained, viz.:—alba grandiflora, pure white, flowers double the ordinary size, delicate rose or pink stamens; insignis, large white flowers, with a brilliant carmine spot on each petal, a good successional bloomer, commencing at the base of the plant and gradually spreading over it; insignis Tom Thumb, a dwarf form of insignis, of a flat growth and of a compact habit; and Lindleyana, having self violet or rosy purple flowers destitute of any spot, growing from 12 to 15 inches in height, very free and effective in appearance. Leptosiphon

androsaceus ruber is a selection from L. androsaceus, with pretty reddish purple flowers of a bright and effective hue of colour. Nemophila maculata marginata is a large form of N. maculata, but with the purple spot broadened out into a distinct broad margin of this colour. This is very attractive when true to the new character, and if it can be fixed will be a valuable acquisition. N. discoidalis rosea has the dark ground changed to bright rose, and being of a compact growth and free blooming it is very attractive. N. discoidalis fol. variegata has a silvery variegation in the foliage, in which respect it is a very good companion to the golden variegated N. maculata, and both are very pretty in early spring, when the variegation is seen to the best advantage.

The foregoing list does not include all the selections being made, because many sports have only put in appearance here during the past year or two, but they include those that have approached to something like fixity of character, and in all probability will be grown when distributed. *R. D.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Oct. 17, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Oct.	In.	In.	°	°	°	°	°				In.
11	29.75	+0.06	57.8	45.0	12.8	49.6	− 1.7	40.9	72	WNW: W.	0.22
12	29.80	+0.11	57.8	43.9	13.9	50.0	− 1.0	40.5	70	WSW: WNW	0.00
13	29.68	−0.01	61.8	46.0	15.8	54.1	+ 3.4	48.6	81	S.W.: WNW	0.10
14	29.51	−0.18	69.0	53.0	16.0	60.0	+ 9.6	51.0	72	S by W S.W.	0.00
15	29.69	−0.01	58.7	45.2	13.5	51.0	+ 0.8	41.4	70	WSW	0.02
16	30.01	+0.31	50.8	38.0	12.8	44.5	− 5.5	38.4	79	WNW: W.: WSW	0.05
17	30.19	+0.49	52.0	33.1	18.9	41.7	− 8.1	35.7	80	W: WSW	0.00
Mean	29.80	+0.11	58.3	43.5	14.8	50.1	− 0.4	42.4	75	W.	sum 0.39

Oct. 11.—A very fine day. Cold and windy. Heavy showers of rain in early morning.
— 12.—A fine day. Cloudy at times. Little rain fell at night.
— 13.—A dull cloudy day. Strong wind. Fine and clear at night. Rain fell in morning.
— *14.—A very fine summer-like day. Warm. Gale at night.
— 15.—A fine bright day. Little rain fell in morning. Violent gale in early morning.
— 16.—Fine and cloudless till 10 A.M., then overcast till 6 P.M. Cloudless at night. Rain fell between 11 A.M. and 1 P.M. Cold.
— 17.—A fine bright day, partially cloudy. Very cold.

* The barometer reading at 3 P.M. was 29.59 inches. At midnight it was 29.33 inches; and at 9 A.M. on the morning of the 15th was 29.53 inches.

London: *Barometer.*—During the week ending Saturday, October 13, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.63 inches at the beginning of the week to 30.17 inches by the morning of the 8th, increased to 30.33 inches by noon on the 9th, decreased to 29.93 inches by the morning of the 11th, increased to 30.04 inches by the morning of the 12th, decreased to 29.87 inches by the morning of the 13th, and was 29.88 inches at the end of the week. The mean reading for the week at sea level was 30.12 inches, being 0.14 inch below that of the preceding week, and 0.23 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 61¾° on the 13th to 53½° on the 7th; the mean value for the week was 56½°. The lowest temperatures of the air observed by night ranged from 36½° on the 7th to 46° on the 13th; the mean for the week was 42°. The mean daily range of temperature in the week was 14½°, the greatest range in the day being 17¼° both on the 7th and 10th, and the least 11¼°, on the 8th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—7th, 44°, — 8°.6; 8th, 49°.5, — 2°.7; 9th, 46°.9, — 5°; 10th, 45°.2, — 6°.4; 11th, 49°.6, — 1°.7; 12th, 50°, — 1°; 13th, 54°.1, + 3°.4. The mean temperature of the air for the week was 48°.5, being 3°.1 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 108° on the 11th, 103¾° on the 9th, and 104¼° on the 13th; on the 7th the reading did not rise above 71°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 28¾° on the 7th and 29¼° on the 10th. The mean of the seven low readings was 35½°.

Wind.—The direction of the wind was N., W., and S.W., and its strength brisk. The weather during the week was fine and cold, but generally cloudy. Fog prevailed on the 7th, and a solar halo was seen on the 12th.

Rain fell on three days during the week, the amount collected was 0.35 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 65° at Sheffield, 64½° at Eccles, and 63¼° at Cambridge; the highest temperature of the air at Wolverhampton was 56½°, and at Bradford 58½; the mean value from all stations was 61°. The lowest temperatures of the air observed by night were 31¾° at Wolverhampton, 32° at Nottingham, and 33° at both Bristol and Eccles; the lowest temperature of the air at Bradford was 41½°, and at Leeds, 41°; the general mean from all stations was 36¾°. The range of temperature was the greatest at Eccles, 31½°, and the least at Bradford, 17¼°; the mean range from all stations was 24¼°.

The mean of the seven high day temperatures was the highest at Truro, 60°, and Portsmouth, 58½°, and the lowest at Wolverhampton and Nottingham, both 53½°; the mean value from all stations was 56¼°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 37¾°, and Bristol and Eccles, both 39°; and the highest at Portsmouth and Sunderland, both 44¾°; the general mean from all stations was 42¼°. The mean daily range of temperature in the week was the least at Norwich and Bradford, both 10¼°, and the greatest at Eccles, 18½°; the mean daily range from all stations was 14¼°.

The mean temperature of the air for the week from all stations was 48¼°, being 7½° lower than the value for the corresponding week in 1876. The highest was 51° at Truro, and 50½° at Portsmouth, and the lowest 44¾°, at Wolverhampton.

The amounts of rain measured during the week at the several stations varied from one inch nearly at Eccles, and three-quarters of an inch at Sheffield, to one-tenth of an inch at Brighton, Plymouth, and Bristol; the average fall over the country was four-tenths of an inch.

The weather during the week was fine, although dull and gloomy at times. Lightning was seen at Cambridge on the 10th.

Scotland: *Temperature.*—The highest temperatures of the air observed by day varied from 67° at Greenock to 58½° at Aberdeen; the mean value from all stations was 60½°. The lowest temperatures of the air observed by night ranged from 33° at Perth to 36° at both Glasgow and Greenock; the mean value from all stations was 35°. The mean range of temperature in the week from all stations was 25¾°.

The mean temperature of the air for the week from all stations was 48°, being 4½° lower than the value for the corresponding week in 1876. The highest was 49½°, at Greenock, and the lowest 47°, at Edinburgh.

Rain.—The amounts of rain measured during the week varied from 3 inches at Greenock to six-tenths of an inch at Edinburgh, Dundee, Aberdeen, Leith, and Perth; the average fall over the country was 1 inch.

Dublin.—The highest temperature of the air was 66¾°, the lowest 37°, the range 29¾°, the mean 51¾°, and the fall of rain ¼ inch

JAMES GLAISHER.

Law Notes.

Liability of Shipowners.—At the City of London Court a few days since the case of *Suter* v. *Watkins* was heard, in which the plaintiff, an importer of Potatos in the City, sued the defendant, the owner of the ship *Lightning*, to recover the sum of £10 13s. 1*d.* for the non-delivery of thirty-eight sacks of Potatos from the defendant's ship in the London Docks. From the plaintiff's statement it appeared that he had consigned to him from abroad 3860 bags of Potatos, and that when they were tallied thirty-eight bags were found wanting, for the value of which the present action was brought.—George Wynn, a lighterman, said he found thirty-eight bags short, and complained both to the mate of the ship, as well as to the stevedore, of the deficiency, and refused to sign for the full delivery of the sacks. The plaintiff's foreman said he checked the sacks on their delivery at his wharf, and found the number sued for deficient.

At this stage of the case the defendant's solicitor urged that his client's contract was completed as soon as the sacks were delivered into the barge alongside.

The learned Judge said he did not think so. They might have been stolen in the river. In the days of "good Queen Bess" river robberies were punishable by death; he was glad it was not the case now.

This being the plaintiff's case, John Cogney, the defendant's stevedore, said he knew the mark of the Potatos, and they tallied with the ship's manifest.

The Judge recalled the first witness, who said he only tallied 1300 sacks, but the plaintiff's foreman checked the rest.

The learned Judge said that as the mate of a ship and the ship's stevedore were the *bonâ fide* agents, with the captain, of the owner of the ship, the owner is responsible for their actions. In the present action he considered that the plaintiff had proved his case, and therefore judgment would be in his favour.

The owner of the ship was about to address the Court, when Mr. Commissioner Kerr told him to stand down, as judgment had been given against him. Judgment was accordingly entered for the plaintiff, with the costs of solicitor and two witnesses.

Variorum.

Fir Trees in Braemar.—In the beginning of this century Dr. Skene Keith tells us there were thousands of Fir trees in Braemar, some of which were nearly 6 feet in diameter, "superior in point of quality to any wood of that denomination that was ever imported into any place in Great Britain." Dr. Macgillivray in his *Natural History of Braemar*, throws doubt on this statement, but Dr. Lankester points out that between 1811 and 1850 the finest part of the Braemar Pines were sold and cut down. Mr. J. B. Webster states that on Locknagar he found the remains of old Fir trees at an elevation of 2500 feet above the sea level. From the appearance of the roots and trunks he supposed them to have averaged from 6 to 12 inches in diameter above the surface of the ground. He also found the remains of an Oak tree at an elevation of 1000 feet above the sea level. The average diameter of the trunk was 24 inches (*Transactions of the Highland and Agricultural Society*, 1859-61, p. 285). The lower division of Mar, between the Dee and Don, from the coast about 15 miles backward, was, according to Dr. Skene Keith, almost a continued forest, distinguished by the names of the Forest of Drum, the Forest of Kintore, and the Forest of Stocket. Mr. Cosmo Innes, while doubting whether in old historical Scotland—Scotland of the fourteenth to the beginning of the eighteenth century—there was more wood than at present, states that we have now, as we have always had, in the glens of Mar and elsewhere, a very interesting, and, as he believes, aboriginal Pine forest of Pinus sylvestris (Scotch Fir), no matter whether living to its natural term or meeting with a violent death, still reproducing itself if not impeded, and indeed surmounting many impediments, and stretching up, not, as vainly imagined, to the tops of the mountains, but as high up the glen as wood can ever have grown—as high as soil and climate will allow. *Aberdeen Paper.*

The Best Cropping Hardy Fruit Trees.—The general failure of the fuit crops this year will doubtless make all those who intend to plant young trees try to find out the varieties that have borne the best crops in their different localities. To begin with Apples, the best-bearing varieties here have been, amongst the early ripening, the Irish Peach, Early Harvest, and Early Strawberry; of the mid-season sorts, Lord Suffield, Duchess of Oldenburg, Cox's Pomona, Small's Admirable, King of the Pippins, and Cox's Orange Pippin; and of the late or winter-keeping sorts, New Hawthornden, Tower of Glammis, Blenheim Pippin, Lord Burghley, Dumelow's Seedling, and Sturmer Pippin have cropped the best. The early varieties of Pears that have had half a crop on them have been Beurré Giffard, Clapp's Favourite (an American Pear of good flavour), Beurré d'Amanlis, and Williams' Bon Chrétien; of the mid-season Pears, Louise Bonne of Jersey, Fondante d'Antomne, Doyenné du Comice, Thompson's and Comte de Lamy; and of the latest Knight's Monarch, Ne Plus Meuris, Beurré Easter, and Hacon's Incomparable. All kinds of Plums have been a complete failure, that great bearer in most years, the Victoria, having only very thin crops even in the most sheltered situations. Of Cherries, although I never saw the bloom more abundant, only the May Duke and Morellos on the walls produced crops. There is not the least doubt but that by the selection of free-bearing hardy fruit-trees in planting new orchards and waste grounds, the production of fruit in this country might be doubled, and a check put to the importation of so much hardy fruit from abroad to our markets. Of course, in unfavourable seasons like the present the foreigners,

from their better climate, would always have the advantage of our growers, and the higher prices given them for fruit would compensate them for the carriage; but in plentiful fruit years here this will not be the case. If new orchards planted with the free-bearing sorts of Apples, Pears, and Plums were attached to farms that had only old, unproductive ones, and all waste grounds and even hedge-rows were planted in places out of the reach of the million what quantities of fruit might be grown, and then the markets might be supplied at a cheap rate. The best-cropped small orchard I have seen this year was where there had been a quarry, and the *débris* of the magnesian limestone surface had been placed in it to fill it up. The tenant, an industrious man, had barrowed and carted all the road-scrapings within his reach to plant the trees in, and they had seldom missed bearing fine fruit. Of small hardy bush-fruit, such as Gooseberries, Currants, and Raspberries, there might be greater quantities grown in odd corners, in gardens and orchards, and in waste places. That delicious and wholesome fruit, the Strawberry, seems to be increasing in its more extended cultivation, and every large town and city will yet come to have its strawberry farms or gardens. *William Tillery, Welbeck, in "Florist and Pomologist."*

A Venerable Wild Cherry Tree. — The *Irish Farmers' Gazette* remarks in its last issue that visitors to Old Conna Hill, the charmingly situated residence of Phineas Riall, Esq., D.L., could not fail to be impressed with the huge size and proportions of a venerable wild Cherry Tree which stands in isolated grandeur on an elevated plateau of greensward immediately in front of the house. It would be hazardous to guess even as to the age of this grand, old ancestral tree; but, at all events, a long page has been furnished for the world's history since the sapling Cherry first raised its head sufficiently to look down on its beautiful surroundings. Full of foliage and, apparently, of vigour, it looked in the early part of the season—when calling at Old Conna—as if it would continue, for long years to come, to be an object of interest. It was with regret, therefore, that we found on occasion of a recent visit to Old Conna that one of the huge limbs had suddenly given way, owing to decay at the centre, where the water found a lodgment and a way in. The loss of this great arm has taken considerably from the size and spread of the tree, as well as marred its symmetry. Nevertheless, we hope it will long remain as one of the most prominent of the many objects of interest to the arboriculturist to be found at Old Conna, and the most remarkable example we know of the size to which the Cherry will grow to. Fearing, however, that the venerable patriarch may succumb, or his removal be necessitated, through fear of accident from the sudden crash of another great limb, we have thought it well to put upon record the dimensions of the trunk—the height at top and spread of branches we cannot state exactly. At 1 foot from the ground the circumference of the trunk is 16 feet 8 inches; at the ground surface considerably more, owing to large irregular expansions and excrescences. At 5 feet from the ground it branches out, and here the girth is 19 feet! Will any of our readers kindly say if they know of any other tree of its kind that exceeds these measurements? Dr. Moore—who has often admired its huge proportions and picturesque form, and who, with the writer, lamented over the loss of limb and the insidious symptoms of decay—stated that in all his wanderings in these and other lands he never met any of its kind at all coming up to the proportions of Mr. Riall's picturesque and patriarchal Cherry tree.

Humea elegans.—A most graceful and elegant biennial is the Humea elegans, not so much grown as it deserves to be. It is, moreover, of very easy culture. The seed should be sown in May, and put into a gentle hotbed. The seed should be very lightly covered, and if a piece of glass be put over the pot, it will keep the soil moist, without too much watering, until the seeds germinate. As soon as the plants are sufficiently large to handle, they should be potted off into small pots, and put back into a gentle heat. When the plants begin to fill the pots with roots, they should be shifted into 48-sized pots, using a compost of loam, peat, and sand. The plants when potted should again be put back into a gentle heat. With attention they will now begin to grow rapidly, and will soon require another shift, when a little rotten dung should be mixed with the compost, and less peat used. The plants, when shifted, may now be placed in a light, airy part of the greenhouse, near the glass, and should be well attended to in regard to watering, being also occasionally syringed in the afternoon. About the first or second week in August the plants should have their final shift for the season. If they have done well, they should now have 8-inch pots, and more rotten dung and less peat should be mixed with the compost. Towards the middle of October the plants should (if properly handled) be from 18 inches to 24 inches high, and every leaf should be perfect. During the autumn and winter months they should occupy a warm and light part of the greenhouse. They may, of course, be wintered anywhere, if frost be kept out, but they will do best in a light and warm part of the greenhouse, as recommended above. During the autumn and winter months no more water should be given than is absolutely necessary to keep them from suffering for want of it. Towards the end of February they should be put into 10-inch or 12-inch pots, using a compost of half loam and half dung, with a little sand. As the days lengthen, and heat increases, the plants will begin to grow freely. When first shifted they will not require much water until they begin to fill the pots with fresh roots, when water should be liberally supplied to them. Towards the end of May they will be beautiful objects, and may be plunged in the most suitable places in the flower garden. They should not be planted in very exposed places, though they will stand a fair share of wind, and, being securely tied to neat stakes, they will be very ornamental till the end of the summer season. *M. Saul, Stourton, in "Florist and Pomologist."*

Enquiries.

He that questioneth much shall learn much.—Bacon.

211. Galvanised Iron Wire.—Has galvanised iron wire an injurious effect on vegetation? I have some Roses and some Raspberries trained to galvanised wire: in both cases the shoots appear to me to suffer when tied to it. *N. E. L. L.* [We have not observed the injurious effect complained of. What do our correspondents say? Eds.]

212. Galvanised Corrugated Iron.—Can any of your readers give me any practical information as to the utility and cheapness of galvanised corrugated iron for the roofing of cottages? What I want to know is whether it will compare favourably with slates. The former, of course, will take much less material for rafters, &c. *H. Maxwell, Selborne.*

Answers to Correspondents.

Address Wanted. Can any one give us the present address of the manufacturers of Brooks' Liquid Carbolic Soap—the Clydesdale Co., formerly of the Imperial Works, Three Mills Lane, Bromley-by-Bow, E.

Burning Clay. A correspondent lately asked a question as to the cost of burning clay, and we may state as a result of our inquiries that in the neighbourhood of London the cost is 3s. a yard.

Excrescence on Beech Leaves. *H. M.* The excrescence is produced by Cecidomyia piligera. *A. M.*

Fungus: *F. Kidd.* Fungus of any kind is generally regarded with suspicion when it gets near the roots of anything. You had better put your Vine roots on the safe side by removing the whole, or as much as possible of it, before it spreads to any great extent.

Gymnogramma: *J. Hudson.* It is probably a symmetrical sport from G. pulchella; the tasselled apices of the frond and of the pinna are very ornamental. It may be called G. pulchella cristata, and is well worth perpetuating if it will keep constant, as it probably will do.

Insects: *E. H.* Steropus madidus, a carnivorous hunting beetle, consequently more a friend than a foe to the gardener. *A. M.—Camjee.* The moths from your cellar are not clothes moths, which are considerably smaller; but your insects are too much rubbed to be determined. *I. O. W.—R. F.* The lice from the old wood of Willows (which do not touch the young shoots or leaves) are a large species of aphides (A. salicis). They are not at all common. *I. O. W.*

Lily of the Valley: *T. E.* In forcing Lily of the Valley successfully the first essential is to procure strong roots that have the flower-buds fully developed, such as are now imported from Holland and Germany. This plant, as too often grown in England in out-of-the-way corners, shaded by the branches of trees, and the soil exhausted by their roots, is not in a condition to force well; not but that roots for forcing can be well cultivated in this country if proper attention is paid to them. If required early, say in January, the crowns should be potted from a dozen to a score together in 6-inch pots, sufficiently drained, in ordinary soil. This may be done next month, and the pots plunged in ashes and covered overhead with the same material, as usually practised with Hyacinths and other bulbs. Three weeks or a month before they are wanted they ought to be plunged in a bottom-heat of 75° or 80°, and the light kept from them for a fortnight, until they have pushed up an inch or two, after which they should be moved to a house near the glass, gradually, not all at once, subjecting them to the light, with a temperature of 65° in the night and proportionately higher by day. If there is not convenience for submitting them to the above temperature they will do equally as well cooler, of course requiring more time.

Names of Fruits: *G. W.* Pear: Beurré Rance. Apples: 1, Minshull Crab; 3, Nonsuch; 4, Cellini; 5, Mère de Ménage; 6, Court of Wick; 9, Royal Russett; 10, Royal Pearmain; 11, 17, Dumelow's Seedling; 13, Hollandbury; 16, Fearn's Pippin; 18, Cox's Orange Pippin; the others not recognised.—*E. B. C.* 1, Margil (?), 2, Court of Wick; 4, Shepherd's Newington; 5, Dutch Codlin; 7, Hawthornden; 8, Downton Pippin; 9, Royal Russett; 10, King of the Pippins; 11, not recognised, but not Norfolk Beaufin; the others not known.—*T. N. K.* 1, Northern Greening; 2, Rymer; 3, Braddick's Nonpareil; 4, not known; 5, New Hawthornden (?); 6, Hollandbury.—*John Charlton.* Your Apple is not known.

Names of Plants: *W. C.* We cannot spare time to hunt up the names of plants of which solitary leaves only are sent to us.—*B. B., Queenstown.* 1 and 2 seem to belong to Araliaceæ, but they are not determinable from leaves only; 3, Spiræa callosa.—*J. M. W.* Aralia spinosa, a hardy deciduous plant from Virginia.—*A. W.* The plant received from the Sandwich Islands is Asclepias curassavica.—*A. T.* Melilotus alba.—*R. D.* Euonymus latifolius.—*P. M., St. Leonards.* Salix caprea.—*P. T. N.* Abelia serrata.—*E. B. C.* 1 and 2, Anthuriums, not determinable; 3, a species of Higgiosia; 4, Tetranema mexicanum; 5, Lamprococcus fulgens; 6, Gesnera or Episcia, we cannot say which without flowers; 7, Beloperone oblongata (?) Could you oblige us with a good specimen of the latter for the herbarium?—*W. B.* 1, perhaps an Echeveria, but not determinable without flowers; 2, Selaginella Martensii; 3, Peperomia arifolia; 4, may possibly be a Boussingaultia, but indeterminable in the absence of flowers; 5, Linaria spurea.—*H. M. K.* Odontoglossum Rossii.—*T. B. W.* 1, Æschynanthus grandiflorus; 2, Diplacus (Mimulus) glutinosus; 3, Leycesteria formosa.

Pear Leaves: *H. Barnard.* It is the well known fungus, Rostelia cancellata. You must burn the leaves, but we fear it is too late this year, as the spores have probably fallen to the ground. *M. J. B.*

Scabby Potatos: *Inquirer.* The scab on the Potato is only skin-deep, and is now generally ascribed to the action of the earthworms, which in dry weather excoriate the skins of the tubers to obtain moisture. Your best remedy would probably be found in the application to your Potatos, and early in the spring, of a dressing of agricultural salt sown broadcast over the surface and dug in. Also use when planting the sets a light dressing of soot. Both of these ingredients are excellent fertilisers, yet obnoxious to the worms.

Various: *Picciola.* The name of the creeper is Ampelopsis tricuspidata, generally called in gardens A. Veitchii. We do not know which species of Aloe you allude to, but as a rule none of them flower every year under cultivation. The Pampas-grass should not be cut down level with the ground when the bloom is over, nor should it be cut at any time, except, it may be, occasionally to remove the dead leaves from the bottom.

Worcester Pearmain Apple: *J. Scott.* We find, on inquiry, that this Apple is not the same as the old Scarlet Pearmain. The Worcester Pearmain is ripe in August, two or three months before the Scarlet Pearmain, and the eye is also different, being small, with short closed segments set in a shallow and uneven basin, whereas in the Scarlet Pearmain it is open, with long reflexed segments.

Communications Received.—E. J.—Ebor.—E. H. B.—F. W. P.—G. C. G.—B. P.—H. W. B.—A. McL.—J. F.—W. J. E.—W. A. E.—G. T.—C. W. S.—J. C. & Sons.—W. C.—W. H. B.—W. A. P.—H. E.—D. T. F.—J. G. B.—J. A. C. (the book in question is not trustworthy).—G. F.—J. W.—C. D. S. (next week).

Markets.

COVENT GARDEN, October 18.

Our market is completely overdone with Apples just now, large quantities remaining on hand, prices for common sorts being exceptionally low. Grapes are heavy, but Pines meet with a ready sale. Kent Cobs are easily cleared at firmer rates. *James Webber, Wholesale Apple Market.*

Cut Flowers.

	s. d.	s. d.		s. d.	s. d.
Asters, 12 bun.	.. 6	0–12 0	Narcissus, (Paper White), per doz.	.. 3	0– 6 0
Bouvardias, per bun.	1 0–	4 0	Pelargoniums, 12 spr.	1 0–	3 0
Calceolaria, p bun.	0 6–	1 0	— zonal, 12 sprays	0 6–	1 6
Camellia blms., doz.	5 0–	12 0	Primula, double, per bunch	.. .. 1 0–	2 0
Chrysanthem. 12 bun.	4 0–	9 0	Pyrethrum	.. .. 0 6–	1 0
Cornflower, 12 bun.	6 0–	9 0	Roses (outdr.), 12 bun.	6 0–	12 0
Dahlias, 12 bun.	.. 6 0–	12 0	— (indoor), per doz.	1 6–	12 0
Eschscholtzia, dozen bunches	.. .. 2 0–	6 0	Stephanotis, 12 spr.	6 0–	12 0
Eucharis, per doz.	.. 4 0–	12 0	Stocks, 12 bunches	.. 4 0–	8 0
Gardenia, per doz.	.. 5 0–	12 0	Sunflower, 12 bun.	.. 2 0–	6 0
Heartsease, 12 bun.	1 6–	6 0	Sweet Peas, 12 bun.	6 0–	9 0
Heliotropes, 12 spr.	0 6–	1 0	Tropæolum, 12 bun.	1 0–	4 0
Hyacinths, Rom. doz.	2 6–	6 0	Violets, 12 bunches	1 0–	2 0
Jasmine, per bunch	1 0–	2 0			
Mignonette, 12 bun.	2 0–	9 0			

Plants in Pots.

	s. d.	s. d.		s. d.	s. d.
Begonias, per doz.	.. 6 0–	12 0	Ferns, in var., p. doz.	4 0–	18 0
Bouvardias, do.	..12 0–	24 0	Ficus elastica, each	2 6–	15 0
China Asters, dozen	6 0–	12 0	Fuchsias, per dozen	.. 6 0–	12 0
Chrysanth., per doz.	5 0–	12 0	Liliums in var., each	1 6–	6 0
Clematis	.. .. 6 0–	24 0	Mignonette, per doz.	6 0–	9 0
Coleus, per dozen	.. 3 0–	9 0	Myrtles, do.	.. .. 3 0–	9 0
Cyclamen, per doz.	..18 0–	24 0	Palms in variety, each	3 6–	21 0
Cyperus, do.	.. .. 4 0–	12 0	Pelargon., scarlet, p. dozen	.. .. 2 0–	9 0
Dracæna terminalis	30 0–	60 0	Solanums	.. .. 9 0–	24 0
— viridis, per doz.	18 0–	24 0	Valotta purpur., doz.	9 0–	18 0
Euonymus, in var., per doz.	.. .. 6 0–	24 0			

Fruit.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0–	5 0	Peaches, per doz.	.. 6 0–	15 0
Grapes, per lb.	.. 0 9–	6 0	Pears, per doz.	.. 1 0–	3 0
Lemons, per 100	.. 8 0–	12 0	Pine-apples, per lb.	.. 4 0–	8 0
Melons, each	.. 2 0–	5 0	Figs, green, doz.	.. 1 0–	3 0
Nuts, Cobs, per lb.	.. 0 4–	0 6	Walnuts, per bushel	5 0–	8 0
Oranges, per 100	..12 0–	20 0			

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Horse Radish, p. bun.	4 0– ..
Aubergines, p. doz.	2 0– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per bushel	10 0– ..	Lettuces, per score	2 0– ..
— Scarlet Runners, per bushel	6 0– ..	Mint, green, bunch	0 6– ..
Beet, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Brussels Sprouts, p. bush.	8 0– ..	Onions, 12 bunches	3 6– ..
Cabbages, per doz.	1 0– 2 0	— young, per bun.	0 6– ..
Carrots, per bunch	0 4– 0 6	Parsley, per bunch	0 9– ..
Cauliflowers, per doz.	1 6– 4 0	Peas, green, p. bush	3 0– 6 0
Celery, per bundle	1 6– 2 0	— shelled, per qt.	1 6– ..
Chilis, per 100	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	2 0– 3 0	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Shallots, per lb.	0 6– ..
Herbs, per bunch	0 2– 0 4	Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6
		Vegetable Marrows, doz.	1 6– 2 0

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

SEEDS.

LONDON: *October* 17.—The seed market has this week been rather thinly attended, and the business doing has been limited in extent. The article now most in request is Trefoil, for which there is a good speculative inqury at an advance of 1s. to 2s. per cwt. In Red Clover there is no movement at present, either up or down; in despair of obtaining orders, the French, and especially the Americans, have during the last few days offered less freely to this country. On account of its cheapness, foreign Italian meets with rather more attention. Rape seed is fairly steady at the recent fall, but in white Mustard the downward tendency still continues. New brown Mustard has now begun to offer in quantity. Feeding Linseed is firmer. For white Millet, which is now largely used as a substitute for Canary seed, there is a good sale at the moderate values now current. Blue Peas and Haricot Beans are in good request at last Monday's rates. For winter Vetches the trade keeps very slow, and quotations are again lower; in fact, good samples are now obtainable on Mark Lane at unusually low prices. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday English Wheat was held for better prices at the opening, but as the day advanced it was found advisable to submit to the level of the previous Monday's quotations. Foreign Wheat was steady, without much demand. Barley was in limited request, and for grinding parcels prices were hardly as good. Malting Barley remained firm. Malt was quiet, and as regards the new produce, of which there was a fair supply, prices were somewhat unsettled; 76s. per quarter was about the top quotation. Oats were a little cheaper, while in the value of Maize there was no particular alteration. Beans and Peas were taken off at firmer prices. Flour was scarcely so firm.—Trade on Wednesday revealed no particular feature. Holders mostly continued firm, but buyers appeared few and far between, and the result was that, in the majority of sales effected, any difference in prices as compared with the rates of Monday was disadvantageous to the factor.—Average prices of corn for the week ending October 13:—Wheat, 52s. 2d.; Barley, 43s. 6d.; Oats, 23s. 9d. For the corresponding period last year:—Wheat, 46s. 2d.; Barley, 39s. 5d.; Oats, 25s. 10d.

CATTLE.

At the Metropolitan Market on Monday the demand for beasts was fair, and prices recovered from last Thursday's depression. The supply of sheep was small, yet enough for the demand—trade being exceedingly dull for any but choicest descriptions. Some choice sizeable qualities reached 7s., but our quotations more truly represent the average. There were very few calves on offer, and choice ones were in demand. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 6d. to 6s.; calves, 4s. 8d. to 6s.; sheep, 5s. 4d. to 5s. 8d., and 6s. 4d. to 6s. 10d.; pigs, 4s. to 5s.—On Thursday trade, though very quiet, was tolerably steady, owing to the cold weather. The supplies, both of beasts and sheep, were about the average for a Thursday. Fine breeds were firm, with a moderate demand, but other kinds sold slowly. Calves were quiet but steady.

HAY.

The quotations from the Cumberland Market are as follows:—Superfine meadow hay, 105s. to 115s.; inferior, 84s. to 95s.; superior clover, 130s. to 140s.; inferior, 90s. to 112s.; and straw, 54s. to 60s. per load.—At Whitechapel, on Thursday, a moderate supply or hay and straw was on sale. There was a good trade, and prices were well supported. Prime old Clover, 100s. to 142s.; inferior, 85s. to 95s.; good new, 100s. to 135s.; prime meadow hay, 90s. to 113s.; inferior, 70s. to 85s.; and straw, 44s. to 55s. per load.

POTATOS.

We learn from the Borough and Spitalfields markets' reports that good Potatos, of which there are only moderate supplies, continue in request at full prices. Inferior Potatos are a heavy sale. Kent Regents, 120s. to 140s. per ton; Essex ditto, 100s. to 130s.; rocks, 90s. to 100s.; kidneys, 110s. to 130s.; Victorias, 120s. to 140s.; American Rose 100s. to 120s.—The imports into London continue to increase in bulk. Last week 45,134 bags were received from Hamburg, 8171 Antwerp, 7622 Bremen, 2450 bags 281 sacks Boulogne, 3862 bags Ghent, 2087 Dunkirk, 2516 Harlingen, 712 Stettin, 660 Rotterdam, and 140 Brussels.

B G L Oilcake.

ARREST YOUR PURCHASES of all other Cake until you have read the "Book of Testimonials" from users of this cake. Sent post-free by the Agent for the County, or by the Makers.
Mills, Shad Thames, London, S.E.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
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RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60s. to 100s. per 100; superior close-wove, 40s., 50s. and 55s. per 100; Packing Mats at 20s., 30s., and 35s. per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

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And a large Assortment of the finest Ornamental Plants of other descriptions.

Particulars will be given in future Advertisements, meanwhile Catalogues are being prepared, and the Stock to be Sold may be seen at

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P.S.—The Annual CATALOGUES of FOREST TREES, ORNAMENTAL TREES and SHRUBS will be published at the usual time, and Special Offers to Large Buyers made upon application.

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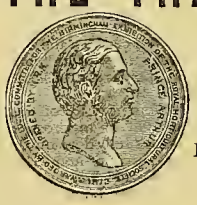

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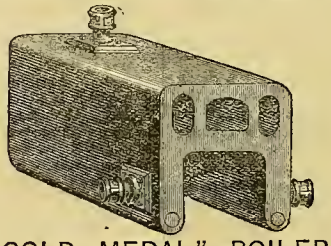

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Earliest orders will be supplied from first arrival.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12s. 6d.; 21-oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36s.; 3ds, 46s. per 300 feet;—21-oz. 4ths, 36s.; 3ds., 46s. per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, Londoo, N.

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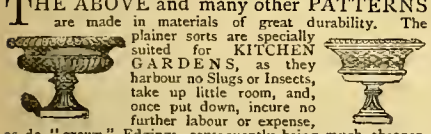

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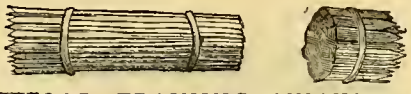

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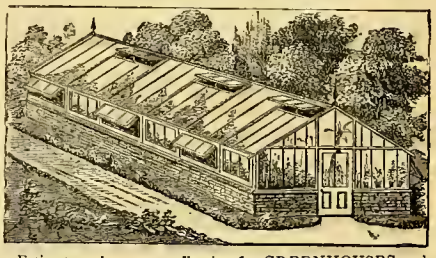

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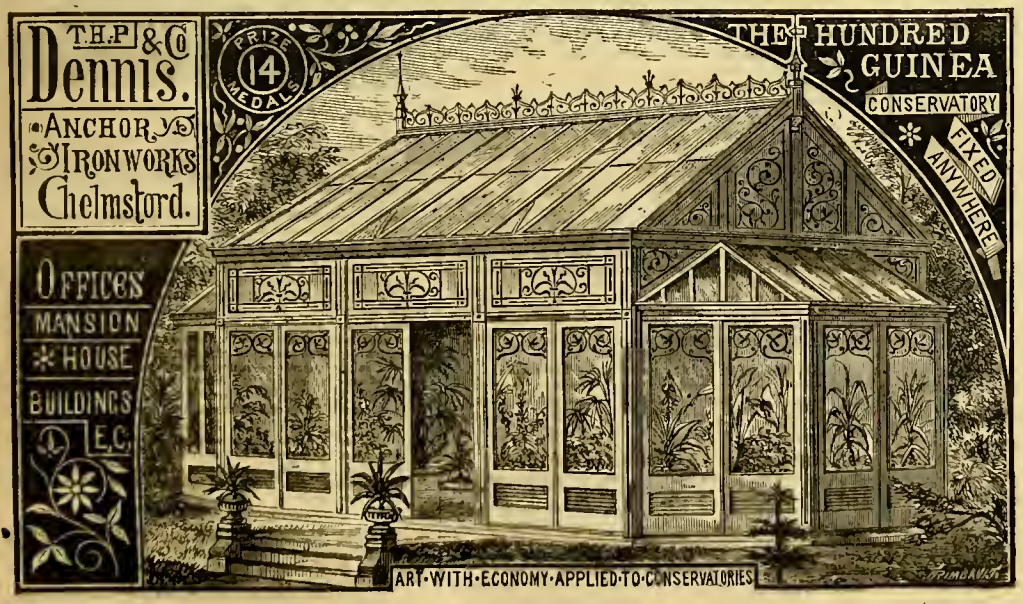
LIGHTS ONLY.		
3 feet by 4 feet Light, not painted nor glazed	3	6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10	0
6 feet by 4 feet, not painted nor glazed	6	0
Ditto glazed and painted four coats	16	6



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And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

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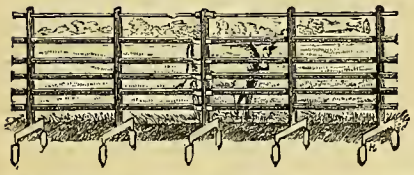
POWERFUL WINDING STRAINING PILLARS,
RIGID INTERMEDIATE IRON POSTS,
STRONG and DURABLE WIRE CABLE STRANDS,

Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,

IN WROUGHT AND CAST IRON,

Designed for the Mansion, Villa, or Farm,

WICKET AND GARDEN GATES,
In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards,

FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c

☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.*

IMPROVED LIGHTNING CONDUCTORS,
With fittings complete, simple in construction, and easily erected by a careful mechanic.

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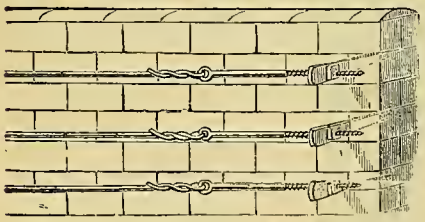
THOMAS'S
FITTINGS for WIRING WALLS.

NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall:—	20 yds.	40 yds.	60 yds.	80 yds.	100 yds
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No. 14 Gauge Wire	1 0	1 7	2 1	2 7	3 1
No. 13 ,, ,,	1 3	1 10	2 5	3 0	3 7

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.

Five per cent. discount allowed for prompt cash on Orders amounting to 20s. and upwards.

Special quotations for larger quantities.

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CONTINUOUS BAR FENCING,

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STEAM PLOUGHING MACHINERY,
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For Prices, Description, and Reports of Working, apply to the Manufacturers,

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AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

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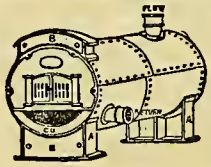
TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Copy of a Testimonial.

"Royal Exotic Nursery, King's Road, Chelsea, S.W.—Aug. 8, 1877.

"Messrs. SILVESTER.

"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

"For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hot-houses during the cold winter months as we do now.

"We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.

"We are, Gentlemen, yours faithfully,
"JAMES VEITCH AND SONS."

For Illustrations, with full particulars, apply to the Sole Makers.

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

WAGSTAFF'S

Patent Saddle and Cylindrical

BOILERS.

Efficient and Economical.

Awarded 6 Silver Medals.

Messrs. E. G. HENDERSON & SONS' Spacious Nurseries, Pine-apple Place, Maida Vale, are most satisfactorily Heated with two of these Boilers.

Plans and Estimates of Work in any part of the Kingdom gratis, and efficiency guaranteed. Price Lists, Prospectus, and Testimonials free on application.

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STOVES,

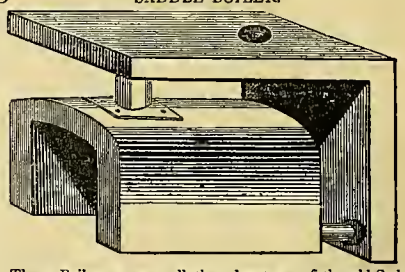
Terra-Cotta! Portable! For Coal!

ROBERTS'S PATENT.

Healthy Heat twenty-four hours or longer for about 1*d.*, without attention. For Bedrooms, Greenhouses, or almost any purpose. Prospectus and authenticated Testimonials sent. In use daily at Patentee's, THOMAS ROBERTS,

112, Victoria Street, Westminster, S.W.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

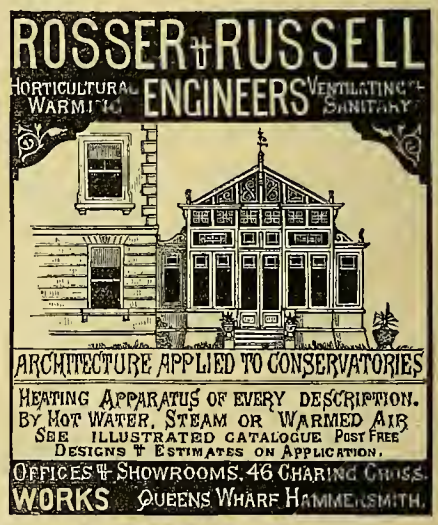
From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.



For Sale, a

STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to

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AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this, to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

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Can be obtained Wholesale of FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C.; and of CORRY AND SOPER, Shad Thames, London, S.E.

No one cultivating plants under glass should be without one.

NOTICE TO THE TRADE.

THE THAMES BANK IRON COMPANY,

UPPER GROUND STREET, LONDON, S.E.,

Having Bought the Entire Stock of

HOT-WATER BOILERS, PIPES, AND CONNECTIONS

OF

Messrs. ANDREW McLAREN & CO., LONDON,

(Who have relinquished this branch of their business),

WILL FOR A FEW WEEKS OFFER THESE GOODS AT

REDUCED PRICES.

HOT-WATER APPARATUS ERECTED COMPLETE, OR THE MATERIALS SUPPLIED AT WHOLESALE PRICES.

NOTICE TO THE TRADE.

ANDREW McLAREN & CO.,

IRONFOUNDERS,

174, UPPER THAMES STREET, LONDON, E.C., and ALBION IRONWORKS, ALLOA,

MANUFACTURERS OF

HOT-WATER PIPES, CONNECTIONS, &c.,

Execute Orders direct from their Ironworks, at greatly reduced Prices, and as quickly as from a London Stock.

HOT-WATER APPARATUS ERECTED COMPLETE, IN TOWN OR COUNTRY, ON THE MOST IMPROVED PRINCIPLE.

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☞ Their New Patent Underflued Boiler and every other kind of Boiler supplied.

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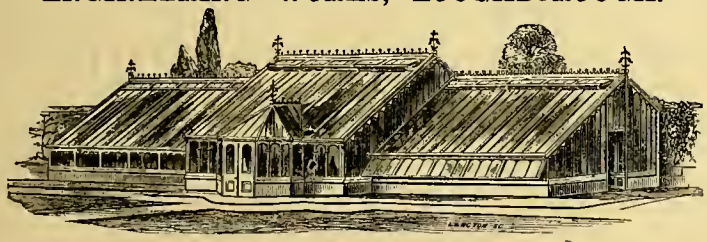
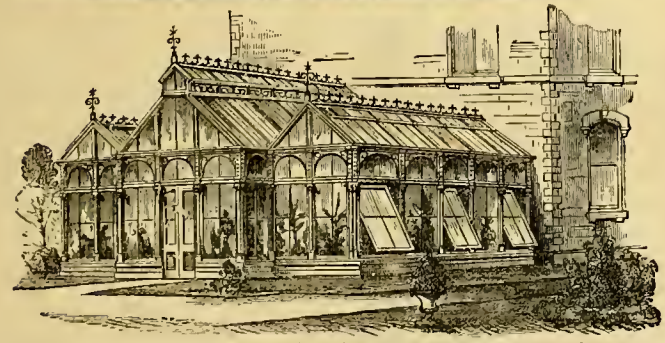
MIDLAND HORTICULTURAL BUILDING & HOT-WATER ENGINEERING WORKS, LOUGHBOROUGH.





Horticultural Buildings erected on Messenger & Co.'s Patent Method of Construction are very strong, *most durable, light, elegant, amply ventilated, perfect efficiency* for intended purpose is *guaranteed*, are economical *in cost and maintenance;* combine the peculiar advantages of Wooden and of Iron Houses, without their disadvantages.

MESSENGER AND CO., from their long experience, and having large Works exclusively devoted to the Construction and Heating of Horticultural Buildings, are in a position to execute with despatch, in the best manner, the Orders with which they are entrusted. Only thoroughly well seasoned timber used.

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Plans and Estimates forwarded on receipt of Particulars by Post. Ladies and Gentlemen waited upon.

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Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL RECEIVED MAY 3, 1877.

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Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

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9	,,	..	..	0	5	6	20 ,,	..	..	0	11	0
10	,,	..	..	0	6	0	21 ,,	..	..	0	11	6
11	,,	..	..	0	6	6	22 ,,	..	..	0	12	0
12	,,	..	..	0	7	0	23 ,,	..	..	0	12	6
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AUCUBA JAPONICA, average 1½ foot, 12s. 6d. per 100.
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" average 1½ foot, 10s. per 100.
WILLIAM ABRAHAM, Nurseryman, Limerick.

80,000 Ponticum Rhododendrons.

JOHN STANDISH AND CO. have an immense stock of PONTICUMS to offer, suitable for Cover Planting. Prices on application.
Royal Nurseries, Ascot, Berks.

SPECIMEN SHRUBS, several hundreds, 6 to 9 feet, comprising Araucarias, Thujopsis, Cupressus, Thuja aurea, &c., together with thousands suitable for pots. Must be Sold without reserve. No reasonable offer refused.
J. B. BUTTERFIELD, Nurseries, Baker Street, Enfield.

WHITE DOG'S-TOOTH VIOLETS. Price per 1000 on application.
PARKER AND BUSH, St. Michael's Hill Nursery, Bristol.

Cucumber Seed.—To the Trade.

E. COOLING can now offer choice Stocks of TELEGRAPH KING, TENDER and TRUE, FEARNOUGHT, LONG GUN, CARTER'S MODEL, &c. Prices on application.
Mileash Nurseries, Derby.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING

GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

Box Edging.

WANTED, 10,000 yards of good Dutch BOX EDGING. Sample and price to
R. AND G. NEAL, The Nurseries, Wandsworth Common, London, S.W.

WANTED, a quantity of good transplanted SYCAMORE, 2 to 3 feet. State quantity and price.
W. F., Nurseryman, 41, Wellington Street, Covent Garden, London, W.C.

WANTED, 2000 good 2-year ASPARAGUS PLANTS. Must be cheap.
WEBSTER, Chigwell, Essex.

Roses, Fruit Trees and Coniferæ.

CHARLES TURNER'S New CATALOGUE of the above is now ready, and can be had post-free on application.
The Royal Nurseries, Slough.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgworth, Herts.

Roses, Fruit Trees, &c.

WILLIAM FLETCHER'S CATALOGUE for the present season is now ready, and may be had on application. The stock is very large and most healthy.
The Ottershaw Nursery, Chertsey.

SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16s. per 100, £7 per 1000, or £60 per 10,000.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

CHRISTMAS ROSES, 20,000. HEPATICA CÆRULEA, 8,000.
May be had from
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPIGELIA MARYLANDICA.—Beautiful perennial, of gay appearance. Strong flowering plants, with many crowns, at 64s. per 100.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

PANDANUS UTILIS.—Extensive stock of this splendid ornamental plant, at 20s. per 100, 180s. per 1000. Extremely healthy, 6, 8 and 10 inches high and upwards.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.
N.B. English CATALOGUE post-free.

WONDERFUL (Smith's).—The best Geranium in cultivation, 3s. 6d. per dozen, 25s. per 100. Special prices to the Trade for larger quantities.
A lot of good Stock Plants of VESUVIUS, from the ground, 1s. 6d. per dozen, 8s. per 100.
RAPER AND CO., Seedsmen and Florists, Fern Nursery, Leamington.

Tree Carnations.

CHARLES TURNER can supply these in great variety, fine healthy plants, showing bloom, at 18s. to 30s. per dozen; also PINKS for immediate planting, 9s. and 12s. per dozen pairs; and extra strong forcing PINKS, 9s. and 12s. per dozen.
The Royal Nurseries, Slough.

CHOICE ALPINE AURICULA.—Same as spoken of by E. W. B. in his article on "Horticulture at Matlock" in last week's issue. 3s. per dozen.
P. DEUXBERRY, Lumsdale, Matlock.

Common Sainfoin and Giant Sainfoin.

MESSRS. LEVAVASSEUR AND SON, SEEDSMEN, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on Commission.

PRICKLY COMFREY.—An invaluable Perennial Forage Plant. 150 tons have been grown to the acre. October and November good months to plant. Special Prices on application.
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

VINES.—Magnificent Canes, splendidly ripened, short jointed, all leading kinds, for Fruiting or Planting. Cannot be surpassed. Warranted clean. Inspection invited. The Trade supplied. Priced LIST on application to
FRANCIS & ARTHUR DICKSON & SONS, The "Upton" Nurseries, Chester.

Vines for Fruiting and Planting.

JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

HAMPTON COURT BLACK HAMBURGH VINES.—Strong Fruiting Canes of this well-known Grape, 5s., 7s. 6d. and 10s. 6d. each; Planting Canes, 3s. 6d. Also a large stock of all the principal kinds at the above prices.
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

DRIED FLOWERS, GRASSES, and MOSS. Address
N. BOETTNER, Roemhild, Germany.

HYACINTHS in POTS.—Pots made expressly for Hyacinths can be supplied by
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List Free.

SALES BY AUCTION

Unreserved Sale of Choice Hyacinthe for Glasses, Pots, and Borders, TULIPS, CROCUS, POLYANTHUS, NARCISSUS, LILIES, GLADIOLI, and other BULBS, including a special Consignment from a well-known Grower, of several Remnants of certain kinds of HYACINTHS of fine quality, lotted largely, specially for the Trade.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, 950 Lots of the above, on MONDAY NEXT, at the Mart, Tokenhouse Yard, Bank, E.C.

On view the morning of Sale and Catalogues had.

Godalming, Surrey.

GREAT UNRESERVED SALE of first-class NURSERY STOCK, worthy the attention of the Trade and others largely engaged in Planting.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Milford Nurseries, near Godalming, Surrey, on MONDAY, October 29, and four following days, at 12 o'Clock to the minute each day, by order of Mr. Maurice Young, in order to clear for alterations, an unusually large quantity of well-grown NURSERY STOCK, comprising thousands of handsomely grown specimen Coniferæ and Evergreen Shrubs of all sizes, in fine condition for removal and transplanting; also 12,000 choice named Hybrid and other Rhododendrons, 1 to 6 feet; 5000 Retinosporas, 2500 Portugal Laurels, 3500 Variegated Hollies, 10,000 English Yews, 5500 Thujas, of sorts; 2000 Cedrus Deodara, 1000 Young's New Golden Chinese Junipers, 1000 Golden Yews, &c.; Ornamental and Fruit Trees, and others too numerous to mention.

Goods may be transmitted to any part of England, Scotland, or Wales without change of truck.

May be viewed prior to the Sale. Catalogues had on the Premises and of the Auctioneers.

City Auction Rooms, 38 and 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Rooms as above, on TUESDAY, October 30, at half-past 12 o'Clock precisely, a first-class Collection of DUTCH BULBS, a choice assortment of 400 Standard, Dwarf, and other ROSES, selected FRUIT TREES, choice hardy AMERICAN PLANTS, CONIFERÆ and Evergreen SHRUBS, &c.

May be viewed the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Moulsham Nurseries, Chelmsford.

CLEARANCE SALE of well-grown NURSERY STOCK, a portion of the land having been sold for building purposes.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Saltmarsh & Son to SELL by AUCTION, without reserve, on the Premises, on THURSDAY, November 1, at 11 for 12 o'Clock precisely, a large quantity of valuable NURSERY STOCK, consisting of a fine assortment of handsome specimen Coniferæ and Evergreens; also a considerable quantity of smaller stock; a fine collection of clean-grown Fruit Trees, likewise a quantity of Ornamental Trees, together with a choice assortment of Standard and Dwarf Roses.

The Stock may be valued at any time. Catalogues may be had on the Premises.

Edmonton, N.

SALE of 2000 GREEN and VARIEGATED HOLLIES, 1 to 10 feet, also a quantity of COMMON and PORTUGAL LAURELS, CEDRUS, THUJAS, AUCUBAS, CUPRESSUS, YEWS, and other SHRUBS, 1000 ORNAMENTAL and FOREST TREES, 3000 FRUIT TREES, a fine Collection, 1500 Standard, Half-standard, and Dwarf ROSES, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. C. Adams to SELL the above Stock by AUCTION, on the Premises, the Barrowfield Nursery, Lower Edmonton, N., on SATURDAY, November 3, at 12 for 1 o'Clock precisely.

On view the day prior and morning of Sale, and Catalogues had.

Leytonstone.

GREAT SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Fillebrook and American Nurseries, Leytonstone, Essex, adjoining the Railway Station, G. E. R., on TUESDAY, November 6, and two following days, at 12 o'Clock precisely each day, without reserve—a portion of the ground being required for other purposes—an immense quantity of NURSERY STOCK, consisting of Coniferæ and Evergreen Shrubs, ranging all sizes, Ornamental Forest and Fruit Trees, choice hardy American Plants, a rich assortment of Standard and Dwarf Roses, strong Vines in pots, &c.

Full particulars and Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Highgate, N.

CLEARANCE SALE of a fine assortment of EVERGREEN CONIFERÆ and DECIDUOUS SHRUBS, comprising several fine specimens and a quantity of Border SHRUBS and other useful stock; a fine assortment of AMERICAN PLANTS, STANDARD ORNAMENTAL TREES, selected FRUIT TREES, fine Standard and Dwarf ROSES.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Eagles, who is retiring from business, to SELL the above by AUCTION, without reserve, on the Premises, the Nursery, Southwood Lane, Highgate, close to Highgate Station, on FRIDAY, November 9, at 11 for 12 o'Clock precisely.

May now be viewed, and Catalogues had of the Auctioneers.

Woking.

CLEARANCE SALE of NURSERY STOCK, by order of the Executors of the late Mr. William Collyer.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, the Horsell Birch Nursery, Horsell, about 1 mile from the Woking Station, Surrey, on TUESDAY, November 13, and two following days, at 11 for 12 o'Clock precisely each day, a large quantity of well-grown NURSERY STOCK, comprising 40,000 Green Hollies, including many fine specimens; 18,000 English Yews, 18 inches to 5 feet, 1000 variegated; 5500 Portugal Laurels, 2 to 5 feet; 10,000 Common Laurel; 1000 Aucubas, Laurustinus, and numerous other Shrubs; 1500 Standard Roses; 100,000 Fruit Stocks, 800 Daphne indica, 1000 Horse Chestnuts: and large quantities of other useful stock in capital condition for removal.

N.B. This Sale is specially attractive to Contractors, Builders, the Trade, and to others engaged in making extensive plantations.

The Stock may be viewed any day prior to the Sale. Catalogues may be had on the Premises, of Mr. KNOWLES, and of the Auctioneers and Estate Agents, 38, Gracechurch Street, E.C.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during October, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Clapham Park, S.W.

IMPORTANT SALE of SPECIMEN STOVE and GREENHOUSE PLANTS.

MR. J. C. STEVENS has been favoured with instructions from S. Ralli, Esq., to SELL by AUCTION, on the Premises, Cleveland House, Clapham Park, S.W., on TUESDAY, October 30, at half-past 12 o'Clock precisely, the COLLECTION of EXHIBITION PLANTS, comprising Crotons, Nepenthes, Dracænas, Palms, Ixoras, Dipladenias, Allamandas, Heaths, Azaleas, &c., which have won such high honours at the chief Metropolitan Shows, and sold in consequence of Mr. G. Legg being about to terminate his engagement with Mr. Ralli; also the well-made EXHIBITION VAN. The beautiful Collection of SEEDLING CROTONS (15 in number), raised by Mr. Legge, will be included in this sale.

On view the day prior and morning of Sale, and Catalogues had of Mr. LEGG, on the Premises; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Plants and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, October 31, at half-past 12 o'Clock precisely, standard and dwarf ROSES, trained and pyramid FRUIT TREES, specimen HOLLIES and CONIFERS, and other plants just arrived from Holland. First-class double and single HYACINTHS for Pots, Glasses, and Borders; double and single TULIPS, CROCUSES, NARCISSUS, IRIS, LILIUMS, GLADIOLI, and other BULBS just arrived from Holland, in large and small lots to suit all buyers; RUSTIC GARDEN WORK, &c.

On view morning of Sale, and Catalogues had.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 1, at half-past 12 o'Clock precisely, Standard and Dwarf ROSES, Trained and Pyramid FRUIT TREES, Specimen HOLLIES and CONIFERS, and other Plants just arrived from Holland; first-class double and single HYACINTHS for Pots, Glasses, and Borders; double and single TULIPS, CROCUSES, NARCISSUS, IRIS, LILIUMS, GLADIOLI, and other Bulbs just arrived from Holland, in large and small Lots to suit all Buyers.

On view the morning of Sale, and Catalogues had.

Hare Hill Nursery, near Addleston, Surrey.

One mile from the Addleston Station, South-Western Railway.

POSITIVE CLEARANCE SALE of NURSERY STOCK.

MR. W. ABRAHAM is instructed by the Proprietor to SELL by AUCTION, without the least reserve, on the Premises as above, on MONDAY and TUESDAY, October 22 and 23, at 12 o'Clock each day punctually, the whole of the NURSERY STOCK on 5 acres of land, consisting of common and Portugal Laurel, Scotch and Austrian Fir, large quantities of English Yew, Green Holly, Poplars of sorts, Horse and Spanish Chestnuts, Limes, Norway Maples, Birch, Mountain Ash, Mussel, Pear, Crab, Cherry, and other Stocks, Fruit Trees, various; Cupressus Lawsoniana, fine Pampas Grass, Yucca gloriosa, Retinosporas, Aucuba japonica, Laurustinus, a quantity of Standard and Dwarf Roses, also Two strong Spring Carts, a Set of Harness, &c., all of which will be enumerated in Catalogues to be obtained on the Premises, or post-free of the Auctioneer, Goldworth Nurseries, Woking, Surrey.

N.B.—The Auctioneer begs to state that this is a *bonâ fide* Clearance Sale, and well worth the attention of the Trade and Gentlemen Planting.

Trucks can be loaded at the Addleston Station, and forwarded to any part of the country without change.

Caversham Place Park, near Reading.

Well-grown Bushy LAURELS, BERBERIS, BOX, &c.

MESSRS. J. OMER, COOPER AND SON will SELL by AUCTION, as above, on TUESDAY, October 30, to commence at 12 o'Clock precisely, a capital assortment of well-grown SHRUBS and TREES for immediate planting. Auction Offices, 162, Friar Street, Reading.

Beverley.

An Important Property, well known as the Norwood Nurseries, situate on the south side of Norwood, in the occupation of Mr. W. E. Dixon, the owner.

N. EASTON AND SON are instructed by the Proprietor, who is leaving Beverley, to SELL by AUCTION, at the "Holderness Hotel," Beverley, on THURSDAY, November 8, at 3 o'Clock P.M., and subject to conditions which may be inspected prior to the Sale, the valuable FREEHOLD PROPERTY known as the Norwood Nurseries, situate on the south side of Norwood, Beverley, in the immediate vicinity of the centre of the town, and consisting of a commodious Family Residence, containing spacious Drawing and Dining Rooms (the latter 24 feet by 16 feet), Library, two Kitchens, six Bed and two Dressing Rooms, two Attics, W.C., and the usual Domestic Offices; the extensive range of modern Buildings, consisting of Sale Shop, Warehouses, Offices, Stables, Coach House, Harness Room, Yan Shed, &c.; noble Conservatory, of recent erection, and fitted on the most approved principles, size, 50 feet by 40 feet; thirteen Greenhouses, about 1750 feet in length, containing about 12,500 superficial feet of Glass, the whole heated by about 3000 feet of 4-in. piping; four Potting Sheds, and the extensive and well laid out Nursery Grounds, the area of the whole being about 7260 square yards, with a frontage to Norwood of 87 feet or thereabouts.

The situation of the property is a most central one for the extensive business now being carried on, and the present Sale offers a most favourable opportunity for purchase to any person wishful to embark in the Nursery and Seed Business. The property is also well worthy the attention of Speculators and Others, as a large portion of the land might be utilised for Building Purposes. Early Possession can be given.

N.B.—This Sale does not include the Nursery Stock.

For plans and further particulars application may be made to the Auctioneers, Bowlalley Lane, Hull; to Mr. W. E. DIXON, on the Premises; or to SHEPHERD, CRUST, TODD, AND MILLS, Solicitors, Beverley.

Stanhope Nursery, Westerham Hill, Cudham, Kent.

EXTENSIVE and VALUABLE NURSERY STOCK, comprising fine Specimen Shrubs, Fruit Trees, Standard and Dwarf Roses, Cedars, Deodars, Weymouth and other Pines, Portugal and Common Laurels, Hollies, Ivy, Creepers, and a large quantity of Forest Trees, &c.

MESSRS. BAXTER, PAYNE, AND LEPPER will SELL by AUCTION, on the Premises, by order of Mr. A. Fairall, on TUESDAY, October 30, at 11 for 12 o'Clock precisely, the above valuable NURSERY STOCK, comprising a very choice collection of many thousand Trees and Shrubs.

May be viewed, and Catalogues obtained at the various Inns in the neighbourhood; at the place of Sale; and of BAXTER, PAYNE, AND LEPPER, Auctioneers and Land Agents, Town Hall, Bromley, Kent, and 157, Fenchurch Street, E.C.

Important Collection of Dutch Bulbs.

MR. ALFRED RICHARDS has received instructions from M. Ph. Van Noort (the Importer), to SELL by AUCTION, without reserve, at the Whittington Nursery, Highgate Hill, N., on SATURDAY and MONDAY, November 3 and 5, commencing at 12 for 1 o'Clock each day, an Importation of about 100,000 DUTCH BULBS, consisting of Double and Single Hyacinths, Double and Single Tulips, Narcissus, Crocuses, Crown Imperials, Anemones, and Snowdrops. Also STOVE PLANTS, comprising Dracænas, Crotons, Ficuses, and a variety of Ferns, &c.

May be viewed the day preceding and morning of Sale. Catalogues obtained at the Whittington Nursery, and of the Auctioneer, High Road, Tottenham.

The Potteries, Ilkeston.

To NOBLEMEN, GENTLEMEN, NURSERYMEN, FLORISTS, and OTHERS.

MR. WRIGHT LISSETT begs to announce that he is honoured with instructions from Richard Evans, Esq., to SELL by AUCTION, at his Gardens, the Potteries, Ilkeston, on MONDAY, November 5, at 11 o'Clock precisely, the whole of his very choice collection of CAMELLIAS, STOVE and GREENHOUSE PLANTS, and FERNS; also all the HOTHOUSES, GREENHOUSES, and a splendid CONSERVATORY, with the Heating Apparatus and Fittings belonging to each; likewise sixty-four GREENHOUSE LIGHTS, 7 feet 6 inches by 4 feet, quite new, suitable for Garden Frames; quantity of FLUE COVERS 18 by 9 inches, ditto, 18 by 12 inches; patent Garden ROLLER, by Tindale; large Iron TANK, and various other items.

The Camellias, for which Mr. Evans has long been noted, are in robust health, and well set with bloom, and are altogether a very fine collection, as well as the largest in the district for many miles round. The conservatory is nearly new, of artistic beauty, and in good condition, built from a design by Mr. Foster. One of the Vineries is equal to new.

Catalogues will be ready seven days prior to the Sale, and may be had at the place of Sale, and of the Auctioneer at his offices, Town Hall, Ilkeston, and Maypole Yard, Nottingham, on Saturdays.

Swiss Nursery, Loughborough Road, Brixton, S.W.

(Close to the Loughborough Junction Station).

MR. W. ABRAHAM is instructed to SELL by AUCTION, on the Premises, as above, on SATURDAY, November 17, at 1 o'Clock punctually, a choice and varied assortment of NURSERY STOCK, including some fine Cryptomeria elegans, Junipers, Yew, Pampas Grass, Cupressus, Gold and Silver Holly, Standard and Dwarf Roses, Coniferæ and Evergreens in pots, large Myrtles, Palms, Agave, Oleander, trained, pyramidal and bush Fruit Trees, and many others.

Catalogues one week before the Sale, on the Premises; or of the Auctioneer, Goldworth Nursery, Woking, Surrey.

London, North-West District (4297).

TO BE SOLD, on Advantageous Terms, a small FLORIST'S BUSINESS. Excellent position, 3 miles from Covent Garden, adjoining a Railway Station. Comprises 2 acres of very productive Land. Lease eighteen years unexpired. Rent, £40 per annum. Incoming moderate. Stock and Glass by valuation. No reasonable offer refused. For further particulars apply to

PROTHEROE AND MORRIS, 98, Gracechurch Street, London, E.C.

In the Midland Counties (4317).

To NURSERYMEN, MARKET GARDENERS, FLORISTS and SEEDSMEN.

TO BE DISPOSED OF, a capital BUSINESS in a large and busy Market Town, with excellent railway facilities. Satisfactory reasons given. Comprises 8½ Acres of deep, rich, Nursery and Market Garden Land, convenient Dwelling-house and Seed Shop, 13 Greenhouses, ample Outbuildings. Manure and Sewage ready to hand for nothing. Lease nine years unexpired. Rent very moderate.

Price required for Business and Stock may be obtained of Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

London, North-West District (4320).

FOR DISPOSAL, in an excellent neighbourhood, a particularly genuine SEED and CUT FLOWER BUSINESS, comprising a desirable Ten-roomed Residence with commanding Shop. The present trade, which has not changed hands for thirty years, is a most lucrative one, and is being relinquished solely on account of ill-health. Lease eighteen years unexpired. Rent £85 per annum. Price for Lease, Goodwill, Fixtures and Stock on application to

Messrs. PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, London, E.C.

London (4316),

Ten Miles therefrom, facing an important Station on the South-Eastern Line.

A SMALL FLORIST'S and MARKET GROWER'S BUSINESS, in good going order, comprises a Cottage, 13 Greenhouses and Pits heated by hot-water. Held at a low aggregate rental of £37 per annum. Price required for Tenant's Fixtures, including nearly the whole of the Glass, together with the interest in the Lease, Stock, and Utensils in Trade, £550.

Apply to Messrs. PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

To Nurserymen, Florists, and Others.

TO BE LET, with Immediate Possession, CRESCENT ROAD GRAPERIES, Worthing, standing on an acre and a quarter of ground. Nearly 500 feet run of Glass; good Cottage. No Valuation on entering. For particulars, or for view, apply to

GARDENER, The Graperies, Crescent Road, Worthing.

Cheltenham.—To Florists and Gardeners.

TO BE LET, the old-established NURSERY BUSINESS, London Road, Cheltenham, comprising good Dwelling House, gas laid on; five Greenhouses, 40 to 60 feet long; long range of Pits, the whole well heated by hot water; about 1 acre of Land planted with Violets, Roses, and other plants. Stock consists of Camellias, Eucharis, Stephanotis, Azaleas, Gardenias, Ferns, early Pelargoniums, scarlet Geranium for winter flowering, for which, with other cut flowers, there is a great demand; also stock of Bedding Plants. No reasonable offer refused.

For further particulars apply to FOREMAN on the Premises, Charlton Nursery, London Road, Cheltenham.

Important Notice.

FIFTY NURSERY, FLORIST, SEED, and MARKET GARDEN BUSINESSES to be Disposed of. For particulars see PROTHEROE AND MORRIS' PRINTED MONTHLY LIST, obtainable (gratis) at 98, Gracechurch Street, E.C.

THE

IMPROVEMENT OF LANDED ESTATES,

By DRAINAGE, ENCLOSING, CLEARING, The ERECTION of FARM BUILDINGS and COTTAGES, WATER SUPPLY, &c.

The Land Loan and Enfranchisement Co.

(Incorporated by Special Act of Parliament)

ADVANCES MONEY:

1st.—To the OWNERS of SETTLED and OTHER ESTATES, for the Erection of Farm Buildings and Cottages, and for the Drainage, Irrigation, Enclosing, Clearing and General Improvement of Landed Property in any part of the United Kingdom.

2d.—To the OWNERS of SETTLED ESTATES in ENGLAND, for the Erection or Completion of Mansions, Stables, and Outbuildings, and for the Construction or Erection of Reservoirs, and other Works of a permanent nature, to supply Water for the use of the Estate, or for any other purpose.

3d.—To LANDOWNERS generally, to enable them to subscribe for Shares in Companies for the Construction of Railways and Navigable Canals, which will beneficially affect their Estates.

4th.—To INCUMBENTS, for the Improvement of their Glebe Lands, by Drainage, and the Erection of Farm Buildings and Cottages.

5th.—To COPYHOLDERS, for the Enfranchisement of Copyhold Lands.

The amount borrowed, with the expenses, would be charged on the Estate benefited, and repaid by a rent-charge, terminating in twenty-five years.

No Investigation of the Landowner's Title is necessary.

Forms of application, and all further particulars may be obtained of

Messrs. RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S.W., and Salisbury; of Messrs. ASHURST, MORRIS, CRISP, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company, as below.

T. PAIN, Managing Director.
EDWIN GARROD, Secretary.

Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

Vines.—To the Trade.

WILLIAM F. TAYLOR has to offer a few hundred splendid Planting Canes, principally Black Hamburgh, well ripened and short jointed. Price £12 10s. per 100, 36s. per dozen.

Market Gardens, Upper Hermitage, Lochend Road, Leith.

Small and strong Pyramid Camellias, Gladioli SEEDLINGS, per 1000.

LÉVÊQUE ET FILS, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have small and strong PYRAMID CAMELLIAS, bushy and well formed, from 2r. to 10s., 15s., 20s., 50s. and upwards, according to strength and size of plants (alba-plena in quantity).

GLADIOLI SEEDLINGS in all colours, good flowering bulbs, £3 per 1000.

SEAKALE for FORCING.—Largest roots in the Trade, 90s. per 1000; any number under 500, 10s. per 100; many acres for sale. Remittances to accompany all orders.

ALFRED ATWOOD, Market Gardener, 3, Althorpe Road, Upper Tooting, Surrey (late of 5, Simpson Street, Battersea).

To Gardeners and Others.

TREE FERN STOOLS.—Nine splendid, just landed direct from Victoria, Australia. For prices and particulars address

Mr. P. F. DAVIS, 31, Tomlin's Grove, Bow Road, E.

Pick Your Own Violets.

A Bed can be sent to any address.

H. CANNELL has many thousands of the above, in large clumps and throwing an abundance of Flowers, which can be securely packed. Flowers and Plants also posted to any address. Price on application.

Nurseries, Swanley, Kent.

Cytisus, Cytisus, Cytisus.

FOR SALE, good stuff, in thumb-pots, 20s. per 100, or £9 per 1000; special prices for larger quantities. Also LYCOPODIUM DENTICULATUM, good, in 48's, 25s., and large 60's, 40s. per 100. For Cash only.

F. C. BOFF, 17, Magdala Road, Upper Holloway, N.

FOR SALE.—To Nurserymen, Landscape Gardeners, and Others requiring a quantity of fine Specimen ENGLISH YEWS, from 5 to 8 feet high: good Pyramids.

Mr. R. ROBBINS, Rhydd Court Gardens, Upton-on-Severn, Worcestershire.

Cabbage Plants, Cabbage Plants.

WILLIAM MEADMORE can supply strong plants of Early York, Little Pizie, East Ham, Enfield Market, at 3s. per 1000, free to rail.

Market Place, Romford, Essex.

SEEDLING PLANTS.—HOLLYHOCKS, fine strong seedlings, 2s. 6d. per dozen; PANSIES, 1d. each from 1 to 10,000; CARNATIONS, 1d. each from 1 to 10,000. Bulb CATALOGUE on application.

BIDDLES AND CO., Loughborough.

THE ROYAL METROPOLITAN ROOT SHOW, under the exclusive management of JAMES CARTER & CO., will be held at the Agricultural Hall, London, N., on WEDNESDAY and THURSDAY, November 14 and 15, when TWO HUNDRED and FIFTY POUNDS will be awarded, including the following Prizes for Vegetables:—

CLASS 28.—For the best 12 dishes of Vegetables, 1st, £3 3s.; 2d, £2 2s.; 3d, £1 1s.; 4th, 10s. 6d.

CLASS 29.—20 tubers of Porter's Excelsior Potato, 1st, £1; 2d, 10s.

CLASS 30.—20 tubers of Snowflake Potato, 1st, £1; 2d, 10s.

CLASS 31.—20 tubers of Carter's Improved Red-skinned Flourball Potato, 1st, £1; 2d, 10s.

CLASS 32.—20 tubers of Carter's Improved Magnum Bonum Potato, 1st, £1; 2d, 10s.

CLASS 33.—20 tubers of Carter's American Breadfruit Potato, 1st, £1; 2d, 10s.

CLASS 34.—12 roots of Onions, spring sown, 1st, £1; 2d, 10s.

To the Trade.

GLADIOLUS BRENCHLEYENSIS, 250,000 extra large, high crowned bulbs, prices very low. COLCHICUM speciosum, TULIPA Greigi, T. Eichleri, FRITILLARIA kamtchatcensis, LILIUM Browni, Kramerianum, pulchellum, tenuifolium, callosum, Washingtonianum, Humboldti, tigrinum splendens, Szovitzianum; TRITELEIA laxa, GALANTHUS Imperati, BEGONIA Froeheli, and Hybrid BEGONIAS. Prices on application to

F. SANDER AND CO., Seed Growers, St. Albans.

B. WHITHAM, The Nurseries, Reddish, near Stockport, has for Sale:—

50,000 ENGLISH YEWS, extra fine, many times transplanted, 1 to 2 feet, 20s. per 100; 2 to 3 feet, 40s. per 100; 3 to 4 feet, 60s. per 100. Great reduction to purchasers of 1000 and upwards.

Also to be sold cheap many Thousands of HORSE CHESTNUTS and LIMES, 8 to 10 feet, fine for avenues.

Kent—The Garden of England.

THOS. BUNYARD AND SONS offer the finest Stock in the Trade of

10,000 Standard CHERRIES,
15,000 Standard PEARS,
1,000 Standard MULBERRIES,
KENT COB NUTS, and other FRUIT TREES.

Prices of which may be found in their Trade LIST, just published.

Also cheap and fine AUCUBAS, 2 to 6 feet; trained PLUMS and PEARS, RHODODENDRON PONTICUM, SPRUCE, large; YUCCAS, ELMS, LIMES, and other FOREST TREES, CLIMBERS, &c.

THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

PETER DE COCK AND COLLUMBIEN, The White Flower Nursery, Meirelleke, Ghent, Belgium, offer to the Trade:—

SPIRÆA JAPONICA, forcing clumps, 14s. per 100, £6 per 1000.
DEUTZIA GRACILIS, for forcing, 18s. per 100, £8 per 1000.
HELLEBORUS NIGER (Christmas Rose), for bloom, 14s. per 100, £6 per 1000.
CAMELLIAS, AZALEAS, PALMS, FERNS, &c.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to

EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

Plants for Hedges.

JOHN LUFF, St. Helen's Nursery, Hastings, offers:—

50,000 QUICKS, strong, transplanted, 15s. per 1000.
500,000 QUICKS, extra strong, transplanted, 3 to 3½ feet, 20s. per 1000.
25,000 PRIVET, Evergreen, extra strong, transplanted, 3 to 4 feet, 20s. per 1000.
5,000 PRIVET, Box-leaved, extra strong, transplanted, 3 to 4 feet, 60s. per 1000.

Stout healthy Plants, grown on high and exposed land. Sample Hundreds at same rate.

CATALOGUES of General Nursery Stock on application.

JASMINUM NUDIFLORUM, 5 feet, splendid stuff, in 48's, 50s. per 100.
JASMINE, common White, splendid, in 48's, 50s. per 100.
IVY, Irish, extra fine stuff, in 32's, 100s. per 100.
" " good, in 48's, 50s. per 100.
" " extra strong, from ground, 25s. per 100.

WILLIAM HOLMES, Frampton Park Nursery, Hackney, London, E.

NERTERA DEPRESSA, good stuff, in single pots, 4s. per dozen, 30s. per 100.
MENTHA PULEGIUM GIBRALTARICUM, good clumps, in single pots, 16s. per 100.

These are the greatest acquisitions for Carpet Bedding yet introduced.

WILLIAM HOLMES, Frampton Park Nursery, Hackney, London, E.

New Roses for this Year.

3000 strong dwarf MARECHAL NIEL ROSES, from the open ground.

LÉVÊQUE ET FILS, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have just now, per 1000, MARECHAL NIEL, GLOIRE DE DIJON, and other strong Tea and Perpetual sorts, Dwarfs, Standards, and on their own roots. Their fine NEW SORTS of ROSES this year are "Edouard Dufour," "Grand Duc Nicholas," Princesse Lise Troubetskoi," and "Princesse Charlotte de la Tremoille." Also forty-six sorts of other Raisers.

Price LISTS and CATALOGUES on application.

Now Ready for Delivery.

CHRISTMAS ROSES, healthy single plants, 12s. per 100, 100s. per 1000.
SPIRÆA JAPONICA, strong clumps, 1st size, 16s. per 100, 2d. size, 13s. per 100.
HEPATICA TRILOBA CŒRULEA, healthy, with one to five flowering crowns, 12s. per 100, 80s. per 1000.
ARUNDO DONAX fol. var., extremely strong roots, 60s. per 100.
ASCLEPIA TUBEROSA, 12s. per 100, 100s. per 1000.
SPIGELIA MARYLANDICA, 60s. per 100.

Extensive Collections of LILIES can be had in large quantities.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

Florists' Flowers, and Roses.

Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.

Hale Farm Nurseries, Tottenham, London.

Orchard Planting, &c.

H. F. SMITH AND SONS, SEED MERCHANTS, Selby, being about to give up their Nurseries, will offer the whole of their splendid stock of FRUIT TREES, &c., at about half the usual price. It comprises about 10,000 Apples, Pears, and Plums; 10,000 Gooseberries, of best sorts; 5000 Black Naples Currants; 6000 Northumberland Fillbasket Rasps (extra strong canes) &c., as well as fine stock of FOREST and ORNAMENTAL TREES, SHRUBS, CONIFERS, &c., all clean and healthy. A dozen or 100 sent as sample if required.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.: also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS: Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.

Priced CATALOGUE sent post-free.

Address, HENRY SHEPHERD, Manager.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANNI.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.

The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to

R. AND G. NEAL, Chief Office, Wandsworth Common.

The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

STONE'S APPLE.—As Certificated by the Royal Horticultural Society, and shown at the Crystal Palace. A very handsome Kitchen Apple, of large size and a great bearer. True to name. Fine 2-yr. trees, 42s. per dozen. Trade price on application.

THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

Cabbage Plants, Cabbage Plants.

W. VIRGO AND SON can now supply in any quantity good strong, healthy plants, viz., Early Battersea, Early Enfield Market, Early Nonpariel, and Sugar-loaf Cabbages, all at 3s. per 1000; Robinson's Drumhead, 3s. per 1000; Red Drumhead, 5s. per 1000; delivered free on rail. Post-office Orders must accompany all orders from unknown correspondents.

W. VIRGO AND SON, Wonersh Nursery, near Guildford.

To the Trade.

F. W. COOPER has secured fine pure Stocks of Seed of the following CUCUMBERS, which he can offer at per ounce:—

ROLLISSON'S TELEGRAPH,
TURNER'S BLUE GOWN,
PEARSON'S LONG GUN,
MONRO'S DUKE OF EDINBURGH.

Florist, Huntingdon.

6000—Camellias—6000.

H. WALTON begs to call attention to his extensive collection of the above, of all sizes, from 42s., 63s., 105s., to 120s. per dozen; large handsome plants of all the best varieties, from 21s. to 105s. each, all home grown.

AZALEAS, all the leading varieties in fine healthy plants, from 24s. to 63s. per dozen.

A large quantity of Specimen STOVE and GREENHOUSE PLANTS in fine condition.

ERICAS, in Half and Quarter Specimens, all the best Exhibition varieties.

Inspection invited.

Edge-end Nurseries, Brierfield, near Burnley, Lancashire.

See Report, No. 190, page 212, Aug. 18, 1877.

Fruit Trees.

THOMAS EVES begs again to call the attention of all persons intending Planting to his immense and superb stock of FRUIT TREES, for the growth of which the Gravesend Nurseries are particularly adapted, and for which they also have a wide reputation, the trade for them extending to all parts of the United Kingdom and Colonies. The leading sorts of Apples, Pears, and Plums most in demand by Market Growers are extensively cultivated as Pyramids and Standards, and can be supplied in large quantities at from 70s. per 100; Espaliers from 20s. per dozen.

CHERRIES, a fine lot of tall Standard, from 100s. to 120s. per 100.

GOOSEBERRIES, 3-yr. to 5-yr., 100s. to 120s. per 1000.

CURRANTS, 3-yr. to 5-yr., 60s. to 75s. per 1000.

T. EVES, Gravesend Nurseries. Established 1810.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.

CATALOGUES post-free on application.
Lion Walk, Colchester.

WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1806,)

ROSE GROWERS,

TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS, HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

Estd. 1844.

For the best List of Choice Hyacinths, Tulips, Crocuses, Narcissus, &c., see our Beautifully Illustrated

CATALOGUE

OF

DUTCH FLOWER ROOTS

FOR

Autumn, 1877,

Containing numerous fine Engravings and much Valuable and Original Information on the successful Culture of Bulbous-rooted Plants. Should be read by all intending purchasers before ordering. Post-free on application.

Our 21s. Collection (No. 7),

For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

Other Collections, for Greenhouse or Conservatory, &c., 12s. 6d., 21s., 42s., 63s., and 84s. each.

From Mr. H. Bennett, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

From R. Pronyce, Esq., *Bathgate, N.B. February* 7, 1877.

"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

DANIELS BROS.,
THE QUEEN'S SEEDSMEN, NORWICH.

NEW HARDY RHODODENDRONS.—
MRS. MENDEL.
SIGISMUND RUCKER.
MARCHIONESS OF LANSDOWNE.

The above beautiful and distinct hardy Rhododendrons will be supplied for Three Guineas.

ANTHONY WATERER, Knap Hill, Woking, Surrey.

STEPHANOTIS FLORIBUNDA. — For Sale, Six magnificent Specimens, eight years old, surplus stock of a Gentleman. Price 25s. each, about quarter their value. Apply to

F. FRENCH, Nurseryman, Wren Road, Camberwell Green, London, S.E.

SPECIMEN AZALEAS, suitable for Exhibition.

A Gentleman desirous of disposing of Twelve fine Specimens offers them a bargain, viz.:—

Stella,	Madame A. Verschaffelt,
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Criterion,	Perfection,
Madame de Cannaert,	President,
Comte de Hainaut,	Magnet,
Madame Dominique Vervaene,	Etoile du Nord.

For full particulars apply to

JAMES VEITCH AND SONS, Royal Exotic Nursery, Chelsea, S.W.

Gladioli!—New Roses!—Gladioli!

EUGÈNE VERDIER, Horticulturist, 37, Rue Clisson, Gare d'Ivry, Paris.

New varieties of ROSES obtained in this Establishment, and to be offered for sale for the first time in November:—

HYBRID PERPETUALS.—Charles Baltet, Charles Duval, Comtesse de Flanders, Docteur Auguste Krell, Mdme. Albani, Mdlle. Maria Castel, Mdlle. Maria Verdier, President Schlachter, Princesse Blanche d'Orléans, Souvenir d'Auguste Rivière.

New varieties of GLADIOLI to be offered for sale for the first time in November:—Caprice, Conquête, Crésus, Eglée, Eugène Ramey, Lactea, La France, La Perle, Leviathan, Madadam Platz, Parmentier, Pasquin, Séduction, Tour du Monde.

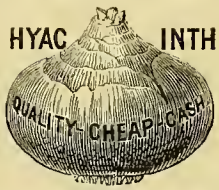
New varieties already on sale, magnificent, very recommendable, and much recommended:—Madame Krelage, Lord Hawke, Madame de Cazes, Roi de Jaunes, &c.

CATALOGUES are now ready, and will be sent gratis, on demand, post-paid.

To the Trade.

PRIMULA SINENSIS FIMBRIATA, red and white, in 54-pots, 3s. per dozen, 20s. per 100.
CINERARIAS, in 48-pots, 4s. per dozen, 28s. per 100.
WALLFLOWERS, Young's Blood-red, transplanted, extra fine, 2s. 6d. per 100, 22s. 6d. per 1000.
GERANIUM, double, fine, 4s. per 100, 35s. per 1000.
ROCKETS, double white, fine cuttings, 3s. per dozen, 21s. per 100.
DAISIES, AUCUBÆFOLIA, strong, 8s. per 100. On application to

THOMAS PERKINS AND SONS, 42, Drapery, Northampton.



H. CANNELL announces that his CATALOGUE of the above, and other BULBS, is now ready, and sent post-free.

Flowers all the Year Round.

H. CANNELL, F.R.H.S., begs to inform the Public generally that his AUTUMN CATALOGUE of SOFT-WOODED PLANTS is now ready, and will be sent post-free. His Stock is the largest in England, and contains all the best, both New and Old Varieties, in cultivation, supplied either as Cuttings or Plants by post.

Calceolarias, Primulas, Cinerarias, and Cyclamen.

H. CANNELL begs to announce that he has many thousands of the above, and will make special offers for large quantities.

STRAWBERRY PLANTS.—All the best and most profitable kinds in cultivation. LIST and valuable particulars post-free. Special Prices for Large quantities. Swanley, Kent.

ARECA LUTESCENS, store pots, 60s. per 100.
,, RUBRA, small pots, 60s. per 100.
COCOS WEDDELLIANA, store pots, 160s. per 100.
LATANIA BORBONICA, store pots, 14s. per 100.
PHŒNIX TENUIS, store pots, 10s. per 100.
,, DACTYLIFERA, store pots, 6s. per 100.
,, CANARIENSIS, store pots, 12s. per 100.
,, SPINOSA, store pots, 24s. per 100.
CHAMÆROPS HUMILIS, store pots, 20s. per 100.
PANDANUS UTILIS, store pots, 20s. per 100.

English Descriptive CATALOGUE post-free.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPECIAL OFFER TO THE TRADE.

FRUIT TREES.

EXTRA STRONG—BEAUTIFULLY TRAINED.

2-yr. Cordons, Palmettes and Pyramids.

	Per 100.
APPLES, on Crab and on Doucin	42s.
PEARS, on Crab and on Quince	50s.
PLUMS, on Prunus St. Julien	50s.

A List of the Names of the Fruit Trees gratis on application.

STOCKS for BUDDING and GRAFTING.

	Per 1000.
PYRUS MALUS, Crab-Apples	20s.
ROSE, Manetti	25s.
,, multiflora de la Grifferaie	25s.

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 15s. per 1000.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

BEAUTIFUL FLOWERS

WEBBS'

CHOICE COLLECTIONS

OF

HYACINTHS, CROCUS, TULIPS, NARCISSUS, &c.,

CONTAIN A

Superb assortment of the best varieties.

For Growing in Glasses, Pots, Vases, &c.
10s. 6d., 21s., and 42s. each.

For Outdoor Cultivation.
10s. 6d., 21s., and 42s. each.

For Greenhouse or Window Boxes.
10s. 6d., 21s., 2nd 42s. each.

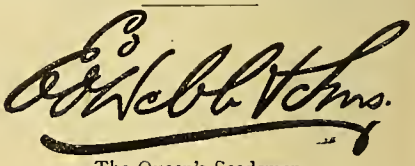
All Goods 20s. value Carriage Free.

Five per cent. discount for Cash.

Webb's Autumn Catalogue of Dutch Flower Roots, &c.,

Contains Original and Complete Cultural Instructions.

GRATIS AND POST-FREE ON APPLICATION.



The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

TO THE TRADE.

JAMES & ROBERT THYNE
are now offering—

ABUTILONS, in variety, in 3-inch pots, 9s. per dozen.
ADIANTUM GRACILLIMUM, in 4-inch pots, 9s. to 12s. per dozen.
ARDISIA CRENULATA, in 3-inch pots, 9s. per dozen.
ARECA AUREA, in 3-inch pots, 70s. per 100.
ARECA RUBRA, in 3-inch pots, 70s. per 100.
CHAMÆROPS EXCELSA, in 3-inch pots, 30s. per 100.
CICCA DISTICHA, in 4-inch pots, 12s. per dozen.
CYRTODEIRA FULGIDA, in 3-inch pots, 18s. per dozen.
COCOS WEDDELLIANA, in thumb pots, 30s. per dozen.
CROTONS, in variety, in 4-inch pots, 12s. to 18s. per dozen.
CYATHEA DREGEI, recently imported and making magnificent heads, 6 feet stems, 12 guineas each; 5 feet stems, 10 guineas each; 3 feet 6 inches stems, 8 guineas each; 2 feet stems, 6 guineas each.
CYPERUS LAXAS, in 4-inch pots, 6s. per dozen.
DIEFFENBACHIAS, in variety, in 4-inch pots, 18s. per doz.
DRACÆNAS, in variety, in 4-inch pots, 100s. per 100.
IXORAS, in variety, in 3-inch pots, 12s. per dozen.
LOMARIA DALGAIRNSIÆ, 10s. 6d. to 21s. each.
PAULINIA THALICTRIFOLIA, in 3-inch pots, 12s. per doz.
PHŒNIX RECLINATA, in 3-inch pots, 40s. per 100.
,, TENUIS, in 3-inch pots, 30s. per 100.
PILLEA MUSCOSA, in 3-inch pots, 6s. per dozen.
POINSETTIA PULCHERRIMA, in 5-inch pots, 9s. to 12s. per dozen.
SEAFORTHIA ELEGANS, in 3-inch pots, 50s. per 100.
SONERILLA HENDERSONI, in 4-inch pots, 18s. per doz.
TACSONIA VAN VOLXEMII, in 5-inch pots, 6s. per dozen.

GREAT WESTERN NURSERIES,
Kelvinside, Glasgow.

SPRING BEDDING PLANTS, BULBS, &c.

DAISIES, best red and white varieties in cultivation, and POLYANTHUS, 1s. per dozen, 5s. per 100.
SEDUMS, acre aurea, acre elegans, glaucum, lividum; SEMPERVIVUM tectorum and californicum; ANTENNARIA tomentosa; MENTHA gibraltaricum, 1s. 6d. per dozen, 8s. per 100.
ALYSSUM saxatile, ARABIS alpina and caucasica fol. var.; IBERIS coriifolia and Tenoreana; PHLOX frondosa and verna; SILENE pendula compacta; SAPONARIA ocymoides; STELLARIA graminea aurea; MYOSOTIS dissitiflora, sylvatica, and alba or rosea, 1s. 6d. per dozen, 10s. per 100.
SWEET WILLIAMS, 1s. 6d. per dozen, 8s. per 100.
WALLFLOWERS, 1s. per dozen, 6s. per 100.
PRIMROSES, double white or lilac; HEPATICAS, double red or single blue; GENTIANA ACAULIS, 4s. per dozen, 30s. per 100.
PRIMROSE, Double Sulphur, 3s. per dozen.
Choice named exhibition varieties of PANSIES, PINKS, PHLOXES, and PENTSTEMONS, 4s. per dozen, or 12 of each for 14s.
DELPHINIUMS, POTENTILLAS, PYRETHRUMS, PÆONIAS, fine named sorts, 6s. per dozen, or 12 of each for 21s.
CARNATIONS and PICOTEES, fine exhibition sorts, 7s. per dozen plants.
Bedding PANSIES and VIOLAS, in distinct colours, white, yellow, blue, purple, &c., named sorts, 1s. 6d. and 2s. per dozen, 12s. and 16s. per 100.
TULIPS, 1s. to 2s. 6d. per dozen.
CROCUS, 1s. 6d. to 3s. per 100.
Border HYACINTHS, 3s. per dozen, 20s. per 100.
Collections of 100 HERBACEOUS PLANTS, in 20 to 50 varieties, 16s., 20s., and 25s.
Collections of 100 CARPET BEDDING PLANTS, in variety, 8s., 12s., and 15s.
Collections of 100 SPRING FLOWERING PLANTS, in variety, 8s., 12s., and 15s.
Collections of 100 SPRING FLOWERING BULBS, in variety, 6s., 9s., and 12s.
Collections of 500 SPRING FLOWERING BULBS, in variety, 21s., 30s., and 50s.
Collections of BULBS for conservatory decoration, 21s. and 42s.
Collections of FLORISTS' FLOWERS for exhibition, 50 plants in 50 sorts, 15s., 21s., and 30s.; 100 plants in 100 sorts, 25s., 35s., and 50s.
CATALOGUE of Bulbs, Roses, Fruit Trees, Spring-flowering and Herbaceous Plants, &c., post-free.

WILLIAM CLIBRAN & SON,
THE OLDFIELD NURSERIES, ALTRINCHAM.

FOR SALE, Forty large AZALEA PLANTS, in fine healthy condition, well set with buds. Price about £20 the lot. Also a few HEATHS. Object in parting with them, being short of room.
Mr. J. HARTWELL, Amington Hall, Tamworth.

To Exhibitors and Others.

STOVE PLANTS.—Large specimens to be disposed of, on account of not having sufficient room to house them:—
PANDANUS VEITCHII, 4 feet high and 6 feet through, and 5 feet high and 6 feet through.
CROTON INTERRUPTUM, fine specimen, well coloured, 6 feet by 6 feet.
" UNDULATUM, 5 feet by 5 feet.
ALOCASIA METALLICA, 3 feet by 4 feet.
MARANTA ZEBRINA, 3 feet by 6 feet.
" VEITCHII, good half-specimen.
" ROSEA PICTA.
Also the following healthy and useful WINTER FLOWERING PLANTS:—Solanums, Bouvardias, Liboonias, Eranthemums, Linums, Gardenias, Erica hyemalis, gracilis, Caffra, and other varieties; Camellias, Azaleas, Cyclamens, Poinsettias.
Now being the time to obtain stock of the following Carpet Bedding Plants, W. MILES can supply Alternantheras, Antenarias, Arenaria, Achillea, Cerastiums, Leucophyton, Mentha, Mesembryanthemums, Nertera, Sagina, Santolina, Tecoma, Echeverias, Sempervivums, &c. All particulars and prices on application to
WM. MILES, West Brighton Nursery, Cliftonville, Sussex.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.
LIMES, 10 to 20 feet high.
POPLAR, canadensis nova, 12 to 20 feet high.
These Trees have been grown expressly for Street and Avenue Planting.
They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

THE QUEEN'S SEEDSMEN,
HIGH HOLBORN, LONDON, W.C.

STRAWBERRY PLANTS.—Strong well-rooted plants of the under-named varieties, 3s. 6d. per 100, purchasers' selection:—Aromatic, Amateur, Ananas Perpetual, Ascot Pine-apple, British Queen, Bicton Pine, Black Prince, Cockscomb, Comte de Paris, Cornucopia, Comte de Zans, Crimson Queen, Dr. Hogg, Duke of Edinburgh, Eleanor, Exquisite, Early Prolific, Enchantress, Eliza, Fairy Queen, Filbert Pine, Frogmore Pine, Grove End Scarlet, Garibaldi, Haiquin, James Veitch, John Powell, Keens' Seedling, La Grosse Sucrée, Leon St. Lannier, La Constante, Lucas, Marguerite, Newton Seedling, Oscar, Prince of Wales, Prince Arthur, President, Premier, Princess of Wales, Royalty, Sir J. Paxton, Sabreur, Stirling Castle, Sir John Falstaff, Souvenir de Kieff, Scarlet Pine, Countess, Vicomtesse Héricart de Thury, Victoria, Unza Fritz, Wonderful, W. J. Nicholson. Our selection, 2s. 6d. per 100, 20s. per 1000, in ten or twenty sorts, all true to name.
HARRISON'S MUSK, 2 plants 1s., 12 for 3s. 6d.
PRIMULA SINENSIS FIMBRIATA, of a splendid strain, 2s. per dozen.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To the Trade.

JOHN PERKINS AND SON beg to offer the following, the whole of which have been recently removed, and are fine healthy plants:—
ABIES DOUGLASII, 4 to 5 feet, 18s. per dozen.
ACER NEGUNDO, var., Pyramids, 40s. per 100.
ABIES MENZIESI, 4 to 5 feet, 18s. per dozen.
CEDRUS DEODARA, 2½ to 3 feet, 21s. per dozen.
HOLLY, Gold Queen, 1½ to 2 feet, 18s. per dozen.
LIMES, fine Standards, 10 to 12 feet, 12s. per dozen.
LAURELS, Common, 2 to 2½ feet, 12s. per 100; 10os. per 1000.
LAURUSTINUS, 1½ to 2 feet, 40s. per 100.
PICEA NOBILIS, 2 to 2½ feet, 30s. per dozen.
" PINSAPO, 3 to 5 feet, 24s. per dozen.
" NORDMANNIANA, 3 to 5 feet, 30s. per dozen.
PINUS EXCELSA, 4 to 5 feet, 18s. per dozen.
" CEMBRA, 4 to 5 feet, 60s. per 100.
LAURELS, Portugal, 3½ to 4 feet, 70s. per 100.
THUJA AUREA, 1 foot, 50s. per 100.
Wholesale and Retail CATALOGUES on application.
52, Market Square, Northampton.

THE BEST HOUSE FOR BULBS.

Mr. Iliffe.—"The bulbs had from your firm have turned out very good."

The Rev. Dr. Holt—"The Rev. Dr. Holt presents his compliments to Messrs. Jefferies, and begs to say that the bulbs he had of them were excellent."

The Rev. W. P. Bennett.—"It gives me great pleasure to say the collection of bulbs you sent last year gave great satisfaction."

THE BEST GUINEA COLLECTION OF BULBS.

None but First-Class Bulbs will be sent.

This Collection has the advantage of having Bulbs suited for Indoors and Outdoors.

200 CROCUS, Assorted	100 SNOWDROPS
50 ANEMONES, Assorted	50 WINTER ACONITES
75 TULIPS, Assorted	50 RANUNCULUS, Assorted
18 NARCISS for Pots, Assorted	24 NARCISS, for Beds, Assorted
12 JONQUILS, Assorted	12 HYACINTHS, for Beds
6 HYACINTHS, for Pots, Assorted	6 SCILLAS
6 TRITELEIAS, Assorted	4 IXIAS.

Double the number, Two Guineas. *Half the number*, 10s. 6d.

20s. and over carriage free to any Station in England; 42s. free in Ireland or Scotland.

Persons desirous of making their own Selection should send for our Illustrated BULB CATALOGUE, post-free on application, and obtain best Bulbs at special low prices for cash. The Catalogue contains most useful hints for Spring Gardening, with all the desirable varieties of Bulbs.

Jno. Jefferies & Sons,
BULB MERCHANTS, CIRENCESTER, GLOUCESTERSHIRE.

NOTICE TO THE TRADE.

THE THAMES BANK IRON COMPANY,

UPPER GROUND STREET, LONDON, S.E.,
Having bought the Entire Stock of
HOT-WATER BOILERS, PIPES, AND CONNECTIONS
OF
Messrs. ANDREW McLAREN & CO., LONDON,
(Who have discontinued keeping these goods in stock),
WILL FOR A FEW WEEKS OFFER THESE GOODS AT
REDUCED PRICES.

HOT-WATER APPARATUS ERECTED COMPLETE, OR THE MATERIALS SUPPLIED AT WHOLESALE PRICES.

Sole English Medallists for the Best Hot-Water Apparatus at the United States International Centennial Exhibition, Philadelphia.

WRIGHT'S
ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

"The **'Boiler of the Future.'** I have no doubt about this."—Wm. Thomson, *Clovenfords.*

By Her Majesty's *Royal Letters Patent*

NEW PRICE LIST.

Boiler Number.	Length.		Width.		Height.		No. of Top Sections.	Surface Exposed to the Flame.	Calculated Heating Power, 4-in. pipe.	Recommended for 4-in. pipe.	Price.		
	ft.	in.	ft.	in.	ft.	in.		ft.	ft.	ft.	£	s.	d.
1 A	2	0	1	6	1	10	2	13	520	400	10	0	0
2 A	2	0	1	6	2	2	3	17½	700	500	11	10	0
3 A	2	0	1	6	2	6	4	22	880	600	13	0	0
4 A	2	0	1	6	2	10	5	26½	1,060	700	14	10	0
5 A	2	0	1	6	3	2	6	31	1,240	..	16	0	0
6 A	2	0	1	6	3	6	7	35½	1,420	..	17	10	0
1 B	2	6	2	0	2	4	2	20	800	650	14	10	0
2 B	2	6	2	0	2	9	3	27½	1,100	750	17	0	0
3 B	2	6	2	0	3	2	4	35	1,400	850	19	10	0
4 B	2	6	2	0	3	7	5	42½	1,700	950	22	0	0
5 B	2	6	2	0	4	0	6	50	2,000	..	24	10	0
6 B	2	6	2	0	4	5	7	57½	2,300	..	27	0	0
0 C	3	0	2	0	1	11	1	18	720	700	16	10	0
1 C	3	0	2	0	2	4	2	27	1,080	1,000	20	0	0
2 C	3	0	2	0	2	9	3	36	1,440	1,300	23	10	0
3 C	3	0	2	0	3	2	4	45	1,800	1,600	27	0	0
4 C	3	0	2	0	3	7	5	54	2,160	1,900	30	10	0
5 C	3	0	2	0	4	0	6	63	2,620	..	34	0	0
6 C	3	0	2	0	4	5	7	72	2,880	..	37	10	0
0 D	3	6	2	6	1	11	1	24½	980	850	20	0	0
1 D	3	6	2	6	2	4	2	37½	1,500	1,500	25	0	0
2 D	3	6	2	6	2	9	3	50½	2,200	2,200	30	0	0
3 D	3	6	2	6	3	2	4	63½	2,540	2,540	35	0	0
4 D	3	6	2	6	3	7	5	76½	3,000	3,000	40	0	0
5 D	3	6	2	6	4	0	6	89½	3,580	..	45	0	0
6 D	3	6	2	6	4	5	7	102½	4,100	..	50	0	0
0 E	4	0	3	0	1	11	1	30	1,200	1,100	27	10	0
1 E	4	0	3	0	2	4	2	48	1,920	1,900	35	0	0
2 E	4	0	3	0	2	9	3	66	2,640	2,600	42	10	0
3 E	4	0	3	0	3	2	4	83½	3,340	3,300	50	0	0
4 E	4	0	3	0	3	7	5	101½	4,060	4,000	57	10	0
5 E	4	0	3	0	4	0	6	119½	4,780	..	65	0	0
6 E	4	0	3	0	4	5	7	137	5,480	..	72	10	0

We can supply Foundation Plates—which form Ash-pit—and Smokestacks, if wanted, thereby doing away with the necessity for even a single brick in their erection.

	A		B		C		D		E	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Foundation Plate	35	0	45	0	60	0	75	0	90	0
Smokestack, Damper, and Soot-Door	30	0	30	0	40	0	40	0	40	0
Furnace and Ash-Pit, Frame and Doors; also Furnace Bars, Bearers, Dumb-Plate, &c. ..	30	0	40	0	50	0	60	0	70	0

Foundation Plates are arranged to heat the air before it is sent into the ash-pit at back, and furnace-doors to heat the air before its admission into the furnace, furnishing in fact two "hot-air" blasts to the furnace; the admission of large volumes of cold air being most injurious to the economical working of the furnace.

In preparation an entirely NEW SERIES of SEVENTY BOILERS, embracing a large variety suitable for small places, &c., and all specially adapted for low situations where shallow boilers are a necessity. Particulars on application.

WM. WRIGHT & CO.,
AIRDRIE, N.B.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21*s.* and 42*s.* each. For Detailed List see BULB CATALOGUE.

NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10*s.* 6*d.* each. Extra sized fruiting plants, 21*s.* each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Vines and Strawberries,

"Plant now to ensure a full crop of fruit next season."

FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3*s.* 6*d.* to 5*s.* each; strong Fruiting ditto, 7*s.* 6*d.* to 10*s.* 6*d.* each.

Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16*s.* to 20*s.* per 100; from the open ground, 3*s.* to 5*s.* per 100.

Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.

Sheen Nursery, Richmond, Surrey.

Rhododendrons.

ISAAC MATTHEWS AND SON have to offer the following RHODODENDRONS—100,000 fine bushy plants, thinly grown and well rooted, nice round plants:—

RHODODENDRON SPLENDIDUM, white, 1 to 1½ foot, 37*s.* 6*d.* per 100; 1½ to 2 feet, 50*s.* per 100; 2 feet, 60*s.* per 100.
,, CAUCASICUM PICTUM, scarlet, 1 to 1½ foot, 50*s.* per 100; 1½ to 2 feet, 60*s.* per 100.
,, JACKSONII, scarlet, 1 foot, 50*s.* per 100; 1 to 1½ foot, 60*s.* per 100; 1½ to 2 feet, 75*s.* per 100.
,, WOOLLERII, scarlet, 1 to 1½ foot, 60*s.* per 100; 1½ to 2 feet, £5 per 100.
,, HYBRIDS, from all choicest named varieties, 1 foot, 20*s.* per 100; 1 to 1½ foot, 30*s.* per 100; 1½ to 2 feet, 40*s.* per 100; 2 to 2½ feet, 60*s.* per 100.
,, PONTICUM, 9 to 12 inches, 50*s.* per 1000; 12 to 15 inches, 10*s.* per 100; 15 to 18 inches, 15*s.* per 100; 18 to 21 inches, 40*s.* per 100; 2 to 3 feet, 50*s.* per 100.
,, ,, very bushy, 3 to 3½ feet, 80*s.* per 100.
YEW, English, 6 to 9 inches, 40*s.* per 1000; 9 to 12 inches, 50*s.* per 1000; 12 to 15 inches, 70*s.* per 1000.
,, English, bushy, 15 to 18 inches, 20*s.* per 100; 1½ to 2 feet, 30*s.* per 100; 2 to 2½ feet, 40*s.* per 100.
,, English, very bushy, 2½ to 3 feet, 60*s.* per 100.
CURRANTS, Black, very strong, 10*s.* per 100.
GOOSEBERRIES, strong, 10*s.* to 12*s.* 6*d.* per 100.
CATALOGUES can be had on application to
The Nurseries, Milton, Stoke-on-Trent.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.

The New CATALOGUE, just issued, sent to applicants.

New Exhibition and Decorative Fuchsias.

JAMES LYE, Clyffe Hall, Market Lavington, Wilts, has the pleasure to offer the following fine new varieties of his own raising, unrivalled for their high-class qualities, excellent habits, and free-flowering properties:—

DARK VARIETIES.

Charming.	James Lye.
Gem of the West.	Royal Standard.
Mr. James Huntley.	Elegance.

LIGHT VARIETIES.

Beauty of Wilts.	Mrs. Huntley.
Letty Lye.	Delicata.
Blushing Bride.	Miss Lye.

The above five varieties have been most favourably reported on in the *Gardeners' Chronicle* for June 9, and the *Gardeners' Magazine* for June 23. A coloured illustration of Mr. James Huntley, Letty Lye, Mrs. Huntley, and Royal Standard, appeared in the *Floral Magazine* for October.

A Descriptive List can be had on application. Plants are now ready, and Orders will be executed as received.

Price, the set of twelve varieties, £1 10*s.*; per plant, 3*s.* Post-office Orders payable to

JAMES LYE, Market Lavington Office.

Alnwick Seedling Grape Vine.

D. P. BELL begs to offer young plants of the above Vine, the true variety as grown at Clive House, from which the only exhibit has been made, and for which he received the First-Class Certificate from the Fruit Committee of the Royal Horticultural Society, December 6, 1876, regarding which the report of the Committee, as given by the *Journal of Horticulture*, is as follows:—"The bunch is large and heavily shouldered, with a stout stalk. The berry stalks are stout, and the berries large and roundish oval, frequently with sutural furrows; skin quite black and membranous, covered with a fine bloom; flesh firm, tender, very juicy, and sweet. It was unanimously awarded a First-class Certificate. This is a far superior fruit to Alicante, and will no doubt prove to be a late-keeping variety of great value."

It is important that the public should know that this, the only certificated variety (and therefore the original), has been exclusively raised at Clive House, and cannot be had elsewhere.

Plants 15*s.* each.

The fruit now hanging on the parent Vine may be seen on application.

SPECIAL NOTICE.

MUSHROOM SPAWN
(MILL-TRACK).

WM. CUTBUSH & SON

Have this Season a large supply of this Mushroom Spawn, which has been celebrated for very many years, and can only be obtained here, as it is manufactured under a peculiar process known exclusively to ourselves, and, wherever once used, no gardener will willingly take to any other kind. One chief feature in its superiority is the extraordinary length of time it continues to produce Mushrooms—many instances have occurred where beds have continued in full bearing for eight or nine months. The Mushrooms are also of a rich fleshy kind so much prized in the kitchen.

Printed Cultural Directions, with our Signature attached, will be enclosed in every Package.

For Price per Bushel, &c., see BULB CATALOGUE, Post-free on application.

Highgate Nurseries, N., and Barnet, Herts.

WM. CUTBUSH & SON

Invite an Inspection of their

GENERAL NURSERY STOCK,

Which is both extensive and of unusually fine quality.

In the Plant Department will be found—

ERICA HYEMALIS
ERICA GRACILIS
ERICA WILMOREA
ERICA SINDRYANA, and other winter-blooming varieties
ERICAS, Hard-wooded varieties
EPACRIS
GENISTAS
BOUVARDIAS
} Splendid stuff, full of Bloom-buds.
SOLANUMS, beautifully berried and compact
EPIPHYLLUMS
CYCLAMEN PERSICUM
PRIMULA SINENSIS ALBO FL.-PLENO.

GREENHOUSE PLANTS,
SUCH AS
APHELEXIS, GENETYLLIS, ACACIAS, BORONIAS, PHŒNOCOMAS, DRACOPHYLLUM, ERIOSTEMON, CHOROZEMA, PIMELEA, &c.;

DRACÆNA, GREVILLEA ROBUSTA, PALMS, FICUS ELASTICA;

FERNS,
Including ADIANTUM GRACILLIMA and other suchlike useful kinds;

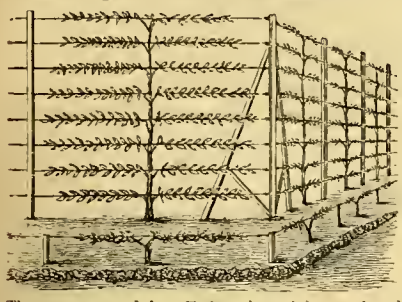
CAMELLIAS (English-grown), AZALEAS, TREE CARNATIONS, &c.

IN THE
HARDY DEPARTMENT,
Extending over Thirty Acres,
Will be found one of the most extensive Stocks of
VARIEGATED and other choice HOLLIES
in the Kingdom, and other
EVERGREEN and DECIDUOUS SHRUBS and ORNAMENTAL TREES;
Also FRUIT TREES of all descriptions, and
STANDARD and DWARF ROSES.

Catalogues will be sent on application, post-free.

HIGHGATE NURSERIES, LONDON, N.,
And BARNET NURSERIES, HERTS.

THOMAS'S
WROUGHT-IRON ESPALIER
TRAINERS,
For Training Fruit Trees on the French System.



The arrangement of these Trainers is much improved, and is now rendered so simple that they can be readily fixed by inexperienced hands. The bases of the terminating and intermediate Standards are of Iron, and require neither Wood nor Stone to attach them to. The wires are usually placed about 8 in. apart.

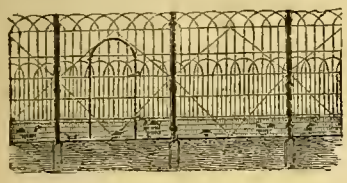
REDUCED PRICES OF MATERIALS.
Galvanised Raidisseurs for Tightening the Wire.

Price 3s. per dozen.

Iron Terminating Posts.	Painted s. d.	Galvanised £ s. d.	Intermediate Standards.	Painted s. d.	Galvanised £ s. d.
4 feet high	9 0	0 14 0	4 feet high	1 5	0 2 2
5 ,, ,,	10 6	0 16 0	5 ,, ,,	1 8	0 2 11
6 ,, ,,	11 6	0 17 0	6 ,, ,,	2 0	0 3 6
7 ,, ,,	16 0	1 2 0	7 ,, ,,	2 3	0 3 9
8 ,, ,,	19 0	1 6 0	8 ,, ,,	2 6	0 4 3

Specially prepared Galvanised Wire.
Best Quality, 1s. 6d., 1s. 9d. and 2s. 3d. per 100 yards.

THOMAS'S
NEW POULTRY FENCING,
Galvanised after Manufactured, with Double-pronged Iron Standards, Painted Black, and placed every 2 feet apart, rendering it the strongest and best Fence in the Market. It can be fixed or removed by any labourer, without extra cost.



PRICE, No. 508.
6 feet high, 6s. per yard; 7 feet high, 7s. per yard,
Including the Iron Standards and the Galvanised Bolts and Nuts for securing the Panels to the Standards.
Doors are charged 3s. extra, except when 12 yards are ordered, in which case a door is included.

THOMAS'S
GALVANISED WIRE NETTING
BY IMPROVED MACHINERY.
Superior Quality. Reduced Prices.

Prices per lineal yard, 24 inches wide.

Mesh.	Light. s. d.	Medium. s. d.	Strong. s. d.	Ex. strong. s. d.
2 inches	0 3	0 3¾	0 4¾	0 6
1¾ ,,	0 3½	0 4½	0 5½	0 7
1½ ,,	0 4½	0 5	0 6½	0 8
1¼ ,,	0 6½	0 8½	1 0	1 3
1 ,,	0 8	0 10	1 2	1 6
¾ ,,	0 10	1 0	1 3	1 8

Usual Widths kept in Stock, 12, 18, 24, 30, 36, and 48 inches
2-inch mesh kept in stock 72 inches wide. This will be found very convenient for erecting Poultry Yards.

All Widths charged at Proportionate Prices.
SOFT GALVANISED TYING WIRE, 6d. per lb.
CUTTING NIPPERS, 1s. 3d. per pair, very useful for Cutting Wire Netting, &c.
Five per cent. discount for prompt cash allowed on all orders amounting to 20s. and upwards.
Special Quotations for Large Quantities.

ILLUSTRATED CATALOGUES on APPLICATION.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285, EDGWARE ROAD, LONDON, W.
P.O. Orders to be made payable at 310, Edgware Road.

N.B.—By personal examination of the crops during the blooming period Messrs. Sutton have been able to secure the finest bulbs grown in Holland this year.

How to Grow Flower Roots successfully, see

One of the most Practical Works on the Cultivation of
HYACINTHS, TULIPS, CROCUS, LILIES, NARCISSUS, &c.,
YET PUBLISHED.
PROFUSELY ILLUSTRATED.
Price 6d. post-free, or gratis to Customers.

Sutton & Sons
THE QUEEN'S SEEDSMEN, READING.

SATURDAY, OCTOBER 27, 1877.

TRUE AND FALSE MUSHROOMS.

Of all fungi the common Meadow-Mushroom (Agaricus campestris) is one of the easiest to determine. Its characters are so marked that, taken altogether, it is almost impossible to confound the Meadow-Mushroom with any other fungus. This statement may appear somewhat rash, when it is remembered that the varieties of the Mushroom are almost endless. In form, size, colour, and habit the Mushroom varies exceedingly, and runs into the adjoining species—the Horse-Mushroom (A. arvensis)—by such insensible gradations that it is sometimes impossible to see where the one ends and the other begins. Its taste varies with its

Fig. 100.—Key to coloured plate of "True and False Mushrooms."

size, colour, and habit; the richest and most delicious flavour is peculiar to the somewhat small, white-topped, pink-gilled Mushroom of our open pastures, and this characteristic flavour gradually diminishes until a much coarser flavour is reached in the yellow-topped, pink-grey-gilled Horse-Mushroom. The Mushroom of our markets, as supplied by professional Mushroom growers from spawn, is a kind of intermediate variety which cannot be referred to one or other of the two plants above-mentioned, but it is, as a rule, much more nearly allied to the Horse-Mushroom than the plant of the open meadows. In country markets the Horse-Mushroom is the variety commonly exposed for sale, and the Meadow-Mushroom less frequently appears, the former being far more common, and generally a heavier and bulkier plant.

The position of the Meadow-Mushroom on the coloured plate is indicated by the letter S in the accompanying outline (fig. 100), and the Horse-Mushroom by the letters T, T. The general average form and colour of the two plants can be seen on the coloured plate, but the decisive characters are best observed by cutting the plants through from top to bottom, as shown in fig. 101. The section displayed on cutting is virtually the same in both the Meadow and Horse-Mushroom. The salient characters consist in the cap being very fleshy, in the gills

being free from the stem, as at A (displaying a channel round the top of the stem when the uncut fungus is turned upside down), in the separable skin and edge of cap (see coloured plate), hanging down below the edge of gills at B, and in the collar which encircles the middle of the stem at C. A point of the first importance rests in the character of the gills not quite reaching the stem. The cap of the Mushroom is dry, never viscid, and may be silky, hairy, or scaly; it varies in colour from white to tawny, smoky, or it may even be of a darkish brown tint; the gills are at first whitish, then pink, or salmon, at length brown or black; the spores thrown down from the

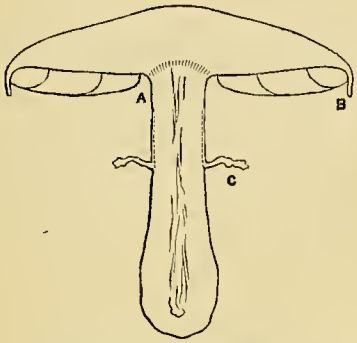


FIG. 101.—SECTION OF THE TRUE MUSHROOM, AGARICUS CAMPESTRIS. (S, ON KEY.)

gills are brownish - purple or purple - black, and the stem is almost solid—not hollow. The Meadow-Mushroom sometimes shows a pink colour on being broken, and one variety turns almost blood-red; in another form the gills remain almost colourless, whilst in a third the top is more or less of a bright-purple colour. In the Horse-Mushroom the entire plant is larger and coarser; it prefers the neighbourhood of trees and hedges to the open pastures, the flesh changes more or less to dull yellow when cut or broken, the stem is more inclined to be hollow, and the gills are a dirty whitish brown, at length black. An entire volume might be written on the varieties of these two fungi, and the forms intermediate between them. Many of the forms have been named as varie-

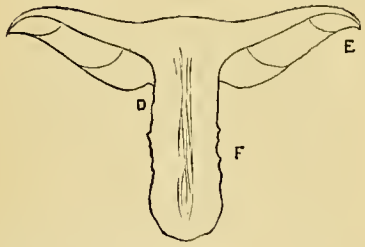


FIG. 102.—AGARICUS FASTIBILIS. (W, ON KEY.)

ties, and sometimes these varieties are made to rank as species. Notwithstanding these variations of size, contour, and colour, the character found in the habit does not change, neither do the botanical characters found in the free gills, the hanging edge of cap, and the collar round the middle of the stem. In the Department of Botany at the British Museum may be seen carefully finished water-colour drawings by the writer of this article, of nearly every known variety of both Mushrooms. The consumption of *bonâ fide* Mushrooms is sometimes followed by indigestion, or some other unpleasant symptom. This is at times due to some peculiar idiosyncrasy of the consumer; at other times it is owing to some accidentally acquired property of the plant taken up during growth, or to the presence of a parasitic mould, or it may be due to incipient decomposition having set in. Mushrooms and all other fungi should be perfectly fresh and clean when prepared for the table, and they should never be gathered from a rank or unclean position.

Experienced fungologists and observers of ordinary sharpness never confound any other fungus with the Mushroom, but careless, non-observant and ignorant persons often make the most surprising errors. Sometimes mechanics belonging to cities (and even country towns) make extraordinary mistakes, and try most hazardous experiments in fungus eating. I have more than once known instances of such persons eating minute fungi or consuming the crimson-topped and acrid Russulæ of our woods for Mushrooms.

The figures on the coloured plate represented by V V on outline belong to Agaricus crustuliniformis, and those indicated by W W pertain to Agaricus fastibilis. These two fungi are closely allied, and probably very dangerous, and they have a superficial resemblance to the Horse-Mushroom. I have several times seen them placed with Mushrooms in fungus exhibitions, and specimens have frequently been sent on to me as doubtful Mushrooms. Undoubtedly both plants somewhat resemble the Horse-Mushroom

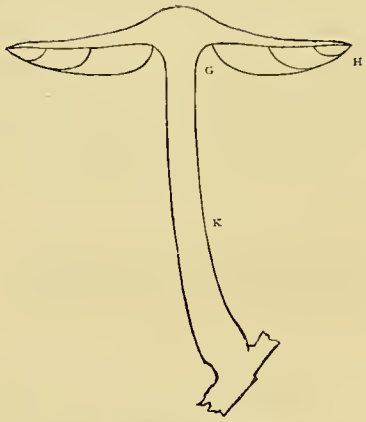


FIG. 103.—AGARICUS CERVINUS. (X, ON KEY.

in external appearance, but in character and habit they differ entirely. The habitat is different, as the two dangerous fungi usually grow in woods and woody places, and not in pastures, and the odour is disagreeable instead of pleasant. The cap is moist or viscid, and not dry; the gills are not free, but attached to the stem (fig. 102, D). There is no hanging margin to edge of cap (E), there is no true ring round middle of stem (F), and the gills never become black. It must, however, be confessed that A. fastibilis and its near neighbours are very variable in all their characters, therefore one isolated point must not be taken by itself in this or any other fungus, but all the characters must be taken together. An article was recently published in the *Gardeners' Chronicle* recounting how Agaricus fastibilis had taken possession of a Mushroom bed in America. This was a most extraordinary case, and if such instances should ever become common Mushroom culture would cease altogether, owing to the superficial resemblance to be found between this plant and the bed Mushroom.

Agaricus cervinus (fig. 103) is represented on the coloured plate at X in key, and however much this fungus may appear unlike a Mushroom to the fungologist, yet it has often been placed with Mushrooms in exhibitions of fungi, and it is one of the plants commonly sent on to me as a possible or doubtful Mushroom. It resembles the Mushroom in its pink-coloured gills, which are, as in the Mushroom, free from the stem (fig. 103, G). A. cervinus, however, has a different habit from the Mushroom, for it generally grows in woody places on and about stumps, though sometimes it certainly grows upon the naked ground, as do several of its neighbours. The plant is less fleshy in all its parts than the Mushroom, it has no hanging margin to its dry top at H, and, most important of all, it never has a collar round the middle of its stem (K). Its odour is not disagreeable, and the flesh remains white

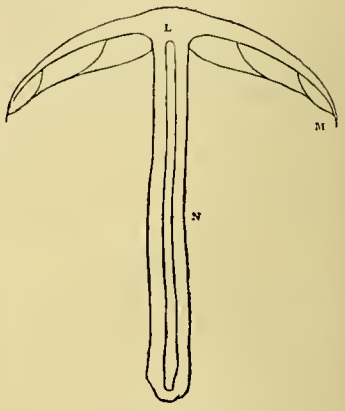


FIG. 104.—AGARICUS VELUTINUS. (Y, ON KEY.)

when cut or broken, but (like all pink-spored Agarics, of which this is one), it is probably a dangerous fungus.

Agaricus velutinus (fig. 104), Y on diagram, often puzzles beginners and not unfrequently finds a place in the Mushroom gatherer's basket. Its qualities are imperfectly known, but like the next and last it has disagreeable and poisonous relations as neighbours, and therefore it may be looked upon with well-merited suspicion. Like the last, A. velutinus usually grows on and about stumps in woody places, and in garden

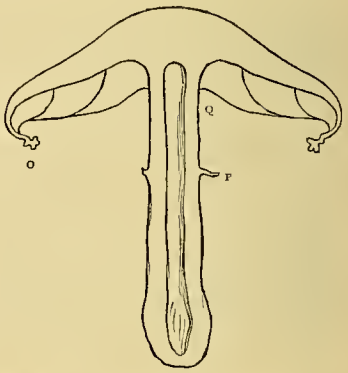


FIG. 105.—AGARICUS LACRYMABUNDUS. (Z, ON KEY.)

beds. It considerably resembles a slender Mushroom, though all its parts are more attenuated and brittle. It is far less fleshy (L) than a Mushroom, and it has a decidedly hollow or piped stem; it is furnished with a hanging margin or fringe round the edge of its dry cap, M, but the stem has no central collar, N. The flesh is stringy, and changes colour to yellowish brown when cut or broken; and the gills which are brown, purplish brown, or black, are commonly studded with drops of moisture.

The fungi represented at the bottom of the coloured plate, Z, Z on outline key, belong to Agaricus lacrymabundus (fig. 105). I have frequently known this fungus to be gathered for the true Mushroom, and it often (like the last) finds a

W. G. Smith ad nat. del.

TRUE AND FALSE MUSHROOMS

place with Mushrooms for ketchup. It has many characters in common with the Mushroom, but it generally grows about stumps, though it is far from uncommon in bushy shady pastures and in gardens; it is somewhat less fleshy than the true Mushroom, it has a decidedly hollow or piped stem, flesh which changes to yellowish brown on being cut or broken, and a disagreeable odour. It generally has a ragged veil or fringe round the margin of its dry cap at O (fig. 105), and a ragged collar at P. In the attachment of the gills A. lacrymabundus differs from the Mushroom; for in the former plant the gills fairly reach the stem, Q, and therefore the characteristic channel left by the free gills of the true Mushroom is not to be seen.

It is very difficult to express in words the more delicate characteristic features of Agarics, and it is equally difficult to draw or paint the same features. Undoubtedly the characters exist in Nature, and an experienced fungologist will know, almost at a glance, the names and characters of from 500 to 1000 species of Agaricini. Sometimes, however, individual specimens of common species are very puzzling, as all Agarics have a great tendency to vary. A specimen of A. terreus puzzled the Woolhopeans at Hereford for some hours at their last meeting; a group of A. inamœnus and another of A. velutinus did the same. A. laccatus is so variable in its size, form, and colour, that its varieties might with some show of reason be referred to a dozen different species. It is impossible to know or study Agarics from herbarium specimens; they must be studied in the woods and fields.

Agaricus præcox, common in our gardens and fields in the spring, is sometimes mistaken for the Mushroom, as also are Agaricus melaspermus and A. obturatus, plants belonging to the woods and pastures of autumn. These three plants are at times mistaken for very small Mushrooms by persons unacquainted with fungi. *Worthington G. Smith.*

ROOT PRUNING.

The theory and practice of root-pruning are now pretty generally understood; therefore, in directing attention to it now it is not needful to discuss the subject at length, but only to insist on the special necessity that has arisen for it at this time, owing to the exceptional character of the season. The excessive rainfall has encouraged an abnormal growth of more than ordinary succulency and size. Such wood is weak and ill-prepared to bear the strain of the coming winter, which is not unlikely to be one of much severity. Such mostly come on the heels of wet seasons. Watery wood and stinging frosts come badly together for the well-doing of the trees. The recent spell of dry weather came most opportunely to check or mature over-luxuriant growth, and even the unusual coldness of the weather may have rendered important service in this double capacity. But still the time is short, the growing season is nearly at an end, and as far as coming events casting their shadows before may be trusted, the winter will be an early one; therefore not a moment should be lost in root-pruning fruit trees as a means of completing the maturity of their wood.

There can be no doubt about the potency of root-pruning as a means of promoting the earlier and more perfect maturity of the wood and buds of fruit trees. Of course the sun's light and heat are the chief agents in this matter, but it is equally true that these influences are checked or hampered in their ripening operations by an excess of crude or watery sap. Cut off or limit the supplies of that, and the sun works with more freedom and potency. Solar influences are no longer handicapped by an excess of water or sap in the tree when that exists—it has been evaporated, got rid of before the work of ripening the wood and finishing fruit-buds can be set about. The sun force expended in dissipating the excess of water in the sap is lost for other and higher purposes, hence the importance in cutting off or curtailing the supply of fluids by early root-pruning in such seasons as this. The very roots, too, that are generally singled out for severing or removal by the root-pruner are mostly those that raise most water. Without going very deeply into the physiology of root structure or function, the statement may be assumed to express a general truth, that the larger and simpler the structure of a root the more water it will raise. The converse is also true—that the more divided and fibrous the root the less water it probably sends to stem, branch, and leaf. We have hardly sufficient data concerning root function to enable us to advance a step further and assert that the fibrous roots forward the most and the best food, and the single undivided roots the least. But experience shows that fibrous-rooted trees ripen their wood sooner than those that are less branched, consequently root-pruning promotes maturity of wood and bud in two ways—it cuts off the excess of aqueous matter in the sap, and powerfully promotes that change of structure, if not of function, in the roots, that is most favourable to the ripening of the wood.

There is another obvious reason for root-pruning earlier and more severely than usual this season. The majority of fruit trees have borne little or no fruit. Freed from the burden of a crop, many of them have rushed into the making of more wood than usual. The sooner this abnormal vigour is checked the better for next year's fruit prospects; for it must be borne in mind that sterility has a tendency to repeat itself as well as fertility. Cultivators, as a rule, have not sufficiently recognised the operations of this law of like begetting like, even in such matters as fruit or no fruit. Few will deny the fact, though only those who are most familiar with root culture will be prepared to understand how it is that fruitful seasons and barren ones often seem to come in cycles. A free growth alone, with no crop to divert much of the vital force of the trees into fruitful channels, must of necessity result in a corresponding development of vigorous roots. These, if left unchecked, result in another crop of abnormally vigorous wood. The latter, again, results in the production of still more and larger roots, and so on and on to infinity; unless the exhaustion of the soil, the resistance of the subsoil, severities of climate, age or extension of parts, arrest the process of wood growing. The root-pruner, however, instead of waiting for such contingencies simply steps in and severs a few of the strongest roots, and thus forcibly arrests the dual processes of reciprocal wood and root-making, and compels the trees to set about the third and more valuable function of fruit bearing.

The sooner root-pruning is set about and completed the better. A caution may be needed against carrying the process too far. The temptation is strong when roots are exposed, after considerable labour, to prune them rather severely. This is seldom necessary or desirable. It is much better generally to raise up roots that are too low than to cut them off. Only the largest and most vertical roots should be cut off. The mere uncovering, and especially the detachment of the roots from the soil, is of itself almost as great a check as moderate pruning: for each root detached from its place of growth and what may, for lack of a better term, be designated its growing hold of the soil, is severely checked until it gets a new grip of the freshly moved or disturbed earth. It thus comes to pass that root-disturbance and examination may answer most of the purposes of root-pruning. A change in the place of roots, the raising them from a low to a higher level, may also bring about all the difference between a sterile and a fertile condition.

The character of the roots may also be modified by removal and a change of place—almost as much by a change of place and of soil as by cutting. By merely lifting large single roots nearer to the surface they often ramify into numerous fibres. From all which it follows that, while exposing the roots of trees with the ostensible object of pruning them, the amount of pruning to which they ought to be subjected, and even the prior question of whether they should be pruned at all, must be determined on the spot.

There is no operation that needs more judgment and care than root-pruning. The practice has often been brought into disregard by the reckless mode of its performance. Some even perform it in the dark, and dispense as far as possible with the preliminary search for or careful examination of the roots. All roots are slashed off within a certain radius of the bole and a specified depth from the surface. Such operations may be designated almost hackings or choppings of the roots. As well send blind men to prune the tops of trees as thus hew their roots to pieces in the dark. Root-pruning needs to be as carefully performed as the most skilful forms of top-pruning, and opportunity should always be taken of the operation of pruning to train the roots also so as to avoid over-crowding, and to place each in the likeliest position for finding the most abundant supplies of the best food with the least risk of being preyed upon or overrun by the neighbouring roots.

Root-pruning, then, carefully performed, is an operation that may not be needful more than once in the life of most trees, and of it more than of almost any other cultural process it may be affirmed that what is worth doing at all is worth doing well; unless, in fact, done well it had better far be left undone. *F.* [We doubt the accuracy of our correspondent's dictum, that the larger the root the more water it will raise, and *vice versâ;* and we have abundant evidence that a multitude of fibrous roots form better feeders than simple undivided roots. But these matters do not affect the practical side of our correspondent's article. Eds.]

New Garden Plants.

Cypripedium lucidum, *n. hyb.* (villosum × Lowii).*

This is one more of Mr. Seden's highly curious hybrids, obtained at the Royal Exotic Nursery of Messrs. Veitch. It has the leaves just intermediate between those of the two species, narrower than in C. Lowii, and longer and stiffer than they are in C. villosum. There is a well defined narrow cartilaginous and lighter border. The peduncle would appear to be racemose, as I judge from my having obtained but a single flower without peduncle or bract. The flower has the cruciform position of sepals and petals so very remarkable in C. Lowii. The upper sepal is greenish, with much brown at the base and in the middle, where there are very many brownish spots from which a brown middle line runs towards the apex. The inferior sepal is greenish yellow, rather narrow. The petals from a narrow base are much dilated, shining inside like the upper sepals, minutely ciliate, the superior half inside is brownish violet, the interior (basilar) part more yellowish, with very many brownish violet spots at the base. The lip is nearly that of villosum, but chiefly brownish violet. There are, however, the small cartilaginous plates in the interior base of the sinuses of the horns with the channelled nail. The staminodium is nearly triangular, a middle tooth stands at its retuse anterior side, and the lateral parts are obscurely bilobe. There are many short violet hairs at its base and at its sides. The ovary is covered with whitish hairs. The mother plant is C. Lowii. *H. G. Rchb. f.*

Sedum lydium, *Boiss.*†

A pretty looking Sedum, which has for some years past found favour with gardeners who devote themselves to "carpet bedding." Its neat, close habit, and green colour, tending to red in hot seasons and dry places, render it admirably suited for the purpose in question.

We should hardly have thought it worth while to allude to it under this heading, but that the true name, S. lydium, has scarcely yet made its way into books on garden botany, and although the name occurs in some catalogues, yet it is difficult for any one not conversant with the technical literature of descriptive botany to verify the name or identify the plant. We have ourselves received the plant under the names of S. lividum, S. pulchellum, and S. anglicum—all three widely different plants.

* *Cypripedium lucidum*, n. hyb. (*Cypripedium villosum* × *Lowii*).—Foliis ligulatis acutis valde coriaceis rigidis; pedunculo —, bractea —; ovario trigono villoso; sepalo superiori oblongo obtuse acuto dorso carinato extus villoso; sepalo inferiori optime connato, anguste ligulato, extus villoso; tepalis lanceolato-ligulatis obtuse acutis, limbo minute ciliatis, valde vernixiis; labello antice retuso, cornubus retrorsis bene evolutis; lamella utrinque in sinu inter cornua et unguem; staminodio triangulo, dorso carinato, antice quinquelobo, lobo medio dentiformi.—In horto Veitchiano artificialiter excultum. *H. G. Rchb. f.*

† *Sedum lydium*, Boiss., Diagn., ser. i., 3, p. 17, et Flor Orientalis, ii., p. 782.—Glabrum cæspitosum; caudiculis repentibus; caulibus ascendentibus sterilibus abbreviatis dense foliosis; foliis linearibus obtusis; cyma corymboso-capitata radiis brevissimis densifloris scorpiodeis; pedicellis calyce brevioribus; petalis roseis lanceolatis obtusiusculis calycis laciniis oblongis obtusis subduplo longioribus.—Lydia et Caria. S. pulchellum et S. lividum hort. var.

S. lydiam is, as its name implies, a native of Asia Minor. Its barren shoots are 2 to 3 inches high, erect, and densely covered with alternate erect linear subterete green leaves about ½ inch long, auricled at the base, blunt at the tip, and studded with small reddish tubercles, very pretty under a magnifying glass. The flowering shoots are 4—5 inches high, erect, with leaves of the same form as those on the barren stems, but less crowded. The flowers are numerous and borne on a corymbose cyme. The flower-buds are pentangular in outline. The expanded flowers are about ¼ inch in diameter, with oblong blunt reddish sepals; the petals are white or pale rose-coloured, oblong lanceolate. The stamens are double the number of the petals, those placed in front of the latter organs are adherent to them, and slightly longer than those placed in front of the sepals. The anthers are red. The ovaries are whitish or ultimately pink, surmounted by slender styles as long as themselves, and encircled at the base by small yellowish glands.

It is a charming little plant, well suited for rockwork, for covering places where little else will grow, and for carpet-bedding purposes, on which account it is desirable that its true name and position should be put on record. *M. T. M.*

THOMAS RIVERS.

By the death of Thomas Rivers, of Sawbridgeworth, British horticulturists lose one of the greatest of experimental physiologists, as well as one of the greatest practical benefactors to their craft. Rose growers, fruit lovers, planters in particular, may revere his memory. A keen man of business, he was yet so imbued with the love of truth for its own sake that, though never neglecting the main chance, he has by his genuine enthusiasm, as well as by the systematic method which guided his proceedings, earned a high place among the small band of vegetable physiologists.

Thomas Rivers was born at Sawbridgeworth in December, 1798, and on the death of his father succeeded to the now famous nurseries, which have been in the occupation or possession of his family at least a century and a half. The love of horticulture was strong in him from early youth. The curiosity which in some boys manifests itself in birds'-nesting, insect-catching, and the like, showed itself very early in attempts to grow, raise, and propagate plants. As years rolled on the love of experiment manifested itself in attempts to improve various descriptions of Roses and fruit trees.

The record of his life and works may be best found in his own books, *The Rose Amateur's Guide*, *The Miniature Fruit Garden*, *The Orchard-House*, &c. The popularity of these little books was amazing; of the first a tenth, of the second an eighteenth, of the third a fifteenth edition was issued. These were not mere trade catalogues, of which an annual edition might be published, but excellent little practical treatises revised in the case of each edition, so as to include the last experiences of the author and his correspondents. Such was the extent of his observations and the amount of his knowledge, that insight into the future of pomology at least seemed as remarkable with him as his knowledge of the past. In him truly "did old experience attain to something of prophetic strain."

Our own columns from the commencement in January, 1841, till a few years since, teem with notices from his pen, and with the comments of others on his publications and his nurseries. He was always a valued contributor to our pages, and a handsome clock on his mantel-piece was laughingly pointed out by him as the "Chronicle," in allusion to a compliment paid to him in recognition of his services. The fullest and most complete account of his nurseries, with incidental allusions to the work done by the proprietor, is given in our volume for 1866, by Mr. D. T. Fish.

In this place we can but briefly allude to the more salient features of his career. Progress was the law of his life from the first, whether it was in Roses, in fruit culture, or in the raising of new fruits. As far back as 1841 we find him growing a fine plant of the "finest Azalea ever known," and so through life, till enfeebled by age and sickness, progress was his motto.

Experiments with Manures.

One of the earliest things to attract his attention was the question of manures. He made endless experiments with them. He was one of the first prominent advocates of the value of malt dust as a manure. For many trees, especially Elms, he showed the value of bone-dust. For Plums he advocated the use of salt. For Strawberries his experiments showed that nitrate of soda (3 oz. to the square yard) was a valuable manure, preferable even to guano. On the other hand, nitrate of soda as an application to Roses he found to be not only useless, but often injurious on his soil.

Root-pruning, Lifting, Double Grafting, etc.

Somewhere about the year 1839 we find him strenuously advocating root-pruning as a means of inducing fertility, and preventing the growth of coarse sappy wood shoots. There was nothing absolutely new in this, indeed it was practised by the Romans, but it had very much fallen into disuse in this country, and it needed the impulse of his practical mind and experience to recommend it to our gardeners. A measure of this kind, involving serious mutilation, requires judicious carrying out. Recklessly or too frequently performed it may do more harm than good. We are not sure that harm did not arise in many cases from Rivers' advocacy of the practice. Root-pruners did not all possess his experience and his judgment. As he himself used to say, the public required to be told, and told explicitly, that the proper end of a Cabbage to be put into the ground was the root end. Actuated perhaps by the consideration of the harm done by injudicious root-pruning, Rivers experimented largely on the lifting of fruit trees with the same object. This practice is less open to objection than root-pruning; and by inducing the formation of a leash of fine feeding-roots near the surface is often very advantageous.

Double grafting was another practice Mr. Rivers introduced to the notice of our horticulturists. In France it had been long practised under the name of *greffe sur greffe*. Pears that do not do well on the Quince, for instance, are double worked, that is, some other Pear, such as Gansel's Bergamot, is worked on the Quince, and in turn becomes the stock on which the desired variety is grafted. The object of the proceeding is to secure an equal growth of scion and stock and earlier and increased fertility. Seedling Peaches were treated in a similar way, being budded on the Plum stock, on the shoots of which latter the desired varieties are again budded.

Stocks.

The question of stocks was ever one of the foremost objects of Rivers' attention. He rightly surmised that the habit, earliness, and productiveness of particular varieties, as well as their relative hardihood and suitability to particular conditions, depended in very great degree on the kind of stock employed, hence nearly forty years ago he introduced the Manetti stock from Italy. Its history is given in his *Rose Amateur's Guide*. The strong growth of the Manetti was found to make an excellent stock for Tea and China Roses, and to obviate in a great degree the evils arising from the production of suckers, to which the Brier is prone.

Roses.

The culture and improvement of Roses early excited his interest, and secured for him well earned renown. "We all regard as our commander-in-chief," says the genial author of the *Book About Roses*, "that veteran hero Rivers, of Sawbridgeworth . . . Age cannot wither his loyalty, and beneath a hundred medals, orders, and clasps, his brave heart is still with the Rose." At the age of twenty he considered himself the most dexterous and rapid budder of Roses that ever lived and was likely to live. Before his time standard Roses were imported from France, but Rivers went to the hedgerows for his stocks, and rendered himself independent of French supplies so far as these were concerned. The *Rose Amateur's Guide* is replete with sound information and historical detail, not the least interesting at the present time being the account of the beautiful hybrid China Rose, Rivers' George IV., which he raised about 1840, and which he says probably contributed more than anything to make him an enthusiastic Rose cultivator. The bright crimson-scarlet hybrid climbing Rose, named Sir John Sebright, was also raised by him at Sawbridgeworth from Italian seed. Mr. Rivers did not raise many new Roses, but he was a large introducer of new French varieties, and records with evident delight how, so far back as 1849, he sent out no less than 8000 standards and dwarfs of the glorious old Géant des Batailles, one of the progenitors of many of the best Roses of the present day.

The following extract from his catalogue of Roses for the present year is worth quoting from the point of view just named:—"In the *Gardeners' Magazine* for August, 1833, Mr. Loudon, the gardener's best friend, takes occasion to say of the first, or nearly the first, edition of my catalogue of Roses, 'This we consider to be the most useful catalogue of Roses in the English language.' He then goes on to say, 'To convey an idea of the completeness of the collection we may mention that there are sixteen sorts of Rosa indica odorata' (the tea-scented Rose). What a contrast this offers to catalogues of the present day, in which from sixty to eighty varieties of this class are named and described! In looking over a catalogue of the above date, printed on a single folio sheet, I find not even one variety of our favourite class, the Hybrid Perpetual, named."

Orchard Houses, etc.

In the construction of houses for horticultural purposes efficiency and economy were the leading principles acted on by Mr. Rivers; houses and pits of weather boarding, covered with felt, with lights springing from a brick wall, or it might be from a thick hedge, were largely used by him. For everything that he did he had a good reason; the wood and the felt were not only cheap and effectual, but they allowed of rapid cooling by night, and in that way he endeavoured to imitate the Eastern climate, whence so many of our fruits have been derived, by securing a high day and a cool night temperature. The hedge-walls secured ventilation and prevented scorching; originally many of these houses were heated by an Arnott stove, with an evaporating pan at the top. But it was in the year 1851 that the orchard-house, with which his name will be ever associated, was first systematically introduced as a remedy for the fickle uncertainties of our spring climate. We have no intention of entering into the old controversy as to the value of these structures, the comparative advantages of pot culture, or of planting-out; suffice it to say that orchard-houses have become an established institution in the gardens of amateur horticulturists, and that their value under certain circumstances is no longer a matter of doubt. In the report of the Botanical Congress of 1866 is an excellent account of the mode of constructing and managing these houses and the fruit trees in them. In this paper, reproduced in our columns at the time, Rivers alludes with honourable pride to "orchard-houses—a term at first broached with diffidence, but now imbedded in the language."

Nor was this the only boon he conferred on the amateur gardener; ground vineries and similar structures for the protection of salads and other plants, if not absolutely introduced by him, were at least introduced more widely to public notice through him than they would otherwise have been.

Rivers as a Pomologist.

But it is as a pomologist that Rivers will probably be longest remembered among us. It is not as a fruit cultivator that we have to speak of him, for we have had others greater than he; nor probably could he be compared with such as Thompson for an intimate knowledge of fruit nomenclature. But Rivers, from his own experience, had a wonderfully intimate knowledge of fruits, a special knowledge of some classes, "all his own," which he seemed never weary of imparting. No man in this country has done so much as Rivers in popularising the cultivation of fruits or in proving and introducing new or unknown sorts to our knowledge. It is not either to his introduction and advocacy of orchard-houses or the cultivation of fruit trees in pots that we would here allude, although assuredly they gave a great impetus to fruit growing, and perhaps tended in his own case in no small degree to make that possible for which his name will be long honoured and respected.

As a fruit hybridist, as the raiser and introducer of new fruits, the name of Rivers stands pre-eminent. We have had no English pomologist to compare with him at all in this department, if we except T. A. Knight. For the last quarter of a century and more there has been scarcely a season without some new fruits from Sawbridgeworth, and many of them have been very decided acquisitions, and are now popular and largely cultivated varieties. We subjoin a list of such new fruits raised and sent out by Rivers as we have been enabled to trace—probably very incomplete. The most remarkable are those in the Peach and Nectarine classes. In these quite a revolution has been effected. It is extremely interesting to note the parentage of some of these fruits—how some have

been bred "in-and-in," as it were, and others cross-bred. We have here accounts of Peaches raised from Nectarines, and of Nectarines from Peaches, proving that they are but varieties one of the other. In the Peach classes the great triumph achieved is the securing of the early varieties. By these Rivers has enabled us to extend our Peach season several weeks without giving any more trouble to the cultivator. This is a decided gain. What does it matter if these early sorts are not quite so large or so fine in quality as some of the mid-season fruits?—they are very good, and will remain a lasting honour to their raiser. The Princess Beatrice is considered the best early, Goshawk is a large and fine early sort, well worthy of cultivation. Of the late sorts not so much in favour can be said. The Princess of Wales and Lord Palmerston are both large and very showy fruits, but seldom of fine quality, partaking too much of the character of their parent, the Pavie de Pompone. Of hardy varieties or improvements on old good sorts, we have Early York (Rivers), bearing glands, and consequently much hardier and not so susceptible to mildew as the old Early York, one of the discoveries, if we mistake not, of Rivers himself—the Alexandra Noblesse having a like distinction and qualification over the old Noblesse, &c. The mid-season varieties, although distinct, we do not consider equal to pre-existing standard sorts. In Nectarines the most wonderful advance has been made—nearly all of Mr. Rivers' seedlings being infinitely superior to the older sorts of the old varieties; none ever equalled in quality of flavour the Stanwick, but this was subject to one great blemish, that of the fruits cracking. Mr. Rivers, however, took advantage of this, and by judicious crossing succeeded in raising several varieties having all the good qualities of the Stanwick without its defects. We allude to the Victoria, which is perhaps the finest Nectarine in cultivation. It greatly resembles the Stanwick in every way, but does not crack. The Prince of Wales is another of the same sort, but later; and later still, the latest of all, is Albert Victor. Of the yellow-fleshed class Pine-apple is a great improvement on Pitmaston Orange. Another, of newer origin, is Lord Napier, a rather early, very large, and extremely handsome variety of excellent quality. This bids fair to be the leading Nectarine.

In the Plum classes several very important additions have also been received. Early Prolific, the earliest of all Plums, and a great bearer; Autumn Compôte, a first-class late cooking Plum; and Sultan, which bids fair to supersede the Prince of Wales, which it greatly resembles. If it does so, and frees us from the loss of trees which the cultivators of Prince of Wales Plum experience, it will be a gain.

The following list comprises some of the best known varieties originated at Sawbridgeworth:—

Peaches.

Albatross
Alexandra Noblesse
Comet
Condor
Crimson Galande
Dagmar
Dr Hogg
Early Albert
Early Alfred
Early Beatrice
Early Louise
Early Leopold
Early Rivers
Early Silver
Falcon
Gladstone
Golden Eagle
Goshawk
Lady Palmerston
Large Early Mignonne
Lord Palmerston
Magdala
Merlin
Nectarine
Osprey
Prince of Wales
Princess of Wales
Radclyffe
Rivers' Early
Sea Eagle
Stanwick Early York

Nectarines.

Advance
Albert
Albert Victor
Byron
Dante
Darwin
Downton Improved
Humboldt
Lord Napier
Pine-apple

Nectarines.

Prince of Wales
Rivers' Elruge
Rivers' Orange
Rivers' White
Stanwick Elruge
Victoria

Plums.

Autumn Compôte
Blue Prolific
Czar
Early Favourite
Early Rivers
Early Transparent Gage
Grand Duke
Late Rivers
Late Prolific
Rivers' Early Apricot
Rivers' Early Damson
Sultan

Pears.

Beacon
Fertility
Princess
Seedling Bergamot
St. Swithen
Summer Beurré d'Aremberg

Apricot.

New Large Early

Cherry.

Early Rivers

Raspberry.

Autumn Black

Strawberry.

Royal Hautbois
Seedling Eliza

Seedling Fruits, etc.

In an article in our columns in 1871 on seedling fruits we have a most interesting account from Rivers' own pen, wherein he speaks of raising seedlings as exercising a fascination over him "which grew with my youth and has strengthened with my decline." The wonderful variations he had seen in fruits raised from seeds filled him with astonishment, and then he goes on to speak of his selections from Jefferson's and Reine Claude de Bavay Plums. Many hundreds of these were raised, and "all of great interest to the raiser, as the origin of all is given. It will be some years before all these trees bear fruit, but every season will give hope, and then disappointment, which one does not seem to feel, it is so often the lot of the fruit raiser." Speaking of seedling Plums he says:—

"It is now as nearly as possible fifty years since—I think I have told the tale, but *n'importe*—that my attention was attracted to some grand old Plum trees planted by my grandfather between 1770—1780. Their name, I think, was the Early French Plum. I soon found out that the proper name was Précoce de Tours. These trees, once in four or five years or so, bore good crops; in other seasons a mere sprinkling of fruit. By a sort of intuition it struck me that this tender but early Plum might be acclimatised by raising seedlings from it. Accordingly I sowed some stones, and raised some young trees. There were planted in a corner and nearly forgotten; I was then immersed in Rose culture. After some eight, or ten, or twelve years had elapsed, these trees commenced to bear fruit; I was struck by the precocity and goodness of one, and the great fertility and goodness of the other. They were first distinguished by their numbers, and were simply No. 1 and No. 2; after a few years the former was named the Early Favourite, a dessert Plum, and the latter the Early Prolific, at present the most popular of all Plums, not only for its earliness, for it is at market by the end of July, but for its excellent flavour as a preserve; it is when well grown and ripe far superior to any other early Plum, even as a dessert fruit. For the last twenty years it has so increased in popularity that from 15,000 to 20,000 trees are sold here annually, and some thousands of young pyramids are planted out 6 feet apart for bearing, under market-garden pruning. By raising this sort—creating it—one feels to have benefited one's species, and, like growing the extra blade of grass, the feeling is one of gratification.

"About twenty-five years ago, when full of Rose love and Rose lore, I happened to be at Bellevue, a charming height near Paris—now, I think, devastated—on a visit to M. Laffay. In the midst of our Rose talk he said, 'You are so full of Roses, but look here—taste.' He then gave me a large mottled Golden Gage, with a most excellent and distinct flavour, superior, I then thought, to the old Green Gage; I think so still. This was Reine Claude Diaphane (now the Transparent Gage), because when fully ripe you can see the stone plainly. A few years after this time I received some trees, but they seemed so disinclined to bear that I despaired of them, their shoots were so glossy and vigorous, and their leaves the same, that no blossom-buds would form. This went on till the hot summer of 1857, I think, when some fine fruit ripened in September—how large and excellent they were! I was not, however, satisfied with the habit of the tree; it was too vigorous, and to a certain extent shy in bearing. My success in acclimatising the Précoce de Tours came to mind, and I had hopes. Some stones were sown, some young trees raised, and two years ago I had the pleasure of seeing a Plum of my own creating, likely, in a humble way, to immortalise my name (*cui bono?*). This seedling is a marvellous likeness of its parent as regards the colour, quality, and size of its fruit, but it ripens fully a month earlier, and is a great bearer; but, above all, instead of having smooth vigorous shoots, it has stout downy ones, and rugose leaves: a more complete departure from the parent I have never witnessed. One day this Plum will go to the London markets by thousands of bushels, and its raiser or creator may be remembered."

In the Congress report, to which we have before alluded, the subject of raising Peaches, Nectarines, and other fruits from seed is also treated at some length, and we are therein told how he formed the idea that varieties of fruit trees might be fixed from seed, and acquire the permanence of species. He tells of his disappointments with Apples and Pears, and of how he on the occasion of a glut in the market in the pre-railway days bought several bushels of Green Gages, and sowed the stones. Not one among the seedlings yielded a fruit worth a name, but all gave green fruit, so far bearing out his theory. He then narrates the history of the Early Prolific Plum, which is neither more nor less than the Précoce de Tours—vigorous in habit and abundantly prolific. "I felt," says he, "amply rewarded for my almost obstinate adherence to a somewhat speculative theory and for many years of careful culture."

In the same paper there is a brief account of his experiments with Peaches and Nectarines, and the wonderful results obtained by intercrossing different varieties:—"A white-fleshed Nectarine, the Elruge, had, with Mr. Williams, produced a seedling with orange flesh, the Pitmaston, which in its turn yielded at Sawbridgeworth a large white-fleshed Peach, and stones from that Peach produced trees with the characters of four generations—viz, the Elruge and Pitmaston Nectarines, the Peach (a child of the latter), and, again, the Pitmaston Orange Nectarine." "It will, I think," he adds, "be seen that my original and rather eccentric idea that old varieties of fruits would reproduce themselves in an improved form if successive generations were raised from seed, has to a great extent been realised."

The paper from which we quote ends with a suggestive hint as to the incurving of the petals as a protection against frost, and the possibility of breeding fruit trees with incurved petals which should be relatively frost-proof. "I may be accused of enthusiasm," says this grand old man, "but I look to the future for new races of fruits with qualities far superior to the old, and the trees of so hardy a nature as to resist some of the unfavourable tendencies of our climate. I have formed this opinion on the solid basis of close observation during a lifetime devoted to the culture of fruit trees in all stages of their growth."

If it were not that our space forbids, we should like to quote more from these two remarkable articles; suffice it to say that they give in brief the history of some of his more remarkable seedling Plums, Pears, Peaches and Nectarines. Of Pears he speaks of 3000 or 4000 varieties, crosses and otherwise—all of interest, but almost hopeless—it is so difficult to raise a fine Pear from seed to ripen when Pears are valuable. "The vagaries of my seedling Pears are productive of amusement, and the hundreds that have not borne of hope."

With Apples, he says he had but little success. He set up the Ribston Pippin as his test, and not one that he raised could surpass or even equal it.

Of Peaches and Nectarines we have already spoken, and what he effected by cross-breeding is known to most of our readers.

In raising of new fruits, as we have seen, Rivers adopted the two plans of selection from seedlings of known origin and of direct cross breeding. In either case exact records were kept—records which we may hope will one day see the light, as their value from a scientific point of view would be very great. Practically speaking, his main aim was to extend the season of particular fruits, and generally to improve their fertility and quality. In the case of the thousands of uncrossed seedlings raised by him only an infinitesimal number were preserved. Rivers' taste was too critically exacting to allow what he thought an inferior variety, or one not better than what we possessed before, to pass muster. Excellence only was perpetuated—the remainder, of mediocre or inferior quality, were made to serve an honourable and useful purpose as stocks.

In raising crosses Rivers followed two distinct plans—1, the self fertilisation or in-and-in breeding, and, 2, cross-fertilisation. Most desirable would it be on all accounts if the history and results of all these thousands of experiments should be recorded, for a more valuable series probably never existed. If the experiments were not carried out with so much care and accuracy as in the case of those of Mr. Darwin, yet their vast number and the length of time over which they extended may in large measure compensate for the defects in a scientific point of view. But it must be remembered that Rivers was quite aware of possible defects, and his keen eye and finely-tempered intelligence were excellent guides in the conduct of experiments. Nothing was left to chance, says Mr. Fish in writing on this matter, but the results obtained were the result of studious toil, minute observation, plodding perseverance, skilful experiment, and profound investigation. Hence his successes were no mere chapters of accident, but an onward series of philosophic sequences. The general results of cross-fertilising Peaches and Nectarines, Nectarines and Plums, Plums and Apricots, Apricots and Nectarines, and so forth was, we may repeat, to secure new flavour and qualities, varied constitutions, endless combinations of colour and characteristics.

Orange Culture, etc.

In later years Rivers turned his attention to Orange culture under glass, a subject which also formed one of the papers read by him at the London Botanical Con-

gess of 1866. The Orange-house at Sawbridgeworth is truly a lovely sight, but we cannot quite share the enthusiasm which would have us admit the flavour of a home-grown Orange to be equal to that of a St. Michael's.

Ornamental trees and shrubs formed another of Mr. Rivers' hobbies, and his taste for fine varieties and his interest in those that are curious were very noticeable; Planes, Elms, Oaks, Limes, Caraganas, and many others, were the objects of his care and attention. Our own columns contain the record of his observations on these matters, and the writer of these notes has cause to remember with gratitude the information on this as well as on various physiological subjects derived from him.

And now, after such a busy, active life the end has come. Age and diminished strength had paved the way, so much so that for the last four or five years Mr. Rivers lived in quiet retirement. Handsome in person, a fine man physically as well as mentally, Thomas Rivers leaves behind him a memorial that commands admiration, compels respect, and which will stimulate those who come after to lead according to their capacity a life as useful and as honourable as he did.

HARDY ARADS.

Although there is not much in the flowers, or rather spathes, of any of the Arums to commend them except their quaint forms and singularity, A. italicum is highly ornamental during the autumn months, owing to the number of fruit-spikes it bears. These are in the form of clubs, the top 6 or 9 inches of which is closely packed, like an ear of Indian Corn, with large rich shining coral-red berries, that, seen without the plant having any foliage and standing straight up from the bare ground, have a peculiar and striking effect. On a stroog clump in the herbaceous border here twenty-five of these brilliant fruit-spikes are now standing, and have been much admired for some time past, the dry weather apparently suiting them, as they are finer this year than I ever remember to have seen them before. The leaves are produced during the winter, and attain their full state of development by March or April, and are then exceedingly ornamental, as indeed they are all through their growth—the deep glossy green of their foliage showing up in pleasing contrast with the yellow veins by which it is traversed. The spathe is of a yellowish-green colour, and when fully expanded is from 4 to 5 inches across, or about double the size of the common Arum of our banks and hedgerows, as is also the spadix; so that even without the spikes of berries it is a very desirable plant to cultivate, and one that should be in every mixed or herbaceous border.

It is readily increased by division, which may be done almost at any time, but is best carried out now, just as the leaves are forming, as then they have a good chance of establishing themselves and getting strong before their season for flowering arrives. Any one obtaining the corms at once would, by planting them in deep rich soil, have the pleasure of seeing them bloom and produce their scarlet berries next summer, when if left to themselves they soon spread and form fine bold masses, that are sure to attract notice. The most remarkable of all the hardy Arums is A. crinitum, a native of Minorca, which from its grotesque character is well adapted for growing in the wild garden or fernery, or similar positions, where it can be afforded a loose sandy soil with plenty of moisture at the root. The leaves of this, instead of being entire, like A. Italicum, are divided, much after the manner of the more recently introduced Amorphophalus Rivieri, which it greatly resembles. In favourable situations it grows to a height of from 2 feet to 2 feet 6 inches, and produces very large spathes, which, when fully expanded, are from 8 inches to 10 inches across, and a foot or so in length, the interior being lined with dark-coloured hairs, and dotted or mottled over with black spots, which, with the large hirsute spadix, makes it a most curious-looking object, and a very interesting one to examine. The tube of the spathe, which is very large and long, is not erect like the other Arums, but has a peculiar bend near the top just before it expands, thus adding to the singularity of its appearance. When dying off it emits a carrion-like smell of sufficient strength to attract flies in quest of a place to deposit their eggs, some of which in their descent of the neck of the spathe for the purpose of doing so are enwrapped and made prisoners much in the way they are by the Sundews and other so-called carnivorous plants.

Arum Dracunculus is likewise a most interesting-looking plant to cultivate, and one that is altogether of such a striking character as not to be passed by without notice. The stem of this, which is flesh-coloured, is mottled or spotted over like the skin of a snake, and this peculiarity has suggested for it the name of the Snake-plant; but this is not the only one of its attractions, as it has handsome pedate leaves, and produces a very long spathe of a deep chocolate colour on the inside, with a spadix tapering and terminating in a fine point. Although a native of Southern Europe this species is quite hardy with us, and does well in shady places in loose boggy soil that has been well drained. Unfortunately, at certain stages of development it emits an offensive odour, but this is not continuous, as it may sometimes be detected on passing, when perhaps five minutes or so later nothing of it remains. To those in search of uncommon-looking plants I can strongly recommend the two above-named, as also Amorphophallus Rivieri [figured in our columns, 1873, p. 609]; but of the hardiness of the latter I have as yet had no experience, not having ventured to leave it out for the winter, neither have I had the pleasure of seeing it bloom. We have as yet been using it as a dot plant for the centres of circular beds, and to grow amongst Ferns and other foliage subjects in the greenhouse, where, from its stately Palm-like habit, it has been greatly admired. *J. S.* [Why not try the most curious of all, the Amorphophallus campanulatus, or the Godwinia, as sub-tropical plants, or where a heated outdoor border could be employed. Eds.]

PRINCE'S PARK, LIVERPOOL.

The inhabitants of Liverpool are indebted for this Park to that enlightened and philanthropic gentleman, the late Richard Vaughan Bates, of The Dingle, near Liverpool, who in 1843 purchased about 100 acres of land from the then Lord Sefton, and had the same laid out into what now forms Prince's Park, from plans prepared by that eminent landscape gardener, the late Sir Joseph Paxton.

In designing the Park, a portion of the land round the margin was reserved for building sites, on the whole of which for some years now a superior class of family residences have been erected, principally owned and occupied by the leading merchants, &c., of the town, this being quite a fashionable or West-end part of Liverpool. It is worthy of mention here that it is from an annual ground-rent levied upon this building land as sold off that the income for maintaining the whole of the Park expenses is solely derived, and it is in consideration of the resident having to pay this ground-rent (which is compulsory on purchase of land) that a small portion of the Park (about 3 acres) is called the "private grounds."

This private enclosure is worked out on such a judicious scheme that computation is completely baffled, and the ordinary idea would be that the garden is three times as large as it really is. This portion of the park is set apart for the exclusive use of the resident families, each family being entitled to one key. In the other portions of the Park the general public are admitted, and on fine days, especially Sundays, thousands avail themselves of the privilege, and it is to be hoped duly appreciate the great boon thus provided for them entirely free of cost, as not a single shilling goes out of the rates towards the expense of this Park, as in the case of other parks under corporate management. As one illustration out of many of the spreading growth of this great commercial town it may not be out of place to add that when Prince's Park was first designed it was what would be called "in the country" from Liverpool, whereas now it is becoming rapidly surrounded by the town—a fact that vastly increases the difficulty of general improvement. At the north or main entrance direct, *viâ* Prince's Road, from Liverpool, there is a commodious lodge erected for the manager, Mr. Mason, under whose astute management the name and reputation of Princes Park stand second to none in the kingdom for good order, general arrangement, and refined taste and ideas.

The health and arrangement of the shrubs and trees, the selection, propagation, and arrangement of the various tribes of plants that are used for spring and summer bedding, especially the latter, are particularly worthy of mention; indeed, it may be truly said that Prince's Park is the "Battersea of the North," for in no other place that we know of is carpet bedding attempted on so large a scale or so skilfully executed under the reverse of a favourable climate or circumstances. It is as well to observe that the effects of the inclement season on tender plants have been felt to some extent here, as elsewhere, but only on close inspection is it possible to trace defects which are more than compensated for when it is considered that any little eyesore in lack of growth amongst tender things is only of a very comparative character.

Of noteworthy objects may be mentioned a row o specimen scarlet Thorns, of remarkable growth and luxuriance, on the road leading from Sefton Park to Liverpool. St. Paul's Church, built for Dr. McNeil, late Dean of Ripon, is also an object that attracts the eye looking westward from the Park, and stands out in bold relief from all its surroundings. We merely mention this as an extraneous object, having no connection with the Park, except its position as a noteworthy edifice of some notoriety and importance. Returning to Mr. Mason's house we notice an irregular sweeping belt of evergreen trees and shrubs, the object of which is apparently to act as a protection to a beautiful chain border, which we shall notice presently, as well as to form an inclosure on the north side of what we may call a sort of American garden, which has been strikingly and very tastefully laid out by Mr. Mason. One is here struck by the combination of ideas so happily concentrated together that they harmonise with one another, and at the same time impart a bold outline to the landscape, and secure the paramount utility of protection. This American garden is of an undulating character, and is here and there relieved by raised beds in grass, the centre plant in each being a scarlet or pink Thorn, or some other striking object. The beds are filled with hybrid and Ponticum Rhododendrons mixed, some of which are edged with hardy Heaths, others with a mixed edging of such things as are known to be proof against a rough climate. As a rough-weather plant, either for individual purposes or for grouping, nothing seems to equal Pernettya mucronata. Here it is planted in the worst situation, and is always fresh and lively in appearance. An isolated circle of scarlet Pelargoniums, occupying a low spot in the centre of a little valley, can be seen from all points of vantage, and illustrates the advantage of strong colours as being peculiarly fitted for distant planting, the strength of colour being chosen in proportion to the effect distance is known to have in subduing colour.

Other outside portions of the park have undergone a complete reformation at the hands of Mr. Mason, particularly that portion adjacent to the Dingle Cricket Ground, which, as may be guessed, is a great resort for the youth and beauty of Liverpool during the greater part of the season.

As we propose to deal first with that portion of the Park which is open to the general public, we must now retrace our steps and examine the chain border, to which reference has been made elsewhere.

The border is a continuous chain of Cerastium, forming a series of oblongs each 12 feet by 36 feet, and circles 12 feet in diameter; the circles being raised in grass, and a specimen Hodgins' Holly being planted in the centre of each. The oblong spaces are devoted to flower-beds, with a margin of grass 18 inches wide between the Cerastium and the beds. The planting is artistically carried out, as follows:—Oblong No. 1 is a design of seven 2 feet 6 inches circles of Pelargoniums, four being Golden Superb Nosegay and three Miss Kingsbury, with a Centaurea and Beet in the centre of each respectively; the groundwork Viola Blue Bell, surrounded by a band of Golden Feather edged with Echeveria secunda glauca.

No. 2 is a design of nine beds, planted in variety with yellow Tagetes, blue Lobelia, and so on.

No. 3 is divided into seven beds, where a very showy effect is produced with Blue Perfection Pansy and Pelargonium Memnon.

No. 4 is planted in bands of Miss Kingsbury Pelargonium (old plants), Perilla nankinensis, Pelargonium Lancashire Witch, Viola Blue Bell, edged with Golden Superb Nosegay Pelargonium.

No. 5 is formed into diamonds and half-diamonds, planted principally with blue Lobelias, Golden Feather, crimson Verbenas, Mesembryanthemums, &c.

No. 6 is a design of seven beds, planted effectively with scarlet Pelargoniums, Calceolarias, Violas, &c.

No. 7 is planted in bands, the centre line being Cleopatra Pelargonium, with a row of Beet on each side, followed by Calceolarias and Violet Hill Pelargonium, and finished off with Gnaphalium.

Proceeding *en route* to Sefton Park, the visitor may enter a gate on the east side, and stroll leisurely by the side of a magnificent lake, which is rich in the beautiful Lily, Nymphæa alba. From this side the lake there is an excellent view of the "private" gardens and grounds, where the rich colours of the bedding plants blend agreeably with one another in the cool eventide, mingled with the faint rays of the setting sun—a perfect Paradise in the distance, ensconced within a labyrinth of scenery that would need the pen of Milton to justly pourtray. Passing on by the lake side there is a gate on the right hand, which is the entrance to the private gardens from this side. On entering the private grounds the observing visitor is at once struck with the ever-changing scenes. Variety seems to have been the preponderating influence throughout, and to this may be ascribed the enlarged ideas of strangers when computing the extent of ground allotted to this purpose. *O. H. W.*

(*To be continued.*)

Fig. 106.—ASTILBE BARBATA AS GROWN FOR MARKET.

The Villa Garden.

Autumn Planting.—As we write, the rain, so long impending and so ardently wished for, is falling. There is a pleasant sweetness in the sound thereof, for the earth is thirsty; and notwithstanding so much rain fell during the summer, the past month of dry weather has drunk up the moisture, and many plants have been flagging for want of it. The spell of dry weather has not been without its uses; it has ripened the wood of fruit and other trees, it has enabled arrears of cleaning to be cleared up, and it has most agreeably softened the relapse of summer into the gloom and decay of autumn. It has delayed planting operations, but they can now be carried out, and it is not too late for executing them.

Preparation of the Soil.—If fruit trees or shrubs are to be planted the soil must be prepared for them if they are to succeed. Hundreds of villa residents have taken new residences and found their gardens planted and laid out after a certain fashion. The garden is but a small matter in the estimation of the builder; when the house is completed the garden is attended to—the heaps of refuse soil are levelled, and then planting takes place. How it is done in the first instance is patent to many of us. A hole is dug, the roots of a scraggy tree are thrust into it, it is filled up, and the work is done. And the plants exist for a time, and then many of them expire of a lingering decline. Surely there must be retribution stored up somewhere against such evil-doers in the walks of gardening.

It is no use to plant trees of any kind unless the soil in which the roots are placed is of a nature to nourish and minister to the well-being of the trees. If it is composed of clay and rubbish, out it must come, and some good loam substituted for it. If the soil be suitable let it be deeply dug or trenched, taking care not to go deep enough to bring up any sour or unkind subsoil. If possible dig in with it any nutritive vegetable refuse or leaf-mould, or any old potting soil.

Selection and Condition of the Plants.—If the planter be unacquainted with fruit trees or shrubs, let him get proper advice as to the most suitable subjects to plant. There is always some one at hand to give advice if only they be sought for. A proper selection being made, the next thing is to see that the roots of the tree or shrub about to be planted are in the proper condition. And now we come to the necessity that exists for nurserymen frequently transplanting trees and shrubs, so as to induce them to put forth good healthy fibrous roots. The Villa gardener should select his plants at a nursery, and stipulate that they were transplanted the previous autumn. The small fibrous roots so necessary to the well-being of the plants are of the first importance, for it is through what botanists term the "spongioles" at the extremities of these that the plant draws in its nourishment from the soil. If it be necessary to trim the roots, the knife should be used with care; and it should be employed to cut away the main or tap-root, but not the fine hair-like fibres or rootlets, all of which should be carefully preserved.

Mode of Planting.—It appears a simple thing to plant, but there is more in the proper method of doing it than is generally supposed. A big enough hole should be dug to take the roots, and enable them to be laid out in a regular and natural manner. The regulation-sized pits of the unreflecting jobbing gardener must be abjured, and according to the size of the ball of roots should be the receptacle in which they are to be laid. It should be just deep enough to admit of the upper roots being covered to a depth of 10 inches or so. It is not well to plant too deeply, and it has been remarked that "thousands of young trees perish annually from being planted too deep. In situations exposed to violent winds it may be allowable to plant a little deeper, but it is only meeting one evil by substituting another, and it would be preferable to undergo the expense and trouble of staking the young trees where it is required;" and in order to give the young rootlets as much encouragement as possible, a little fine soil sifted from the refuse of the potting bench, if placed among them, will be found highly beneficial. This done, fill in with the ordinary soil, and tread it firmly about the roots. Should it happen that a time of drought follows the planting, water must be given, and if a little dung and leaves be thrown on the surface round the stem of the trees, they will reap the benefit of it. There is one advantage autumn planting has over spring planting—that it rarely happens the plants and trees suffer from drought.

The best time to plant is a consideration which follows as a matter of course. In a very useful manual issued by the Heatherside Nursery Company it is observed that transplanting may be performed at any time from October to April, according to the nature of the season. It is difficult to give any general rule, but roughly it may be laid down that autumn is the best time for Conifers and evergreens, and spring for such deciduous plants as do not expand their leaves too early. But the canon to be observed is to plant as much as possible during wet or cloudy weather, and to refrain in sunshine, drought, or frost. Such intervals of forced inaction may be profitably employed in settling the spot where each tree is to be planted, in digging the holes, and in providing the compost to be put round the roots when the planting is performed. The Villa gardener should plant as early as possible in the autumn before bad weather, as rain or frost, sets in to disturb his work, and perhaps keeping his garden in a disturbed state during a good portion of the winter. Perchance he may by so doing get the pick of the trees from the nursery; and having planted as recommended, let him stake each tree securely that needs it; and then, levelling the soil, let him leave all tidy and orderly, trusting that the newly introduced trees will in good time shape themselves into sufficient branches and leaves, that rains will not cease to fertilise nor the sunshine to quicken them in the time to come.

ASTILBE BARBATA.

The accompanying illustration (fig. 106) of this invaluable early-flowering decorative plant, erroneously known under the names of Spiræa and of Hoteia japonica, was prepared last spring from one of the great number of specimens grown for market by Mr. John Reeves, of Acton, to show to what wonderful perfection it may be grown in a 48-pot. The plant is grown in great quantities amongst the bulbs near Haarlem, where we were told it was a constant source of wonder to the workmen, as, through it not flowering with them, they cannot understand what the English want it for. The English, however, have found out its great value for early forcing, and we could not well do without it. The clumps are now being imported in large quantities, and we shall not have long to wait before the plant makes its appearance in all its elegant beauty in the neighbouring market. Its culture is remarkably simple, and its main requirements may be summed up in three words—heat and moisture.

Apiary.

Winter Management.—Probably no part of the year is so little understood—certainly our apiaries are, as a rule, very badly managed in the winter; it may arise in part from the fact that our favourites are seldom seen in severe weather, they are therefore neglected. We find upon observation the majority of the stocks in cottage gardens are lost during winter, because they are hived in common skeps, where they cannot be overhauled to find out how they are faring, and whether they are deficient in food; although where we have induced their owners to weigh the stocks in October, and to rapidly feed up those that are too light, they have seldom lost any stocks from actual starvation. Again, cottagers invariably hive every swarm. Many of them are unable to build sufficient comb to store with honey before the winter is on them, they are thus soon de-

stroyed, and are regarded as so much loss, though, in fact, they but seldom do any good if they are hived solely as stocks. If they could be prevailed to add a condemned stock to each in time, then feed them up, so as not to disturb them in the depth of winter, they would make fair average stocks another season.

Many conflicting opinions are to be found amongst bee keepers as to the best plan for wintering their stocks; whilst some declare it is the best plan to allow them to occupy their stands without moving them, others say a dry cellar or cool store-room is preferable. A few winters back we lost many valuable stocks, we believe, from a very simple cause; upon examination the following winter, at stated periods, we always found the hive full of moisture; sometimes the combs at the summit were saturated, and in nearly every instance in our valuable bar-frame hives the combs were mouldy, so that in the spring a great part had to be removed. Then we tried an experiment. Over one hive we placed our tin feeder, and opened the communication to the hive. We afterwards measured the water, which gradually condensed on the cold tin, and found 12 oz. This was from one stock alone. To another wood-hive we placed a match under each corner of the top-board, so as to make a free passage of the heated air to the outside. Both these stocks came out strong and healthy the following spring.

From this experiment we were taught a most useful lesson upon the advantage of ventilation. Now it is a well-recognised fact that bees, if wintered in straw hives, are healthier than in wooden hives. We speak now about keeping them on the stand in the open air all winter. In the extreme north of Scotland, and even in Norway, the bee-keepers never think of taking them from stand or open-air bee-house, as the case may be, and so much is straw thought of for protection that they merely place a covering of that material over them, bound round with an iron hoop from some old cask, to hold it together or to prevent its being blown away in strong winds.

Of course we do not deny the importance of having strong stocks in winter as well as summer; then next to this we advise good ventilation rather than confining them to a close atmosphere filled with moisture. We should recommend lifting the hive from the floor-board, and resting it upon something to raise it at least a quarter of an inch, thus a free ventilation will be secured. Do not for a moment imagine your bees will suffer from cold. Bees are seldom lost from a cold winter if they have good stores and a dry hive. *R.*

Natural History.

The Cuckoo.—Having seen two paragraphs in your valuable paper respecting the cuckoo, I may mention that I have had the opportunity of proving that the principal food of the cuckoo during the time of their stay in England is the eggs of small birds, which they suck. I never knew them to suck the eggs of the missel-thrush, although I have known them to try; but such is the fury with which the missel-thrush defends its nest that the cuckoo is beaten off in the attempt. In the wooded parts of East Kent, where cuckoos abound, and where thrushes and blackbirds are also plentiful, I have found when a boy six or seven nests a day with all the eggs sucked by the cuckoo. Early in the morning you may see the cuckoo flying along the hedges very gently in search of nests, and when they find one they drive off the old bird and commit their depredations. They first make their appearance about April 12 in East Kent, and the 15th in West Sussex on the borders of Hampshire. I have never known or found a bird's nest with the eggs sucked till after the arrival of the cuckoo. They will eat caterpillars the latter part of June and the beginning of July.

Perhaps your readers may be interested by a few more facts regarding this bird. It is somewhat remarkable that the egg should be so small compared to its size, when the nightjar lays an egg more than twice the size. The only birds I ever knew to rear a young cuckoo are the wagtail, hedge-sparrow, and titlark. It is also a fact that the cuckoo will suck the eggs of the hedge-sparrow and deposit its own egg in the nest; and where more eggs are laid in the nest afterwards and the young ones hatched they remain till the cuckoo gets about half grown, then it ejects its companions and they perish. The old birds having to work very hard to supply the cuckoo with sufficient food, which it devours with greediness, and so quick does it open its mouth, and so wide, that the old birds are soon minus of feathers on the top of their heads, and about the time it is fledged and left to seek its own food the old birds appear completely scalped, having the appearance as if the skin was off to the skull. This I have witnessed both in the titlark and hedge-sparrow, although I never saw it in the wagtail. I once saw a cuckoo alight on a heap of flint-stones which were for building purposes. I drove it away, and in about ten minutes it turned again, and alighted on the same spot. I watched for a short time, then drove it away. Being at work close by, I again saw it come to the same place. I then went to the spot, but could not see anything that could induce the bird to come frequently to one place. I then approached as near the heap of stones as I could, and hid myself behind a bank where I could observe the movements of the bird should it return again. In about a quarter of an hour it came, and again alighted, and tried to get in amongst the stones. I then went and removed some of the stones, and to my great surprise, about 18 inches beneath I found a wagtail's nest with four eggs. Had I seen either of the wagtails about the stones I might have been almost certain they had a nest here. Now, whether that cuckoo wanted to deposit its own egg, or suck the eggs of the wagtail, I could never ascertain, as the aperture that admitted the wagtails would not admit the cuckoo. *William Jacob, Naturalist, &c., The Museum, Sadler's Row, Petworth.*

Pruning Coniferæ.—The impression is no less common than true that the management of woods in this country is either very imperfectly understood or badly executed. It is, however, of little practical importance which is the case so long as the fact remains that a great evil exists somewhere, either in the knowledge or practice of forestry; and should I be fortunate to any extent in either preventing the further extension of the evil or showing how it is produced, that others may guard against it, I will do at least something for my country's weal and the people's good.

As respects diseased trees, and even mismanaged woods, prevention is everything—cure next to nothing. Nature, it is true, performs her own work unerringly, and so far as natural productions are required, she does unaided all that is needed or desirable better far than by the assistance of art. In the culture of forest trees, however, which are produced for purposes of art and industry, rather than as natural objects, the aid of art is called in to direct, or it may be to subvert, the ordinary course of Nature. As, however, wide and different opinions prevail, both among theorists and practical men, as to how much and what part art should be called upon to perform in the culture of forest trees, or how far Nature should be allowed to take her own course undisturbed, it becomes the more necessary to point out carefully the various results of the different modes of pruning the various species of Coniferæ, and leave those specially interested to judge for themselves which course to adopt or which to avoid.

Between forty and fifty years have now elapsed since pruning Conifers was first practised in this country—if not upon a gigantic style, at least in a sufficiently varied and extensive manner to allow those who wish instruction upon the subject to learn and judge for themselves as to results. The pruning referred to as performed about forty years ago was done by or under direction of the late Mr. Gavin Cree, nurseryman, Biggar, and extended to all parts of the United Kingdom. His system at that time met with very general acceptance, was adopted and recommended by some of the most intelligent landed proprietors of the day, and he thereby earned for himself no small share of fame. Mr. Cree's system, like most others, contained much that was commendable, but the little that was wrong in it was sufficient to neutralise the good, and disorder and derange the whole.

The following is a brief outline of the system practised by Mr. Cree, which it is very necessary to give before pointing out the results; but very few, it is presumed, will at all anticipate, even after listening to the theory, what the practical results were and have been:—

"The common sap having extended over all the branches, mingles with the fluid absorbed by the leaves, and losing the watery and aëriform principles which are useless for nutrition, by evaporation, it returns down the vessels of the bark, and in its course deposits cambium, which forms the annual rings of wood, then extends to and strengthens the extremities of the roots, whereby they are made to extract more nourishment from the soil throughout the season; and as the two saps commingle in the leaves, the descending sap, which has not been deposited in like manner, mixes with that extracted by the rootlets, and is again carried up with the ascending sap.

"How to economise these fluids for the advantage of the tree is to be considered. It is obvious, then, that when the upper lateral branches are shortened to half the length of the leading stem, and the others proportionally, the sap has less superficies to cover than when they are allowed to extend to an improper length and thickness; in consequence there is a greater supply for every part of the tree.

"The branches which are shortened always remain slender, by reason of the small superficies of the branch, and the rapidity with which the sap moves; very little is retained by the branch, and, of course, nearly the whole is deposited in the body of the tree. This truth, with the fact that the foliage remains nearly a month longer on the trees so shortened than on others, accounts for the wonderful rapidity of growth effected by this method of pruning. The smallness of the branches is of advantage likewise, when it is necessary to prune close to the stem, as the wound made by that operation is proportionally small, and may be expected to cicatrise in the course of three years.

"It may be worth remarking that, if the branches are properly shortened, trees never become what is termed hide-bound. Even mismanaged trees, on which a dryness of bark has occurred, may be brought to a proper condition in the course of three seasons. In cases of this kind, the distance from the body at which the branches are amputated must be regulated by the size of the tree; the larger the tree the greater the distance.

"It has been found experimentally that trees under 18 feet in height and 15 inches in circumference advance, taken averagely, as much both in height and circumference in six years, if the branches are properly shortened, as they do in fifteen if these are not shortened, or are improperly pruned. The more trees are pruned close up to the stem before they are 18 feet high, this is proportionally retarded. Trees pruned close to the stem, when the circumference at the part is under 15 inches, take in damp, so that the tree, if dissected after a certain period at the part where the branches have been cut, will be found black into the pith. This department of pruning, when improperly managed, is the principal cause of rot, more particularly in the Larch. The reason is, the wood in young trees is more open in texture than in older ones."

Having already exceeded all due limits, I must conclude, with the intention of resuming the subject in my next paper. *C. Y. Michie, Cullen House, Cullen, N.B.*

Garden Operations.

PLANT HOUSES.

Greenhouse Plants.—In gardening matters those who look the furthest ahead in providing for the time to come, can invariably secure the best supply. This particularly applies to the propagation and growth of soft-wooded plants, which act as the filling-in for conservatory and greenhouse decoration amongst subjects of a more enduring character, such as Camellias, Azaleas, and similar hard-wooded things. One great advantage in a sufficient supply of soft-wooded plants that are raised annually from seeds or cuttings, and discarded after flowering, to be replaced by others of a similar description, is that there need be no hesitation to stand them when in flower in situations where plants of a more valuable, lasting nature would be injured. This is especially the case at the present day, when the interiors of conservatories are arranged with a view to much better effect than they used to be when high stages were in fashion. These latter, no doubt, had the advantage in getting the plants up near the glass, but from their unsightly appearance they have given way to low stands, and in many cases dispensing with stands altogether by simply arranging the plants on the floors; but even in houses that are the best constructed, and stand in a position to receive a maximum of light, it will be obvious that the plants, from being further away from the glass, occupy a less advantageous position; consequently it becomes more than ever necessary to provide plenty of such things as are of a medium size to occupy the front positions in the arranged groups whilst in flower that from their nature

of only being grown for a single year, there can be no hesitation in using even in dark situations. The same may be said also of the quantities of plants that are now required for halls, staircases, and similar positions where comparatively little light reaches them. No doubt many of the harder-leaved more persistent fine-foliage plants are the mainstay for this kind of work, yet a sufficiency of flowering subjects to intermix with them should always be at hand. For such purposes as the above during the spring months there is nothing more suitable from their bright cheerful appearance when in flower than herbaceous Calceolarias, if well-grown, so as to enable them to develope the dense heads of flower they are capable of bearing. If, as advised at the latter part of summer, two sowings of these were made, they will furnish a succession in bloom for many weeks, but, to make them of real use, they must be well managed from the time the seed vegetates all on through the winter. The first sowing, after being pricked out of the seed-pan into pots, will by this time be sufficiently large for potting singly, as, if allowed to remain too long, the roots become interlaced, and cannot be separated without breakage. They should have very rich, moderately open soil, consisting of four parts loam to two of leaf-mould and rotten manure sifted, with a good sprinkling of sand added. Three-inch pots will be large enough for the present, keeping them near the glass, and in a temperature of 40°, or a few degrees over, through the winter, always having a good look-out that they are free from aphides. The later-sown plants may yet remain for some time in the pots or pans in which they were first pricked out. The double rows of Petunias, from their naturally compact habit of growth, answer well to use similarly. Cuttings struck early in the autumn should now have a shift, keeping them stopped and near the glass during the winter. With a view to using in the same way, the later sowings of Cinerarias should now be moved into 6-inch or 7-inch pots. If the plants are well treated, these are large enough. The soil should be quite as rich as that recommended for Calceolarias. The earliest plants of these that have got their pots well filled with roots, and are now about throwing up their flower-stems, will be benefited by weak manure-water regularly, keeping them near the glass, and standing on a moist bottom, which is necessary to preserve their large lower leaves intact. Hydrangeas struck in small pots at the latter part of summer should, when these get filled with roots, be moved into others 6 inches in diameter, and kept in an ordinary greenhouse temperature. Mignonette sown for flowering in spring, if not already in the pots in which it is to bloom, should be at once moved into them. Where the plants are forward and large it is necessary to give enough root-room to keep the foliage of a green, healthy colour, without which, even if fairly flowered, they have an uninviting look. Callas, where grown in sufficient quantity, may be easily had in flower six months during the year; those planted out in spring in the open ground, and that have been taken up and potted, such portion of the stock as intended for the later spring blooming should be kept quite cool, anywhere away from frost will do where they will get sufficient light, with enough water to keep the leaves fresh. Kalosanthes propagated from cuttings twelve months ago should be kept as near the glass as possible. Upon this a great deal depends their flowering. Give just enough water to keep the soil slightly moist, but not too wet. See that no aphides are lurking in the points of the shoots, as they frequently take up their habitation here during the winter, doing serious injury before they are detected. Dipping in tobacco-water is the best remedy when these plants are affected. Any one who provides a sufficient quantity of all the above-mentioned subjects, so as to give a continuous supply through the spring and early summer months, will not be at a loss for flowering plants for conservatory and greenhouse decoration. Chrysanthemums.—Although, as I have previously remarked, there can be no greater mistake than to take Chrysanthemums indoors too early, or before their flowers have begun to show colour, yet they are so unusually late this season that the time has now come when it is not safe to let them remain out longer, unless where there is some means of protecting them. If there happens to be an unoccupied vinery, where the leaves by this time will be off, there can be no better place for them, as here they will get sufficient light and can have abundance of air. Keep on giving them a regular supply of manure-water; if any of the latest have not had their buds enough thinned let this be attended to. *T. Baines.*

FRUIT HOUSES.

Strawberries in Pots.—The rainfall which we get at this season of the year dispenses in a great measure with watering these plants by hand. At times, however, the opposite conditions prevail, and render it necessary that this matter must be attended to as heretofore, because Strawberry plants luxuriate best with an abundant supply of water at the roots, providing it does not by any means become of a stagnant nature. If the weather continues favourable for vegetation, these plants will continue growing for a considerable time yet, and they may with advantage still remain outdoors until much more severe weather approaches, when they should be removed to their winter quarters until they are required for forcing. When the plants are in a state of rest, in our opinion, they should be kept cool and not in an arid state of atmosphere, and therefore we advocate the use of cold frames and pits as being superior places for them under such circumstances. If these conveniences are insufficient for the purpose, turf pits are readily made, which will answer the same purpose. We plunge the pots in either coal-ashes or spent tan, to prevent the action of frost breaking the pots, and to keep moisture at the roots of them at less cost in time in watering, and cover with lights, shutters, or tarpauling cloths only, when absolutely necessary from stress of very severe weather. At other times fully expose the plants to natural influences. As the first batch of these plants when they are started will be benefited by having a slight degree of heat at the roots, timely attention should be directed towards the means of providing it, a fermenting bed being most suitable. *George T. Miles, Wycombe Abbey.*

Vines.—In low-lying damp situations, where the natural soil is cold, heavy, and unfavourable to the culture of the Vine, the management of the roots is of the greatest importance, as Grapes cannot be expected to finish or keep well, neither can the wood be properly ripened, if they are allowed to range over an unlimited space beyond the control of the cultivator. Where these condition have to be met, and borders are unsatisfactory, no time should be lost in setting matters right. The bottoms of the borders should be concreted, with ample drainage for the free passage of water when supplied in large quantities through the growing season, and if, after the first six feet of compost has been placed for starting the Vines in, the remainder is added in small quantities annually, a great number of active roots will permeate every portion of the soil, the heavy expense of making new borders all at once will be avoided, and the piecemeal system will keep the Vines much longer in a satisfactory state, as the roots will have a constant supply of fresh food which will keep them within the influence of solar heat and moisture. When Vines in these situations have filled the allotted space, instead of allowing the roots full range of the surrounding soil, a portion of the border should be forked over, all strong roots shortened back and relaid in new compost made up of rough turfy loam, old mortar, also rough crushed bones, and a liberal supply of earth or garden refuse, burnt or charred with wood. On light soils where the roots can be allowed to find their way into the vegetable quarters without fear of injury or shanking, the addition of heavy loam and well rotted spit or cow-dung will form a good substitute for the burnt earth or potash. The extension system should also be followed, as Vines with a number of rods frequently produce excellent Grapes where single canes are short-lived and a comparative failure. Up to the present time the weather has been all that can be desired for ripening of late fruit and wood, and having been able to give abundance of air with a moderate supply of fire-heat the Grapes promise to keep well. If not already done the latest houses may now be divested of all latent growths and laterals down to the main buds, but the old leaves should be carefully preserved and allowed to ripen off by a gradual reduction of heat and moisture. Prune successional houses and carry out the usual routine of cleansing and painting in order that the wounds may have time to heal before fire-heat is applied. Remnants of crops hanging in autumn houses which are required for plants may be cut and taken into the Grape-room, were they will keep as well as if left hanging on the Vines. *W. Coleman.*

Cucumbers.—By this time plants raised for taking the place of the late Melons will be fit for turning out, but if the latter are not ready for removal the Cucumbers should be shifted into the fruiting pots, and kept near the glass in another compartment, before they become pot-bound. At this place the latest crop of Melons is grown over the path of a Pine stove, and, as the Cucumbers have to cover 6 feet of trellis over the north bed before they reach the Melons, we can have the latter quite as late in the season as they are worth eating. Rollisson's Telegraph is still one of the best winter Cucumbers either for private use or market, and having an excellent constitution it is less liable to canker than more delicate kinds. Look over bearing plants at least twice a week, and keep them sufficiently thin of vine and foliage to allow a free admission of light. Remove all male blossoms as they appear, and regard heavy cropping as one of the greatest evils that can attend the culture of winter Cucumbers. As days decrease in length less water at the roots will be required, but anything like drought or starvation must be avoided if red-spider is to be kept in check. An occasional syringing during the continuance of this bright autumnal weather will be found necessary and beneficial, the evaporating troughs may also be kept filled; but when the change comes moisture must be used with greater caution, and an occasional dusting with flowers of sulphur must be the remedy employed for keeping red-spider in check. Use rough turf and old mortar for earthing, little and often, as the roots appear upon the surface. Water with tepid manure, in sufficient quantity to moisten every particle of the soil when necessary, but avoid the use of solid manure, either in the compost or on the surface of the beds, as it only encourages worms. The pots should be partially plunged in a bottom-heat of 90°, and, if the top-heat is allowed to range from 68° by night to 80° or 85° by day, a few degrees more or less will do no harm, provided the bottom-heat is kept steady. Maintain a sweet atmosphere by perfect cleanliness, frequent washing of the glass, and ventilation on all favourable occasions. *W. Coleman.*

KITCHEN GARDEN.

The end of the fruit-gathering season will throw more hands at liberty for the necessary work of preparation of the soil for future crops; this of course will include the trenching-up of all vacant plots of ground from which the crops have been removed. There is often more leisure at this season to perform the operation in a thorough manner, and it is advisable that the workmen be instructed to take plenty of room, say 3 feet wide trenches at the least, and after throwing out 2 feet in depth break the bottom well up and take care they don't have a ridge of solid, unbroken earth between each trench. The surface should be left as rough as the condition of the soil will allow, so that frosts may penetrate and fertilise it. I have a high opinion of the fertilising influence of severe frosts, but to obtain the greatest amount of good from it, it is necessary to take a little trouble to expose fresh surfaces as often as possible by deeply forking over in dry weather. Rough and half decomposed manure may be incorporated with the soil during the process of trenching, but for some crops it is preferable to use well rotted manure, which should be spread over the surface and left for some time, and when the rankness has been washed into the earth it may be said to be sweetened and should be at once pricked in and will be found in proper condition for the roots of crops to take hold of it at once. The ground intended for Carrots next year will be very much benefited by being subjected to the above routine of culture. Where new beds of Horse Radish are required the ground should be deeply trenched and a liberal supply of manure put into the bottom of each trench; 1 foot in thickness is not too much if fine roots are desired. If in this case the manure is incorporated with the soil the result will be that the roots instead of coming up straight will ramify in all directions in search of it. Asparagus beds should now be cleared of the stalks, and the weeds (which are almost sure to accumulate in such positions, where it is not easy to get at them with the hoe) should be cleared off; the beds may then be lightly pricked over, and a liberal dressing of rich manure spread over the whole surface of the beds and spaces between; this may lie until March, by which time it will be thoroughly sweetened, and will only need to be lightly turned over. The advent of frost, although not at present severe enough to be very dangerous to standing crops, reminds us to be on the look-out for what may soon follow. Amongst other things, the beds of Cauliflowers, Walcheren Broccoli, and Veitch's Self-protecting Autumn Cauliflower, will need to be frequently gone over, and such as are ready for use and not immediately required should be lifted and stored in an upright position in any outhouse or other available space secure from frost; the remainder should be often examined, and when advancing into flower several of the top leaves should be broken over the tops, which will greatly tend to preserve the young heads from the effects of our ordinary autumn frosts; if any do get frozen they must not by any means be allowed to thaw in the sun. The Lettuces and Endive intended for storing should not be left too long in the open ground at this season; a few slight frosts, such as we experience in early autumn, will not be of any great consequence, but if the frost is at all severe it causes decay in the outer foliage, and, considering that we are never safe after this time, it is best to be beforehand with the weather and get the crop stored at once when in a suitable condition. The earthing-up of the main crops of Celery should now be brought to a close, and it would be well to have some kind of dry protecting material, such as dried Pea haulm or light litter from the stables, stored, for the purpose of throwing over the ridges in severe frost; this covering should always be kept on during the bright sunny days which often succeed frosty nights, but should be removed in mild dull weather. Now is a good time to sow as many lights as may be required of red and white Turnip Radishes in frames; spent hotbeds will answer exceedingly well, but, if these cannot be spared, 2 or 3 feet of prepared stable manure will produce sufficient gentle heat on which to sow, but it will require very free ventilation for some time in fine weather, and a little air on at night as long as moisture arises. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 27, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Oct. 29	Sale of Dutch Bulbs, at Stevens' Rooms. Sale of Stock, at the Milford Nurseries, Godalming, by Protheroe & Morris (five days).
TUESDAY,	Oct. 30	Sale of Mr. S. Ralli's Collection of Plants, at Clapham Park, by Stevens. Sale of Stock at the Stanhope Nursery, Westerham Hill, Cudham, Kent, by Baxter, Payne & Co.
WEDNESDAY,	Oct. 31	Sale of Roses, Fruit Trees, Shrubs, and Dutch Bulbs, at Stevens' Rooms.
THURSDAY,	Nov. 1	Meeting of the Linnean Society, at 8 P.M. Sale of Dutch Bulbs, at Stevens' Rooms. Sale of Stock, &c., at the Moulsham Nurseries, Chelmsford, by Protheroe & Morris.
SATURDAY,	Nov. 3	Sale of Camellias, Azaleas, Palms, and Dutch Bulbs, at Stevens' Rooms.

FULL of years, rich in the esteem of his fellows, with the happy consciousness of duty fulfilled and work well done, THOMAS RIVERS has, in his eightieth year, bowed his venerable head, and succumbed to the fate which overtakes one and all the race. In another column we have endeavoured to indicate some of his achievements as a horticulturist, and to chronicle some of those results of his zeal and skill which have caused him to be looked on as one of the greatest horticulturists of this or any former age.

We need not tell the tale twice over, but to give point to our remarks let us recall for a moment just a few things which we owe wholly, or in the main, to RIVERS. True, in many cases he but revived old practices or adopted them from the French, but in reintroducing he extended and improved them. We allude to root-pruning and lifting of fruit trees (1839), double grafting, orchard-houses (1851), cordon training, ground vineries, the introduction of the Manetti stock, constant experiments towards the cheap and efficient construction of houses for fruit culture, and in the cross-breeding and selection of fruits and other plants. His experiments, moreover, were carried on with true scientific method, and recorded with something like scientific accuracy, on which account, as well as for the interesting results obtained, he must ever hold a high place among vegetable physiologists. Results such as RIVERS obtained have rightly secured for him the admiration due to successful enterprise and the gratitude which is the right of those who supply the needs, add to the comforts, and enhance the luxuries of their fellows. RIVERS, though a keen business man, was no mere commercial horticulturist pursuing his art for mercenary ends only. He was an enthusiast. He was guided as much by a love of truth and a desire to seek it where it might be found, as for the sake of any personal advantage to himself.

He had the courage of a pioneer, the zeal of an explorer. Actuated by the sacred fire of real genius, he pursued his end fearlessly, looking neither to the right nor to the left. A calmer, more cautious man would have taken a wider survey than did RIVERS, but it is very questionable whether he would have advanced his art to so great a degree as he did. At the same time this habit of looking at one side of a question too exclusively not unfrequently led him into controversy, and as a controversialist he acted on the principle "*à la guerre comme à la guerre.*" We are not imputing this to him as a subject for blame, but merely as an illustration of the workings of his mind. A less energetic or a more cautious man would have accepted a compromise—would have tried to look upon a question from his opponent's point of view, would have made allowances for circumstances; but this is not what RIVERS did. Confident in the possession of a clear head and brilliant energy—trusting, and with reason, to the wealth of knowledge he had made his own by acute observation and hardly-won experience—he encountered his adversary with a degree of heedlessness which to onlookers suggested apprehension that, in the long run, the victory might not be wholly on his side.

This impetuosity of attack was the more noticeable when directed against any form of presumption, charlatanism or deceit, or anything which he considered to savour of those qualities. Here his love of truth welded to his enthusiasm roused his wrath, and sore indeed were those who, under such circumstances, fell under his merciless lash. The true nobility of his nature, however, showed itself by the way in which he allowed bygones to be bygones. The lapse of time suffered him to see and appreciate the fact that those who had opposed him had done so from motives as honourable as his own. Then ensued a degree of respect, in some cases a friendship, as marked as the former antagonism. His portrait, a votive offering from some of those who admired the man and respected his achievements, was presented to the Trustees of the Lindley Library, and hangs in the Council-room of the Royal Horticultural Society. As a likeness it is admirable. Long may it remain, to remind those who were his contemporaries of one of the greatest of their Fellows, and to stimulate those who come after to the achievement of work such as has made the name of RIVERS a household word among the horticulturists of the whole world.

WITH this issue we present our readers with a coloured plate, designed and executed by Mr. WORTHINGTON SMITH, and representing the common MUSHROOM, together with some of those suspicious allies most likely to be mistaken for it. The description of these plants will be found at p. 519.

—— We are glad to hear of the safe return from Western America of Sir JOSEPH HOOKER, after an unusually long and stormy passage across the Atlantic. Sir JOSEPH brings with him large collections of plants from the Colorado and the Rocky Mountains of the North-Western States.

—— An unusually EARLY FALL OF THE LEAF this year is reminding us forcibly of the near approach of winter. It is probable that this last stage of autumn has been accelerated more by other causes than by the most natural one—the season. The long and unusual drought that has prevailed is lending powerful aid in stripping the trees of their leafage. The terrible storm of wind that prevailed on the night of the 14th inst. did its part also, as the trees in exposed places were half-stripped of their leaves; and, not least, the successive sharp white frosts of last week have caused the foliage to fall in perfect showers. Probably few gardeners will lament this early disleafing, as the fall is at all times productive of an abundance of work and worry, and keeping a place tidy is for the time out of the question. Generally we have had the November gales and the fall of the leaf in unison, making for the time a sort of worms' paradise; this year, when the inevitable storms come, we shall probably have most of the leaves safely stored, and then the worms will find themselves deprived of their customary occupation. As usual, the Elm holds to its foliage with the greatest tenacity, and thus shows its great value as a decorative tree. The Hawthorn hedges, where exposed to the fury of the late storm, have their few remaining leaves browned and seared as with fire. Large-leaved trees, such as the Chestnut, Ash, and Sycamore, have shed their foliage specially early, and will have a long season of rest, unless the early fall should be productive of an early spring leafage. In southern districts, where the want of rain has been most felt, the rich tints of autumn leafage have soon disappeared, thus robbing the landscape of some of its most pleasing effects. Farther north, where the summer has been marked by an excess of rain, a dry autumn would tend to prolong the beauties of the trees, but in the South the contrary effect has resulted. Doubtless most gardeners will echo the wish that, now the fall has begun, the sooner it is over the better.

—— NEW VEGETABLES—that is to say, new kinds, not new varieties of old kinds—have as a rule a poor chance, as we most of us prefer cultivating what we know to be good and palatable to troubling ourselves with a novelty of doubtful quality. This is in some respects a pity, because there are probably many wild plants which, by cultivation and careful selection, would give birth in a few generations to superior varieties, and add to our choice of vegetables. What has been done with such undoubted native plants as Carrot, Parsnip, Celery, and Seakale, is a proof of what, with perseverance, can be effected in this way. Then there is the Cabbage and Turnip tribe, which, if not actually indigenous in Britain, are natives of neighbouring countries. Indeed, if we leave the Potato out of consideration, we are indebted to the New World to a very small extent. Our native flora and that of the Mediterranean region conjointly stock the fruit and vegetable garden. From time to time somebody brings forward a new vegetable, which is received in a half-hearted, sceptical manner, barely tried, and then rejected. Because we have already a very good choice of vegetables, that is no reason why we should be content, and not trouble ourselves to add to the number. Any one having the time and means might find some interesting employment in experiments on untried plants likely to prove useful in this way. Recently a French gardener sent a substitute for Spinach in summer to the committee of the Central Horticultural Society for an opinion as to its merits. There is great difficulty in growing Spinach in some parts of France in hot dry summers, and in some soils it is quite impossible. The plant proposed to replace it is quite an old acquaintance, being the "Ice Plant," Mesembryanthemum crystallinum. This plant was familiar to all the members of the committee in its ornamental aspect, but not one of them could say anything of its value as a vegetable; consequently it was decided to give it a practical trial. The verdict was favourable. It is said to have very much the flavour of New Zealand Spinach, and like that requires cooking at least twice as long as ordinary Spinach, and in a large quantity of water, otherwise it has a strong, somewhat acrid taste. Properly cooked, it is said to be equal to common Spinach, and it can be grown at a season and in a soil unsuited to the latter.

—— Messrs. SUTTON & SONS announce that their twenty-eighth ANNUAL ROOT SHOW will be held at Reading on Saturday, November 24.

—— The young tender green FRUITS OF MARTYNIA LUTEA are said to furnish an agreeable pickle in vinegar, treated in the same way as Gherkins. We learn from the *Journal de la Société Centrale d'Horticulture de France* that it is being tried by some of the members, but no particulars of its quality are given. Another plant under trial is a kind of Cress, a species of Senebiera from the Pampas of Buenos Ayres.

—— The PARSNIP CHERVIL, Chærophyllum bulbosum, remains almost unknown in this country, whereas our French neighbours are taking some pains to improve it. Samples have been frequently exhibited in Paris this season, and one grower, M. CHOUVET, received a certificate for some roots of unusually fine quality. They grew in a peaty soil which had been manured the previous year, and they received no other care beyond hoeing. Roots grown in this way are fit for use at once, whilst the roots of plants in highly manured ground, or watered with liquid manure, are not good to eat for two or three months after lifting. The seed was sown in February and the roots dug in the middle of August. When the seed was sown it had already sprouted about a quarter of an inch, having been stored in layers of sand. This is a necessary precaution to preserve the vitality of the seed until sowing time.

—— In a span-roofed house belonging to J. LIMMER, Esq., of Woodside, Ipswich, may be seen such a show of GRAPES as would astonish any one unacquainted with the capabilities of well-fed Vines. The house referred to contains thirty-six rods, principally Black Hamburghs, on which were recently to be seen upwards of 800 bunches that would at the lowest estimate average 1 lb. each. The berries, although not over large, were as perfectly coloured and finished as Grapes could well be. The Vines are in their fifth year, so that they have not arrived at their full strength yet, and as the house is not heated it

shows what good use has been made of the sun to have the fruit ripe, and the wood in a fine nutty brown condition, betokening maturity, and giving promise of a fine crop next season. In a lean-to house planted last spring twelvemonth some splendid rods have been formed that measure quite an inch through, and have huge thick leaves with stout massive footstalks and buds so large, full, and plump that they now look ready to burst. Mr. Latter, Mr. Limmer's enthusiastic gardener, attributes much of his success to the large quantity of sewage he uses, of which, situated on a hill as this vinery is, on a loose gravelly bottom, they will take any quantity. Mr. Limmer, with a wise forethought for this, has had a large tank made to catch all the drainage from the house, which is thus stored up for the use of his garden instead of being wasted, as is the case in most places. There can be no question that were gardens better supplied with liquid manure, and a free use made of it, much better results would be achieved than is now possible in such dry seasons as we have had for years past. Loose gritty porous soil induces fibrous roots, and, with so many feeders, all it wants to bring good crops of whatever kind is plenty of sewage, not given in driblets, but in sufficient quantity to thoroughly soak it through.

—— We hear that Mr. Taylor, who has been gardener and general manager at Isel Hall, Cockermouth, for the last five years, is leaving that situation at Christmas, in consequence of the Hon. P. T. Wyndham, M.P., having given up his residence in Cumberland.

—— One of the most beautiful varieties of Delphinium in cultivation at the present time is one named Bella Donna. It has a neat and compact perpetual-blooming habit, and lovely azure-blue flowers, with a white centre. We saw it at Mr. Parker's nursery during the summer months, planted alternately with dwarf plants of Acer Negundo variegatum, and the combination was a very striking one. Another of the very best is Delphinium magnificum, a perpetual bloomer, with flowers of a rich blue colour suffused with bronzy red, and a white and orange centre. Add to these two the distinct and beautiful double lavender-blue flowered D. Keteleeri, and we have a trio of pefect gems. To make half-a-dozen we should add to the above Madame E. Geny, reddish purple, tipped with blue, and blue and white centre; Coronet, dark blue, with purple and orange centre; and Gloire de St. Mande, a fine double variety, of a brilliant blue colour, shaded with crimson on the edges of the petals.

—— Dr. Peyritsch, it is reported in the *Botanische Zeitung*, has been attempting to fix peloria and abnormally irregular flowers by selection and propagation from seeds. The total result of the experiment was that no essential difference existed between the seed, which would produce the peloria and normal flowers. With one lot of seed from pelorial flowers of Leonurus cardiaca all the offspring produced terminal pelorial flowers; but in another experiment there were more cases of peloria from the seed of irregular flowers than from the seed of pelorial flowers. And about half of the pelorial seedlings reverted to the normal form.

—— Dr. Kraus recently read a paper before the Natural History Society of Halle on the Dispersion and Signification of Water in the Processes of Growth and Tension in Plants. Some of the results of his researches are briefly stated in the *Botanische Zeitung*, from which we borrow them. If a normal, vertical shoot exposed to light equally on all sides be halved by axile section, the amount of water in the two halves is equal, but a curved shoot lying on the ground, divided horizontally into an upper and a lower half, will always yield a larger quantity of water in the lower half. This unequal dispersion of the water may be detected a few hours after the shoot has been laid down. It also occurs in rigid woody stems. In normally (perpendicularly) growing radicles the distribution of water is the same as in the stems. A bent radicle contains more water in the upper half than in the lower. A germinating root, 3 or 4 centimetres long, laid horizontally there will be some hours before it begins to bend, an unequal dispersion of the water in favour of the upper side. From experiments conducted last winter it was ascertained that the bark contains more water during the night than in the daytime. With this increase of water there is a greater shortening and a radial expansion; that is to say, the nocturnal diameter of the trunks of our trees is greater than the diurnal. This radial enlargement of the trunk by night is entirely due to the swelling of the bark; not the least change in the diameter of the wood can be detected. This may be proved by putting fresh rings of bark into water, as they will shorten to a measurable extent, and thicken at the same time, whereas wood treated in the same manner undergoes no appreciable alteration. The nightly swelling of the bark is caused by water from the wood, and warmth effects the transfer of the water. The daily diminution of water in the bark is the result of transpiration.

—— That charming Iridaceous plant, Cypella Herberti, is not generally known to be hardy, but so it has proved with Mr. Parker, and the fact is worth recording, for it is a wonderfully floriferous plant, continues in bloom for about three months in summer, and its showy orange-yellow flowers are exceedingly attractive. It is not a new plant, having been introduced from Buenos Ayres some fifty or sixty years ago; but it is not so frequently met with as it deserves to be.

—— Perhaps few Conifers display more striking variations amongst its offspring than the graceful Cupressus Lawsoniana, numberless forms of which, all differing in some particular from the normal type, may be met with where Conifers are grown. To these may now be added a very distinct variety which Mr. Parker will soon put in the trade, and which, on account of its close, compact, bushy habit of growth, he has well named densa. In addition to its sturdy habit, the foliage is tinged with grey; and, taken altogether, it may be put down as a good thing.

—— Mr. Guilfoyle's report for 1877 on the Melbourne Botanic Gardens contains some interesting items of information. The best grasses for forming a good turf have been found to be Stenotaphrum glabrum, Buffalo-grass, Cynodon Dactylon, and English lawn grasses. Three serious nuisances are occasionally experienced in the gardens, in the shape of rabbits, wild cats, and dogs. The rabbits are very numerous and mischievous; and the cats are very destructive to the small birds, particularly the English thrushes, but the latter are fortunately getting rather numerous in the gardens. Eucalyptus ficifolia, which was only known to Mr. Bentham by imperfect specimens in fruit, is described as the grandest of its tribe. It has the beautiful foliage of E. calophylla, and scarlet blossoms of a most gorgeous character. Three large summer-houses have been erected in different parts of the grounds for the accommodation of the visitors, each one having seat room for fifty persons. Respecting the Mesquit Bean, Prosopis pubescens, a curious letter, written to Mr. Dyer by Mr. R. Thomson, superintendent of the Botanic Garden in Jamaica, is printed in this report. By way of experiment Mr. Thomson gave about a pound of the pods to a fine healthy horse, and three days afterwards the horse was found lying dead "in such a position that left no reasonable doubt that it had died from belly ache." The letter concluded with the statement that this belly ache is attributed to the germination of the seeds in the stomach of the animal! If true, this might be avoded by cooking the Beans before giving them to animals. Although it is a dangerous food, the Mesquit Bean is said to be a valuable fodder, as well as the seeds of an allied species, P. juliflora. A band has performed a selection of music, in favourable weather, on alternate Saturdays throughout the past year; and one large moonlight concert was given. The conduct of the people was excellent on these occasions, not the least damage having been done. On the other hand, it is asserted that everything is being done to render the establishment worthy of the name of a botanic garden.

—— A correspondent has lately favoured us with a Multiple Grape, consisting of several berries run together so as to form one large lobulate berry. Such berries are not uncommon at the end of the bunches. We presume that in the early stages of growth the elongation of the branch bearing the berries does not keep pace with the increase of the berries themselves, and hence the berries become fused together. Its occurrence at a later period might possibly be prevented by timely thinning, though we suspect the union takes place at too early a period to be prevented by thinning.

—— One of the most beautiful tints of colour to be found amongst flowers is a brilliant orange-scarlet, and when associated with beauty of form, as in Papaver alpinum miniatum, a neat-habited and continuous-blooming plant of great beauty, nothing, to our thinking, can excel the combination in loveliness.

—— Dr. Grisebach has contributed a report to the *Geographische Jahrbuch* for 1877 on the Progress of Geographical Botany, which is a useful summary of recent contributions to this branch of botany by travellers in various parts of the world. Most of it is pretty well known in this country, but some notes on the forests of Russian Lapland, from the work of H. and K. Aubel, are interesting. The polar limit of trees was ascertained at the following points. Below Kola in 69° N. lat., about the middle of the course of the Ponoi in 67°, running southward to 66° 20′ on the south-east coast. On the opposite peninsula of Kanin the tree limit forms a similar curve, starting from the Arctic circle on the west coast it reaches 67° 40′ in the west of Petschora. The large forests of Russian Lapland consist, according to the estimates of the travellers named, of one-half of Pine (Pinus sylvestris), one-third of Fir (P. Abies var. obovata), one-sixteenth of Larch (P. Larix var. sibirica), the remainder divided among a few other trees, the principal of which is the Birch. The most northernly forests in Kola consist of Pine, which are on an average not more than a foot thick, and heavily laden with Usneas. The Firs on this tree limit attain scarcely a height of 20 feet. The largest Pines measured, and which, according to the number of rings, were from ninety to one hundred years old, were 40 feet high, and the trunk 18 to 21 inches in diameter. Many trees attain only about half these dimensions in sixty or seventy years, and then perish. This premature dying off of undeveloped trees proceeds from the interior outwards, and from the apex downwards, and is accompanied by an excretion of resin. The trunks of Birch and Aspen also decay early. Other trees observed in high latitudes were Pinus Pichta, northwards to 64° in the Government of Olonez; P. Cembra, in the district of Mesen, in 58°; P. Larix var. sibirica, in the same locality and on the Pinega, an affluent of the Dwina, up to 64°.

—— In the last volume of the *Linnæa* to hand is the commencement of a sketch of the Vegetation of Portugal by Dr. E. Goeze, who spent ten years in the country. This part is wholly devoted to the climate, geology, and physical geography of Portugal. The flora of Portugal is in certain regions the richest in Europe, and much remains to be done in thoroughly exploring it. Goeze's sketch will be welcome and useful to any one going on a botanical trip, and we may give the principal features of it in a condensed form, when the whole has appeared.

—— To lovers of choice alpine plants we commend one of the most beautiful of all, and a valuable addition to the genus Omphalodes, O. Luciliæ, which we found in Mr. Parker's nursery. It is quite new, has a low creeping habit of growth, with peculiarly pleasing silvery glaucous leaves, and pretty porcelain-blue flowers. It continues in bloom for a considerable time, and is altogether a gem of the first water.

—— In Androsace sarmentosa Mr. Parker has a splendid new rock plant, which has not yet been sent out. It has a nice tufted habit of growth, and produces dense heads of bright blue flowers in early spring.

—— It is said that Coffee is an Antidote to Strychnine. Dr. Attilio Lelli having met with a case in which a dose of strychnia was administered in coffee without fatal consequences, was, as we learn from the *Lancet*, led to institute some experiments to determine whether it possessed antitoxic power against this drug. The animals employed were rabbits, and by comparative trials he found that a dose of five centigrammes proved fatal in a short space of time; when the same or a larger dose was given in a very strong infusion of coffee, he found that the coffee either acted as a complete antidote in preventing the poisonous effects of the strychnia, or that it materially diminished the violence of its action.

—— The *Bulletin* of the French Society for Acclimatisation contains an interesting article by M. de Quatrefages, on the Peopling of the Islands of Polynesia (understood here as including New Zealand and the Sandwich Islands, and, indeed, all the islands within a triangle formed by these two groups and Easter Island), and the part man has played there in bringing about the present distribution of plants and animals. The area over which these islands are scattered is nearly three times as large as Europe, and some of these islands and groups of islands are very distant from their nearest neighbours. Thus the Sandwich Islands are 1960 miles from the nearest group, New Zealand 1100, and Easter Island 840 miles distant from the nearest land. It is now placed beyond doubt that these islands were peopled by the same race. Cook proved that the language of the inhabitants of New Zealand, Tahiti, and other points was identical; and subsequent travellers have actually succeeded in tracing by means of traditional history the course of emigration. Some twenty years ago Sir George Grey translated a number of the historical chants of the Maoris of New Zealand. As near as can be computed it was early in the fifteenth century when New Zealand was colonised by emigrants from Rarotonga, the history of which has been handed down from generation to generation, even to the enumeration of many of the plants and animals they took with them. The Sweet Potato, Batatas edulis, and the Taro, Caladium esculentum, were among the plants introduced by the early inhabitants; but the Cocoa-nut and Bread-fruit tree, which are spread all over the tropical islands, would not succeed in the higher latitude of New Zealand. But M. de Quatrefages mentions that the kernels of the fruit of the Karaka tree were among the articles with which one of these early expeditions to New Zealand was furnished. At the present time the endemic Corynocarpus lævigata bears that name, according to Hooker's *Handbook of the Flora of New Zealand*; but it is quite possible that the same name may have been applied to a different tree or trees. According to tradition, one of the first cares of the emigrants on landing was to plant the roots and seeds they had brought with them. Now there is as much difficulty in determining the native country of the Bread-fruit tree and Cocoa-nut Palm, as there is of our Grape Vine, cereals, &c. It is not so difficult, however, to say whether a plant is indigenous or not, as for instance of the Taro and Sweet Potato in New Zealand. Since the intrusion of Europeans in New Zealand, Tahiti, and the Sandwich Islands, the useful plants, according to climate, of nearly all parts of the world have been introduced, and, to a great extent accidentally, a vast number of weeds. In New Zealand upwards of 200 British plants are more or less naturalised, and some of them have unfortunately spread with amazing rapidity and become a scourge to those who cultivate the land. It is also recorded in the *Transactions* of the New Zealand Institute that the vegetation of the vicinity of some of the large settlements is more European than indigenous in character.

—— It may not be generally known that the fine double-flowered Pelargonium Dr. Masters, now in course of distribution by Mr. B. S. Williams, originated as a double sport from the old Fire King, at the nursery of Mr. John Reeves, at Acton. As these free-flowering Pelargoniums are much grown for their flowers the double varieties are receiving much notice, and Mr. Reeves informs us that the double flowers command in the market double the price fetched by the single varieties. To market growers, therefore, the new double forms commend themselves on commercial grounds. For cutting from during autumn and winter the old Red Gauntlet is one of the best. Two and three year old plants cut back hard, root and branch, and repotted in August in 48 and 32-sized pots, are now throwing up their flowers, and will continue to do so till Easter. The bright rosy red blossoms are very acceptable at mid-winter, and the gay hues of flowers appear to be much more appreciable during the dull dead season of the year than when there is so much of life and beauty in outdoor gardens.

—— The Pelargonium-house at Chiswick well repays inspection just now, for the choicer varieties of the Zonal section are in full bloom, and some of them are remarkably fine. It is interesting to notice what rich hues of colour the pink-flowering varieties take on at this late period of the year, deepening to very pleasing tints of rosy magenta. One of the most striking is Dr. Denny's Rose of Allandale, and some of Mr. Pearson's pink varieties are charming in the extreme. Among white varieties Jeanne d'Arc promises to take a high place; the habit is good, the flowers of fine form and freely produced, and in all probability it will displace Madame Vaucher for market work.

—— The finest form of variegated Abutilon is undoubtedly Darwinii tessellatum. Mr. Barron has a capital specimen of it at Chiswick just now, the large bold leaves of a well-grown plant being most handsomely marked, and, indeed, it is not too much to state that there are distinct shades of colouring in the variegation, the deep green of the leaves being marbled and blotched with golden yellow and pale yellow. In addition the flowers are freely produced from the leaf axils, and their distinct colouring is in marked contrast to the variegation seen in the leaves. It will make a showy plant for conservatory decoration during winter, for then it appears to shine out in its gayest character.

—— The cultivation of Double Tuberoses for their flowers in this country is a remarkable branch of horticultural enterprise. A large number of Tuberoses are annually imported for this purpose from France, and some clue may be obtained to the quantity when it is stated that Mr. John Reeves, florist, Acton, imports 30,000 annually; but then he has flowers almost all the year round—last year with an intermission of six weeks only, this year he hopes to have an unbroken supply "all the year round." The first batch is potted singly in large 60-pots about Christmas and earlier, and there are successional pottings till May, fresh batches being introduced as required. The bulbs potted at Christmas and onwards are started into growth in a brisk bottom-heat, and shifted into a 48-pot as soon as required, when they have grown to a height of 12 inches or so, and then pushed on into bloom. The later potted roots are put into a cold house to flower after being gradually hardened off. The bulbs potted in May are placed in a cold frame, and during summer fully exposed to the elements; by September some of them are throwing up their flower-spikes, and as they continue to do this introduced into heat to expand their flowers. There can now be seen in Mr. Reeves' nursery a considerable number of plants in bloom, and still in the open air a very large number coming into flower. The Tuberose appears to do well in any light soil, and there is no professional secret of this character in the cultural process. At this time of the year the spikes carry five and six and more of the richly fragrant flowers, but as the days shorten and the fogs abound the latter cause the topmost buds to decay, and Mr. Reeves states that in the depth of winter one or two flowers only will be perfected. It has been asked will the Tuberose flower in the open ground round London? It might do so if grown on in pots and turned out early in summer as soon as warm enough to do so, but if planted in the open ground it is more than doubtful if the flower would be produced early enough to escape the damp and cold of autumn.

—— A telegram from Paris states that the Phylloxera has appeared at Plantières, near Metz, in German Lorraine.

—— Mr. Barron has worked up a good stock of Colonel Trevor Clarke's new hybrid Begonia Moonlight, at the Chiswick Gardens, and nice bushy plants of it in the propagating house are laden with their large white flowers. It is most appropriately named, for there is a kind of lustre shed from the stout alabaster-white flowers. It promises to be as useful in every respect as the well known × B. weltoniensis.

—— Messrs. Carter & Co.'s Royal Metropolitan Root Show is announced to be held at the Agricultural Hall, Islington, on November 14 and 15.

—— The progress of the seasons has again brought us to the time of the year when Cultivators of the Tulip are turning their attention to the preparation and planting of their beds. This also includes examination of the bulbs, a preliminary step of some importance. They should also be arranged ready for planting, at the same time making good all alterations in position noted at the blooming season, and at this time of year such new varieties as will enrich a collection may also be obtained. An important matter is the preparation of the bed. If the soil has been in use only one year, and the Tulips did well in it, it seems scarcely necessary to change it; for if the soil be good the bulbs may be planted in it two or three years in succession provided it be properly tilled and enriched. The rule observed by many cultivators is to remove about 3 inches of soil from the surface, laying it in ridges by the sides of the bed; then to fork over the mould left in the bed, laying that also in a high ridge for a week or ten days. If the soil requires changing growers take about 10 inches in depth of the soil and replace it with sand, decayed turf, good loam and road-grit, mixed well together. This is forked over two or three times, and laid up in a high ridge till planting time. Those who live in manufacturing districts need to be careful in selecting their loam, as in 1876 Mr. Samuel Barlow, of Chadderton, nearly lost a good number of his best varieties by using soil from a hedgerow that had become impregnated with iron. In planting it is customary to place a little sand about the base of each bulb, and a little sulphur is also added by some cultivators; the soil is then put carefully back on the bulbs, and it is covered to a depth of 4½ inches in the centre or highest part of the bed, and 3 inches at the side. Tulips are generally planted seven bulbs in a row, and their position in the row is regulated by the height at which they grow. The time for planting varies in different districts; in the North it is sometimes done as early as the second or third week in October, in the South Lord Mayor's Day, November 9, was the generally observed day for planting. The condition of the bulbs is some indication of the precise time, as, for instance, when they begin to show signs of activity at the point, and by the swelling of the incipient roots at the base of the bulb. Sufficient space should elapse between the renovation of the bed and the time for planting to admit of the soil subsiding to its level. Generally, as soon as planting is finished, the iron hoops used for protection are placed over the bed, ready to place Frigi-Domo mats, or any other suitable covering, over it when the state of the weather makes it necessary.

—— Rogiera gratissima is a plant much used at Floors Castle, and Mr. Knight, writing in the *Florist and Pomologist*, says he finds it of great service all the year over. "By adopting a system of potting and stopping, it may be had in flower all the season, but it is essentially a winter-flowering plant. It gives great returns for the trouble it takes in growing, more so than most ligneous evergreen plants do. Its bunch of flowers is not unlike a fine Carnation, but with more pink in it, and being sweet-scented it is most grateful in a nosegay. For those fan-shaped nosegays which are now becoming so fashionable, I don't know of a plant better adapted for them. I once fringed a Court bouquet with about twenty trusses of its flowers, which had a most beautiful novel effect. We have plants from 7 feet high down to 6 inches, half of which are, more or less, in flower. One plant 5 feet high has upwards of seventy flowers open and opening. A standard with a 2 feet head is being pinched in order to get it in flower in October, with others smaller, and a large planted-out plant. I fancy the plant is not sufficiently well known, or it would be more grown than it is. It is of simple culture, and does admirably in an Azalea-house, though it does not require heat to grow in. We grow it in soft fibry loam, with a dash of burnt ashes through it, and in this it thrives vigorously. We use a nice warmth to our Azaleas in spring, and this extra heat suits them well, and it bears more heat if you want it to flower earlier in winter—say December. I rank this plant as certainly equal, and in some respects superior, to Luculia gratissima, as it is a better habit, in being more comeatable, and the leaves can be used in nosegays with their flowers, and it can be had in flower at all seasons. I got my stock from Linden, who sent it out some years ago, and I have not regretted keeping to my old love, which from the first I pronounced a real gem. Whoever takes it in hand will, I am sure, thank me for bringing it to their notice, and more especially those who must have choice flowers to the fore for nosegays, &c. I am not too sanguine in saying that were I a florist, and wanted a speciality, this certainly would be either first, second, or third on my list of pets."

ARTISTIC GARDENING.

As there are gardens and gardens, so there are gardeners and gardeners, gardening and gardening. Between the forecourt of a suburban cottage and the grounds of princely Chatsworth, between the poor "frozen out" day labourer and the master of the art of horticulture, there exists a difference as great and marked as between the various styles of gardening. We have passed through many phases of the art more or less distinguished by certain peculiarities, we have had the useful as well as the ornamental, the ornamental and the useful combined; we have had the severely simple and the highly ornate, the architectural and the natural, and, finally—that is to say at the present time—we may be said to have the artistic. How far the present fashion in horticulture deserves the appellation we will presently discover, but here, let it be fully understood, our remarks are not meant to apply to extensive gardens placed under the charge of professors of the art of horticulture: the artistic gardening, or rather the style which appears to lay claim to the title, is that displayed in the small area of villa gardens, the floral arrangements of town houses, &c.

First as to the meaning of artistic. In the sense in which it is applied to horticulture it is surely meant to imply the elevating of the occupation of the gardener into an art, into work on which the labourer shall bring to bear all the resources of knowledge at his command, the evidence of such knowledge to be displayed in the laying-out and planting of grounds in the most pleasing and suitable manner; so that, considering the whole, we shall find uniformity without sameness, diversity without heterogeneousness, each part being not only good and beautiful in itself, but dovetailing into the whole so as to heighten the general effect. In fact artistic gardening should consist in bringing to bear upon the subject all the fruits of experience, study, and observation possible, so that in the outcome of knowledge, in the practical evidence in the garden itself, or in the numerous minor portions of it, such as window, balcony, or *jardinière*, there shall be nothing incongruous, nothing to shock the most fastidious taste, nothing which brings heterogeneous subjects into a proximity which detracts from the beauty of all. On looking around the metropolis and observing what goes on about us we cannot but be struck by the universal diffusion of a love of flowers as evidenced by the general efforts to grow them somewhere and somehow. With this widely awakened taste for beauty has arisen a development of decorative garden accessories which are employed without thought, and therefore without fitness. Such are the window-boxes of virgin cork displayed on stuccoed houses. Is it possible to find anything more incongruous than the flat imitation stone surface, the severe pillared porticoes, the handsome expensive plate-glass windows, with an adornment of rustic beauty? It is a misplacement of beauty which jars upon the senses in a manner similar to that which might be felt were we to behold the picture of some village belle taken from the picturesque yet ordinary surroundings of her daily life, and placed in a modern drawing-room: the face and figure of the rustic beauty framed in an environment of woods and fields and the accessories of country life would appear to the best advantage, while such a figure as the principal attraction of a *salon* would be out of place and absurd—a fit subject for satire, a theme for ridicule; the charm of face and figure would be utterly lost from the incongruity of the surroundings, as the rugged form of rustic window-boxes is when placed on modern imitation Italian architecture.

This is but one of the many phases in which artistic gardening belies its name: it is to be found all around us, in greater or less degree. At one time its most glaring form was the painting of railings, garden seats, arbours, any indeed of the adjuncts of the pleasure-ground, a deep uniform green colour; this fashion happily is dying out, we have learnt from the French to employ a deep red-brown tint as the most suitable to be used for wood and iron work in gardens. It were well we should only go thus far, not copying our neighbours in the profuse amount of gilding employed by them, nor following the too prevalent fashion of making garden pavilions of such a form and of so many hues that they have the appearance of abortive attempts at Eastern pagodas and miniature minarets.

To return to English gardening. Although we do not see the improprieties of little mounds, little pavilions, little fountains, and little grottos in a space some few yards square—all of which are so commonly found around the *maisonette* at Auteuil, Passy, or other village outskirt of Paris—yet in many instances the laying out of and planting of a small garden is as inartistic here as it is in France. There space is frittered away, and by attempting too much all is lost; here the reverse is generally the case. Given a villa garden enlosed within brick walls, how seldom is any attempt made at masking the ungardenesque character of the fence, or, by judicious planting of suitable subjects, depriving the enclosure of the hard outline of a formal square? As a rule, three narrow, level borders follow the line of wall, the fourth side of the square being formed by the dwelling-house; four straight paths and a square of lawn complete the laying-out of the villa garden; the summer planting follows the fashion of the day, and carpet-beds and ribbon-borders give to the ground the glory of brilliant colouring for a few weeks. Another form of laying-out is that where life-size statues and gigantic tazzas stand obtrusively out on lilliputian lawns and diminutive terraces, or, interspersed amid attenuated shrubs, only add to the general *outré* appearance and dreariness of the whole. Gleaming white [More frequently dirty. Eds.] statuary beneath the sunny skies and amid the dense Myrtle groves of Italy, in conjunction with the classic architecture and æsthetic memories of the country, is appropriate and therefore beautiful; but such statuary, smoke-begrimed and out of place within the walls of the limited area of a suburban villa garden, is inappropriate and ridiculous.

Since a part of the Horticultural Gardens at South Kensington was first laid out with coloured sands this style of what we may term imitation gardening has become a rage with some people, and we have seen villa gardens in which during winter the beds have been laid down with broken stones and chemical refuse in geometric patterns. Such gardens always remind us of the miniature grounds laid out by the children on the seashore, which are planted with cut flowers; such child's play has, indeed, more of the true ring of a love of Nature and plants about it than the idiosyncracy which delights in parterres of coloured stones. A sincere horticulturist would find more real pleasure in cultivating the veriest wayside weed than in laying-out such gardens, which at the best are not so interesting as the well-designed pattern and artistically blended tints of a parlour carpet. *T. S. Y.*

THE EXTENSION OF FRUIT CULTURE IN AMERICA.*

As the source of light and heat travels from the East, completing its daily circuit on our Western shore, there to rejoice in all his strength, so fruit culture has crossed our continent to the Pacific slope, there to produce almost all the fruits of the habitable globe, and finally to permeate, enrich and adorn our whole land.

At the time of the organisation of our Society the cultivation of fruits for market, or for exportation, was limited to a few of the older States. In Mr. Coxe's opinion the fine Apple growing section was bounded by the Mohawk River in the North, and the James River in the South. Fruit growing in this section was confined principally to Apples and Peaches, but very few of the latter found their way to the markets of the North, while Strawberries and other small fruits were scarcely to be seen, except in the locality where they were raised.

But now almost every steamer from New York for Liverpool or London, in the fall and winter months, takes Apples varying from 500 to 3000 barrels. Shipments have been made from other ports, and as late as last May there were 1500 barrels sent to England from Philadelphia. In December last 90,000 barrels of American Apples were landed in Liverpool. Very little difficulty is experienced in the winter months, but arrangements have been made to ship in warm weather by vessels with refrigerator compartments.

As the refrigerating process becomes more and more perfect it will aid largely the exportation, not only of Apples, but of more delicate fruits. Pears, Peaches and Grapes have been sent to England in good order, and it is confidently expected that American Peaches will soon be well known in the markets of England.

But what shall we say of Canada, Iowa, Wisconsin, Minnesota, Kansas, Nebraska, California, Oregon, and other sections, and other new States and Territories, where the cultivation of fruits had scarcely commenced when this Society was established? Who that witnessed the exhibitions of fruit from the States first mentioned at our various sessions in Richmond, Boston, Chicago, and at the Centennial in Philadelphia, has not been surprised at the progress already made?

At the time this Society was formed the area of fruit culture and the value of our fruits was so limited that it was not thought worth while to collect the statistics. Then many States, Canada and Nova Scotia, had given but little attention to fruit culture, except that of Apples. These and other sections were deemed too far north for successful fruit cultivation. Now they produce large quantities of fine fruits: the Nova Scotia Society have received four medals from the Royal Horticultural Society of London, and the Ontario Society, at the Quarter Centennial Session in Boston, in 1873, the Wilder Medal for the best collection.

The estimate by the Government for the Centennial, last year, furnished the following statistics (soon to be published), of the fruit culture of our country:—

The number of acres under cultivation, in orchards, Vines, and small fruits, is estimated at 4,500,000. The number of trees is estimated as follows:—Apples, 112,000,000; Pears, 28,260,000; Peaches, 112,270,000; Grapes, 141,260,000; the total, 393 790,000. The estimated value of fruit products is:—Apples, 40,400,000 dols.; Pears, 14,130,000 dols.; Peaches, 56,135,000 dols.; Grapes, 2,118,900 dols.; Strawberries, 5,000,000 dols.; other fruits, 10,432,800 dols.; making a grand total of 138,216,700 dols., or nearly equal to one-half of the value of our average Wheat crop. California, to say nothing of Figs, Oranges, Olives, and Almonds, has nearly one-third of the whole Grape area, 60,000 acres of vineyards, and 43,000,000 of Vines, yielding annually, besides Grapes and Raisins for the market, 10,000 000 gallons of wines, to which may be added the wines of Missouri, Ohio, and other States, the whole wine product being 15,000,000 gallons as the annual crop.

The following are a few illustrations of the immense quantities of fruits which are sent to market in addition to what is consumed at home:—

Of Strawberries there were received in one day in the New York market, at the height of the season, from all sources, 7000 crates, averaging at least a bushel and a half each—more than 10,000 bushels. The crop of Peaches raised in this country is so enormous that we hardly dare state the quantity. The largest crop was in 1875, and on the peninsula of Delaware and Maryland alone was estimated at between 7 000,000 and 8,000,000 baskets.

From California, according to the statement furnished me by Mr. E. J. Hoopes, Editor of the *California Horticulturist*, there were sent East, in 1876, 334 carloads of fruit, of 400 bushels each—an increase of more than 100 per cent. over the previous year, one firm having sent 700 tons; and of the Strawberry it is estimated that from San Jose and vicinity, some days there were sent for home consumption forty tons of this fruit, and in a circuit of about five miles there are more than 1000 acres of this fruit under cultivation. Dr. Strentzel, our Chairman of the Fruit Committee for California, writes, that at short notice that State can furnish the whole continent with an overflowing supply of fruit.

From Virginia, Mr. Leighton, our Vice-President, writes, that the increase of Strawberry culture in the vicinity of Norfolk is astonishing, completely heading the page of horticultural progress, and that it seems wonderful how the demand keeps pace so closely with the supply. The shipments this year have been over 3,000,000 quarts. There were nearly 10,000 pickers in the field in one day. One grower had 185 acres. To Boston alone there have been shipped this year 11,547 crates of 45 quarts each, or more than 16,000 bushels.

In Illinois very little fruit was raised, except for home use, until 1840, when, according to Mr. Flagg's interesting historical address before the State Horticultural Society, a new era in fruit culture commenced. Now there are 320,000 acres of orchards in that State. Mr. Parker Earle informs me that in a good season there have been sent from his station alone (Cobden) twenty-five carloads of fruit daily. Of Strawberries, where scarcely any were raised sixteen years ago for exportation, within six or seven years the cultivation has increased, at Cobden and vicinity, to over 1000 acres, so that five or six carloads daily are dispatched to the various markets.

* From President Wilder's address, delivered at the sixteenth session of the American Pomological Society.

From Georgia, Mr. Berckmans, President of the State Horticultural Society, writes as follows of the late exhibition of his society:—

"Many of our people of intelligence were amazed at our progress. The exhibition of fruit was grand. I am safe in saying that the display of Peaches was never surpassed, if equalled, in any place in the past. I had fifty-six varieties of Peaches, all ripe and in perfection; others had collections almost equal in number, and several surpassing in size. Many had Peaches measuring 12½ inches in circumference. The Grape show was almost equal to the Peach exhibit. Upwards of fifty varieties were exhibited. Some wonderfully fine Concords were shown, which weighed 1 lb. to the bunch. Pears were fine, but not numerous as to varieties." He had forty varieties in eating condition, which, together with the balance of his collection, made nearly 200 varieties of fruit.

The increase in the crops of Apples in New York, Michigan, and the more Western States, is wonderful.

From New York it is estimated that in abundant years 1,500,000 barrels are exported, in addition to those consumed at home—a single firm at Boston receiving from that State from 30,000 to 40,000 barrels of Apples per year. In the best seasons, Monroe, Niagara and Orleans counties produce more than 1,000,000 barrels of Apples, and the value in one county is stated to be a million of dollars.

Michigan is a great fruit producing State, and many parts of it fully up to New York. The crop of Apples in this State is estimated by Vice-President Lyon at 2,000,000 dols. in value; Peaches, 1,000,000 dols.; and other fruits 1,000,000 dols., or a total of 4,000,000 dols.

Home Correspondence.

The Late Potato Show at the Aquarium.—As you intimate your approval of the letter of "A. B." [In principle, not in all its details. Eds.], I think it proper to direct your attention to matters of fact. The promoters of the International Potato Exhibition made an earnest endeavour to locate their exhibition at South Kensington, and failed to obtain from the Council of the Royal Horticultural Society any definite reply to a very definite proposal. The endeavour proved injurious to the Potato show, for it delayed operations fully six weeks beyond the time when the arrangements should have been completed. But as you agree "in principle" with "A. B.," I must inform you that adjoining the conservatory at South Kensington is a drinking-bar, and on days of great exhibitions a second drinking-bar is opened at the lower end of the garden. It follows that alliance with the Royal Horticultural Society would continue and strengthen the present "unholy alliance" between "Potatos and gin." But you, under the leadership of the apocryphal "A. B.," would, of course, soon surmount such difficulties. I therefore desire it to be understood that at the next meeting of the International Potato Exhibition Committee I shall propose that the whole arrangements for 1878 be entrusted to the unknown "A. B." and the Editors of the *Gardeners' Chronicle. Shirley Hibberd, Stoke Newington, N.* [Our correspondent may call spirits from the vasty deep, but— Eds.].

—— Your correspondent "A. B." is no doubt very smart in his criticisms upon "little societies" as he calls them, but will he please to explain how he is aware that the promoters of these little societies have no other object in view than their self-glorification, and that with them the advancement of horticulture is as nothing? I say distinctly such sneers as these are most contemptible, and are flung by some one who can show no success that he has accomplished. [A bad guess this. Eds.] Does any one whose opinion is worthy of consideration doubt that Mr. McKinlay, the chief promoter of the Potato show, has not in view the improved cultivation of the Potato, and is actuated by motives as honourable as is any man in England? Let the same be said of Messrs. Horner and Dodwell and the Auricula and Carnation Societies; of Messrs. Paul, Turner, Cant, Hole, Camm, D'Ombrain, and others that represent the Rose show. Are not these honourable men, and have just as much right to hold their exhibitions where they please as have the Council of the Royal Horticultural Society to set up their little shows at South Kensington? How is it that these men are only "Brown, Jones, and Robinson" in the estimation of "A. B."? Are they not as good any day as the puffed-up *parvenus* of the Royal Horticultural Society? If the Royal Horticultural Society wants the support of these little bodies, why does not it try to secure their assistance in a liberal spirit? "A. B." cannot be aware that the Potato Committee endeavoured to obtain such terms from the Council of the Royal Horticultural Society in the spring as would enable them to hold their show at South Kensington, but whilst the Council were parleying over the matter, an offer came in from the Aquarium Company of assistance to the amount of £30, while the Council of the Royal Horticultural Society offered only £10. Had the Council been but a trifle more liberal, the show would have been held at South Kensington. If, however, they are too illiberal towards the little societies to receive the support of the latter, rather let "A. B." blame the Council than these small but nevertheless useful bodies. "A. B.'s" horror of Westminster saloons and joint stock public-houses is ridiculously pharisaic; it is a gross slander upon the myriads of respectable people who frequent either of the places he condemns to say that they go there to drink gin. If "A. B." will take the trouble to go to the drinking bar at the end of the western arcade at South Kensington on any great show day, there he will see more bar-drinking going on than he will see on any show-day at either the Aquarium or at the Alexandra Palace. The quarrel of Potato Committeeman with the manager of the Royal Aquarium had nothing to do with the accommodation furnished with the number of visitors, of which there were twenty times as many as would have got to South Kensington—not with the drinking business. I have as keen an eye for the evils of that feature as have most men, and I fearlessly say, as far as the Aquarium is concerned, that I see less of it there than in many other places. My object in publicly complaining of the manager's conduct was to put other committees on their guard. With this exception only I have no fault to find with the Aquarium, or with the honourable way in which its engagements with others have been acted up to. *A Committeeman.*

Special Shows and Special Societies.—"A. B." confines his denunciation of special shows and societies to those only who do not go to the Horticultural. Speaking of those I am connected with, the fact is, that neither the Royal Horticultural nor the Royal Botanic Society would give us days on which either Auriculas or Carnations and Picotees could be produced; so that the severance was the work of the large societies, as they are generally called, and not our work at all. As to specialism and specialists, what are Dr. Hogg, Worthington Smith, Andrew Murray, and every other man of mark in the present, as of the past, but specialists? And, as for the specialists desiring isolation, I deny that any such feeling governs florists. They neither will submit to be left out in the cold, nor do they wish to leave aught out. As I have said before, we were shut out from the Horticultural Society and Regent's Park, and are, I fear, to be again shut out for 1878; but unless I greatly mistake florists, they will not suffer this in silence. *E. S. Dodwell.*

The Royal Horticultural Society and Small Societies.—Does not your correspondent "A. B." (p. 500) put the consequence in place of the cause, when he says that one reason why the Royal Horticultural Society does not succeed is that the votaries of particular plants do not support it? Committees representing particular plants look only to the interests of their objects in choosing the place of exhibition—the Royal Horticultural Society has been so long looked upon by many of the best horticulturists of the country as a South Kensington institution, supported mainly by Kensington funds, and kept up mainly for Kensington objects. When it becomes the recognised representative Society of the country, horticulturists, whatever their special hobby, will naturally support it, and make it their show place. The Society will get the support of the country when it shows that it fully merits it. One difficulty is that the funds which will result from the support are much wanted to help fully to earn it. "A. B." does not include the Crystal Palace among the "gin and beer" places; perhaps he has seen, as I have at the flower and fruit shows there, the many visitors with eager appreciative faces, such as I hope we shall one day have at South Kensington. *George F. Wilson.*

Notes on Flower Shows, &c.—The letters which have appeared lately in your columns about flower shows prolonged on Saturday nights will no doubt have their effect, still in getting up successful shows the main thing that has generally to be considered is how would early closing of shows on Saturdays suit the treasurer. It is just possible that flower shows held in London could be closed for the exhibitors sooner by an hour or two than shows held in the provinces. In London the visitors might be called more of the upper class, and therefore could attend earlier—I might say they do attend earlier; but in the country it might be said in most cases to be quite different. For country shows the large influx of the working class on the Saturday afternoon is just the very thing that makes the show a success, and the fact of the matter would be just like this—to close early on the Saturday afternoon would be to weaken the finances of the society. Taking home a few loads of big plants even a few miles late on Saturday night, extending into Sunday morning, is quite as stiff a job as taking a box of fruit 100 miles now-a-days. Still it might be safely said that, whatever could be advanced about prolonging the shows on the Saturdays, it will resolve itself into this—will it pay to close earlier or not? There can be no doubt that flower shows that are not in a right way financially soon lose patronage, and early closing would not do much for them were they to adopt the principle without due consideration to all other points. Whilst I would be in favour of every exhibitor getting home in reasonable time after the show, at the same time I would caution against early closing if it were to affect the standing of the society in paying its way. I believe there is another matter connected with flower shows that often gives more trouble than the late closing on Saturdays, and that is the making of awards that do not give satisfaction from the improper or indistinct wording of the prize schedule. Judging from what often appears in your journal about disputes or inquiries concerning rules for certain awards, &c., very few shows pass off without something of this sort; and perhaps though the schedule might have cost the society a great deal of care in its production, still in country shows I think this is a point that generally an improvement can be effected in. If means were adopted to reduce such unsatisfactory awards to a minimum it would be a step in the right direction. Such are the thoughts of *A Provincial.*

Three-Day' Shows and Saturday Terminations.—I think the remarks which have already appeared of this journal in reference to the desirability of closing exhibitions of valuable perishable fruits before Saturday night will meet with the acquiescence and support of all exhibitors, and without going into details here I think sufficient evidence has already been given by practical supporters as to satisfy the promoters and managers of such undertakings that we, as exhitors, have in this case an undeniable grievance to place before them, and one which ought to be amended. I trust, therefore, that before the ensuing season's arrangements are completed the arguments which have been adduced will have due consideration given to them at the council boards for forthcoming shows, and that for the future we shall be spared the inconvenience and additional expense incurred by the late arrangements. The question as to the duration of large shows is another matter, involving other interests of the first importance; the liberal prizes which were given by the managers of the Alexandra Palace show should, however, set this matter at rest in this case. *G. T. Miles, Wycombe Abbey.*

Shropshire and Cheshire Damsons.—In your current number for October 20, p. 497, you call attention to the goodness of the "Shropshire Damson." It would be very serviceable to know the regular trade name, if it exists, of this excellent variety, which I conjecture to be the same as the kinds much prized in the West of England as the Derbyshire and Cheshire Damson. The Derbyshire I only know by reputation, but the Cheshire kind when imported as far south as Gloucestershire is a remarkably free and constant bearer, with a good-sized oval fruit, ripening well, and pleasantly tasted even uncooked. The large yield makes it very valuable for winter supplies in any of the common forms of preservation, and it is especially useful as a cottage tree, from the fruit requiring no more trouble and expense than covering it in a deep jar with a good layer of brown sugar, and setting it in a boiler till the sugar has melted down amongst it, or setting the jar for a few hours for the same purpose in a spent brick oven. In Cheshire, this kind of Damson will keep for a while laid like Apples on straw in a loft, but in the warmer climate of Gloucestershire the fruit ripens thoroughly on the trees; they have also the advantage of caring (as far as I have seen) little for soil or situation—those I knew best standing in a stiff lias clay, and being much shaded by a young Fir wood, and the wild-wood plants and grasses which grew over their roots being rarely meddled with beyond one rough mowing in the year just before the fall of the fruit, and with this I only remember a failure (an approach to one, rather, for there was some crop) once in a long series of years, and generally the trees were heavily laden. I have endeavoured to procure this variety near London, but have only met with the conjecture that it is the "preserving Damson," and I should be very glad to know if it has some name under which it is procurable. *O.*

The Worcester Pearmain Apple.—Excuse me if I differ from you about the Scarlet Pearmain called the Worcester. I send you by this post a bundle of descriptions made by me here two or three years ago from specimens of the various sorts of Apple in my collection. I send you the bundle, as you will find that I am not without proof that the Pearmain called Scarlet Worcester is in my opinion nothing else than the one described by me as Pearmain Scarlet Summer, which you will see coincides with the fruits I send

you. I have since examined leaves from the Worcester sort and from Scarlet Summer, and I find them alike; and I must say that there is no test better than the venation of leaves. You will find also a description of Scarlet Winter Pearmain, which ripens from December to April, whilst the summer sort ripens exactly at the time claimed for the Worcester. I do not wish to hinder the raising of new fruits, but I should be pleased if the parties raising them would authenticate their parentage. *John Scott, Merriott, Crewkerne.*

Mrs. Pince's Black Muscat as a Stock.—My experience with Mrs. Pince is that it makes a very good and suitable stock to graft upon. I have one here that has been planted eight years in an inside border, and which the second year after planting produced a couple of bunches. From its not colouring up to my satisfaction I grafted a Black Hamburgh upon it, and this Vine has proved superior in every point to others grown in the same house. It still retains the two lower spurs which every year carry a bunch each, never colouring up to the mark sufficient for extending which is its failing point with the majority of growers. *W. B., Oct. 23.*

New French Roses.—A correspondent asks a question in last week's *Gardeners' Chronicle* about a certain indefinite 144 of these Roses of the issues of the past five years. From the way in which the inquiry is put it is almost impossible to give a categorical answer, unless "S. X." supplies the names of the lost ones, whose merits, demerits, or fate he desires to know. It may be pretty safely enunciated, however, at once, that all or nearly all that he refers to may be justly referred to the condemned list of mediocrities and failures with which so many of the Gallic raisers try the patience of English rosarians year after year. There is an important point in relation to these French novelties, of late years too often left out of sight. Now-a-days they do not all come here. Warned by that stern teacher, experience, our importers refrain from that prodigal disbursement for all and every individual of the untried and unknown in which they were wont to indulge, and confine their investments to the productions only of those who have proved themselves worthy of confidence. Hence the English catalogues do not coincide in all cases with the French lists of novelties. Another reason which tends to restrict importations from the foreign market is the increasing number of English raised Roses brought before the home public, the means of testing the qualities of which are more complete. Perhaps "S.X.'s" interest in the missing kinds he appears anxious about may be somewhat abated or satisfied by the sweeping assertion, as some might consider it, that from four to five kinds every year exhaust the really distinct and first-class French Roses that come out. "S.X.," therefore, need not wonder that 144 should be left out, but rather that so many are retained. However, if he refers to any particular Rose or Roses I will give him whatever information can be obtained. *W. D. Prior.*

—— It seems to be a fact that, if what appears in your issue of the 13th and 20th inst. is true, during the last five years there have been imported from France into this country not less than 234 inferior varieties of Roses, and these have been heralded into the English market with high recommendations, and are, as far as words go, prodigal in beauty. It appears, however, that all the buyer gets for his money is this fine description, which in the end is dissipated by the alloy of bitter disappointment. The annual influx of new French Roses is at hand, and considering the results of former years there surely ought to be written up on every list as it arrives "*caveat emptor.*" The sum of money paid to the Frenchmen for these so-called new and improved Roses is more than any one unacquainted with the matter would imagine; but as the money is paid by driblets, it may be surmised that the buyers look upon the matter with the contempt which familiarity is said to engender. The cost of these new Roses is, including carriage, as nearly as may be 25*s.* each, so that, supposing only twenty plants of each of these 234 sorts have found buyers in England, it represents a sum total of about £5800 paid to the French Rose-growers during the last five years, and for this amount there is nothing to show except the names in some catalogues, from which they will soon be struck out. I am informed it is invariably the practice with the English nurserymen to select the best stocks to bud, and the best ground upon which to grow the new Roses; this, together with disbudding, insect killing, manuring, watering, and all other approved modes of promoting the growth of the plant, and the development of the bloom, are resorted to without stint; but the result must be very mortifying to these careful and energetic cultivators when they find that, after all this painstaking watchfulness and outlay, they can seldom find a bloom fit to show to a customer as a good new Rose. In former years the French Roses were generally good, excepting that now and then we had a counterfeit, but as it came surrounded by a lot of genuine ones it did not attract much notice; now, matters are quite reversed. I hope the decadence in these French Roses does not arise from the old and respectable growers dying out and their places being filled by others who are not so scrupulous or who have lost the art of raising good Roses; for without doubt some of the best new Roses we have had of late years have been raised in England. I think the Rose growers of England ought to cordially thank you, Mr. Editor, for calling attention to this matter; and I trust your remarks will tend to augment and upbold the reputation which the English Rose growers have always endeavoured to maintain. *Alpha.*

New Spotted Grape.—The enclosed Grapes and leaves were taken from a Vine grown from the seed, by Mr. Gill, of The Fernery, Lynton, North Devon. The Vine is now nearly ten years old, and has always shown the variegated peculiarity, which runs through the whole Vine. There are four Vines growing in the same house, but none of the others are marked at all. I merely mention this to show that the marks are not attributable to blight. The Vine is a large one, the bunches average about 2 lb. each, grown without heat. *Francis A. Stringer, Chancery Lane.* [We received a few weeks earlier a sample of the same Grape direct from Mr. Gill, and concluding that Mr.

Fig. 107.—Shoulder from a cluster of Mr Gill's spotted grape.

Gill's Fern-house, facing north, afforded no opportunity for bringing out the qualities of the Grape either as to size or ripeness, and that as a seedling its constantly spotted berries were a curiosity, we advised Mr. Gill to place some eyes in Mr. Barron's hands to be carefully grown at Chiswick; and this we learn he either has done or intends to do. In the meantime the annexed sketch (fig. 107) of one of the shoulders of the bunch will show the condition to which Mr. Gill has grown it. The spotting is a genuine coloration of the skin of the berries, and is developed in about equal degree throughout the bunch. It is not, as appears to have been suggested by some persons who had seen it a discoloration occasioned by blight or disease. Eds.]

The Best Cucumber.—A neighbour of mine who reads the *Gardeners' Chronicle* recently remarked to me, "I notice that some one has been writing about 'Telegraph' as the best Cucumber, but I prefer Blue Gown to that." He added, "I put out this last spring two plants each of Telegraph and Blue Gown in a pit. They both did well, and bore lots of fruit all through the summer, but Blue Gown held on, and was producing beautiful fruit 20 inches long at least a month after Telegraph had given out, yet both sorts were treated exactly the same." Further, he added, "In a frame Blue Gown does splendidly, and whilst it is of first-class flavour, Telegraph can't touch it for colour." I have thought this impromptu opinion of a good gardener was worthy of general publicity. *A. D.*

Galvanised Iron.—We notice in your issue of this week a query as to effect of "galvanised iron" upon Roses and Raspberries when trained to it. We beg to inform your correspondent that no form of vegetation will make much progress if attached to any metal whatever, simply from the fact of its great conducting power, which causes the metal to be cold and ungenial to all plants. Some few years ago a case came under our notice of a Hop grower experimenting on a small scale with iron rods in one of his "gardens," on account of the great saving there would be in their durability as against ordinary poles, which were continually rotting. The effect was that the Hops would not climb up them, but in preference crept upon the ground, and in all cases where they were tied to the poles to prevent this course, only a poor stunted growth ensued. We have never found Roses succeed well where they come in direct contact with metal out-of-doors. It would be well if some of your ingenious correspondents could discover some more durable material than wood which would answer as well in arches and trelliswork. Could not iron wire, insulated in gutta-percha, or some such non-conducting medium, be successfully adopted? *William Rollison & Sons.*

Eucharis amazonica as a Cool Greenhouse Plant.—Kindly allow me to endorse "D. T. F.'s" statement respecting the above plant. About seven weeks ago we took several pots of this charming and ever-acceptable plant, when in flower, and placed them in the triangular or inner hall in the Castle, where they were subjected to plenty of air, the doors being open on all favourable occasions. The first morning after being put there they showed symptoms of flagging, they having been taken from a close, warm stove, but after they had been there a couple of days the spikes became quite stiff, and otherwise everything that could be desired, and remained so until last Saturday, when we removed them to the stove again. Of course, the blooms were picked off as they faded. Well-grown plants of the Eucharis amazonica, with its beautiful white sweet-scented flowers towering above its green and luxuriant foliage, have indeed a very fine effect. *H. W. Ward.*

—— I am very pleased to be able to bear testimony to the remarks of "D. T. F." on the hardiness of this prince of winter-blooming plants. I have a dozen large plants which are kept in sets of four, and seldom it is I have not a supply of them in bloom. Three or four of these sweet-scented flowers, associated with good old Epiphyllum truncatum with stag's-head Pelargonium, makes a bouquet fit for an empress. *R. Gilbert.*

A Plea for a Neglected Tree.—The deciduous Cypress is seldom seen, I suppose because in unsuitable situations it perhaps may assume a stunted or scraggy style of growth. Where it flourishes, however, it is an object of much beauty, from its feathery foliage and the peculiar tender green which it retains throughout the summer. I have one of these trees about forty years old which I think no one could fail to admire. It is growing in a stiff but not a wet clay, high up on the side of a hill, where it is above the influence of the frosts so prevalent on the lower lying country. *P. P. C.*

Agaves in Jean Verschaffelt's Nursery.—The following is a list of Agaves that flowered in this nursery during the past summer (1877), viz.:—1. Agave filifera elegans, a fine variety, imported a few years ago from Mexico; a very compact plant, dwarf, with numerous short leaves, more abundantly thready (filamented) than in the usual species or varieties, each leaf broadly marked with pure white bands; about 1 foot high by 18 inches in diameter. The flower-stem is about 5 feet high, covered with seed-pods. 2. Filifera, a most noble specimen, about 40 inches in diameter; the flower-stems nearly 15 feet high, covered with hundreds of flowers, a great many of which have been fertilised, and bearing numerous seed-pods. 3. Xalapensis, a really fine plant, about 2 feet high by 3 feet in diameter; flower-stems 3½ feet high. This species seeds very freely, for every flower has become a seed-pod. It is one of the finest green-leaved specimens of the Agave tribe. 4. Agave lophanta, one of the very finest and most esteemed species, but not common in the trade. The specimen in question was perhaps the finest known in commerce. The flower-stem measures quite 20 feet, and it has continued in flower for ten weeks. This does not set so freely, but yet, owing to the immense quantity of flowers, a certain quantity of good seeds may be reasonably expected. 5. Schidigera, an imported plant, 18 inches high by 16 inches diameter; flower-stems 3 feet high; very few seed-pods. 6. Xylinacantha: a fine specimen of this species threw up flower-stems quite 7 feet high, and has now a great number of seed-pods. Beside the above Agaves two or

three imported plants (trunks) of the very rare Dasylirion Hartwegianum (true) have flowered during the past season, but none of them have seeded. Several rare species of Agaves in my collection may be expected to flower next year. *Jean N. Verschaffelt, Ghent, Belgium, October* 20.

The Apple Crop of 1877.—We have not an extensive collection of Apples, but seeing in your issue of September 8 that information as to the varieties which have borne good crops this season would be acceptable, I may say that the following have done well here (in South Hants):—Dessert: Nanny Apple, Stone Pippin, King of Pippins, an exceedingly heavy crop, good size, and highly coloured. Kitchen: Norfolk Beaufin, good crop; Wellington (or Dumelow's Seedling), good crop, very fine fruit and excellent colour. The trees of the latter variety are large, the stems measuring 5 feet 6 inches in circumference at 6 feet from the ground. The situation is 280 feet above sea level, and the soil dry and gravelly. We have no Pears or Plums worth mention. The past month was very favourable for Apples to finish off, and we were fortunate enough to finish gathering all in by the 10th, or we should not have required the use of ladders, the gale on that day having swept over here with great force. *J. Batters, Gr., Chilworth Manor, Romsey, October* 22.

Protecting Polyanthus Flowers.—I fear that the Rev. C. W. Dod will not in the future save his Polyanthus flowers from destruction, if he does not protect his beds either by nets or by wire netting. The sparrows have so often tasted the forbidden fruit that they will not be denied, and nothing short of powder and shot will frighten these audacious birds. They associate so largely with man and domestic animals that nothing but destruction or prevention will keep them at bay. I find them productive of the same mischief with my African Marigold flowers in the autumn, and only netting will keep them off. What food they find in these flowers I have not yet been able to find out. *A. D.*

Potato Disease.—If your correspondent "R.," writing under the above heading, would try (instead of mowing down the stems) pulling them up by the roots, I think he would find that any tubers not affected at the time of pulling the stalks would keep quite sound. I have tried it several times. We walk along each row, putting one foot on each side of the stalk, grasp it with the hand, and pull it clean out. The Potatos served in this way have invariably turned out nearly free of disease. Perhaps some of your correspondents will try the above, and give their experience. Of course the stalks must be pulled out as soon as the disease shows itself. *W. A. Emery, Kilkea Castle.*

Arundo Donax and the Pampas-grass.—At p. 500 a correspondent, "S. W.," recommends Arundo Donax to be planted near water and otherwise. He also recommends the Pampas-grass for the same purpose, but he forgets to say that both these plants perish if we have a severe winter. I have to cover mine every winter with a thick layer of coal ashes, to save the roots. Did any one ever see this fine grass in flower in Britain? Madeira is its native habitat. *John Scott, Merriott, Crewkerne.*

A Cure for Root-eating Grubs.—In January last you were kind enough to write to me in answer to my inquiry for a cure for the "grub" that was eating up my Strawberry plants. I tried "sulphur," recommended by a correspondent of the *Gardeners' Chronicle*, without any success, as we found the vermin alive and well in the middle of the sulphured earth. As you requested me to write to you on the subject, I have now much pleasure in recommending a perfect cure—viz., the copious application of quicklime—small doses are useless. I feared at first I had burned up my plants, but they recovered, and bore an abundant crop, and the grub seems annihilated. Messrs. Sutton & Sons, of Reading, suggested the remedy. *A. F.*

Eriopsis biloba.—I suppose that Eriopsis biloba is not an easy plant to grow; I have not often seen it in really good health. I have had two or three plants, which I bought as they were imported; they all grew vigorously, and one or two flowered, but I lost one or two of them, and have now only one, which appears to be very healthy and to be growing stronger and more vigorous every year. The pseudobulbs of this plant seem to be very slow in forming and maturing, and in the plant that died the leaves spotted and the bulbs shrivelled and rotted in the winter. The roots do not seem so liable to rot as those of many Orchids. The plant which is thriving is grown in a shallow cork basket, which it has filled with roots, hung up close to the glass in a Cattleya-house, and without having much water given it at any time. It certainly, as Mr. Williams says, likes plenty of light; I should say that it likes to be warm and rather dry in the winter, and not too warm and moderately moist in the summer. *C. W. Strickland, Hildenly, Malton.*

Anemone japonica alba.—Valuable as this Anemone is for beds and borders, it is doubly so for pot culture, for except in favourable autumns like the present it is very seldom that it lasts long in full beauty in the open, as the flowers are either cut off by frost or become so damaged by wind and wet as to disfigure them in such a manner as to quite spoil their beauty. I have found this to be the case just lately, owing to the strong gales; as on looking over a number of plants in the herbaceous border I could not find a single bloom but what had the edges so battered and bruised as to be unfit for the purpose required. Of course there are sheltered situations where this mishap may in a measure be guarded against, but not so from frost and wet or damp, foggy nights, which are equally fatal to their beauty, and therefore to enjoy them to the full it is necessary to grow some in pots, that they may be removed to the greenhouse on the approach of bad weather, where they will be found to display their peerless flowers long after those in the open border are destroyed or so tarnished and meagre as to bear no comparison with those under glass. Excepting the Eucharis there is nothing to compare with them for spotless purity, and were they as tender as that plant and required the same heat to grow them, they would no doubt be quite as much prized and sought after as is that popular favourite; but as they are only hardy herbaceous plants they do not receive the attention their merits deserve. Associated on the stage with red Salvias they form a most pleasing contrast, and last on till Chrysanthemums come in to take their place and fill up the void. The best way to manage them, to get them strong and to flower freely, is either to plant them out in rows in rich soil, and take them up just before they begin to show bloom, or to grow them in large pots, plunged and mulched; but the former method is the preferable one, on account of involving less labour, and being productive of more satisfactory results. The thing is to grow them freely, with plenty of leafage, which is sure to end in fine crowns that cannot fail to send up stout stems laden with bloom. If a shallow trench is cut similar to those prepared for Celery, and a good dressing of manure is dug in and then filled up, it will be just the place to grow them, and exactly suit their requirements, and to aid them as much as possible water should be given during dry weather, or, better still, liquid manure in lieu of it. When lifted from the ground it should be done carefully, so as to preserve as many roots as possible, and a fair-sized ball should be taken to minimise the check digging them up entails—an operation for which a dull, moist time is the most suitable, as then they suffer less and recover more quickly than when the atmosphere is hot and arid. A cold frame in a shady situation is the best place to stand them, as then they can be kept close and syringed till the leaves will bear full exposure without flagging, which they will soon do when so favourably circumstanced. Anemone japonica may easily be increased by taking the young offsets, which in established plants growing in favourable soils form freely around them, and should be removed in the spring, and planted in rich sandy loam; or seed sown at that time, and plants raised therefrom will flower the following year. One of the merits of Anemone japonica is that it lasts well in a cut state, and from its light branching habit is free from that stiffness that detracts much from the beauty of others. *S. W.*

Storm in Skye.—The following extract from a letter, received from my friend Mr. Anderson, of Carbost, Isle of Skye, may interest the readers of the *Gardeners' Chronicle*. *C. R. Haig*, 118, *Fenchurch Street*:—

"Last Sabbath (14th inst.) the barometer fell very low, and showed great signs of uneasiness. The wind commenced early in the morning to come in heavy squalls from the north-east, accompanied with rain, which by noon exceeded anything I ever saw in Skye. From that time to 3 P.M. it continued to get worse and worse, till is was no longer rain, but 'whole water.' The flood rolled down the mountains in one universal sheet, sweeping everything movable before it. Bridges were swept away as if they were pasteboard toys. The rivers spread out over their banks from side to side of the glens, and rivulets were swollen into rivers. The bridge at the end of my house, always more than sufficient for the largest flood I ever saw here, could not contain a tithe of the water. On rolled the mighty stream till there was not a bit of dry land round about the house. Stones larger than a man could carry, roots and trees, were swept over the lawn in front of our house into the sea as if they were feathers. My upper dam was swept away, and there were several feet of water in front of the distillery. By 4 o'clock the waters began to subside, and by half-past 5 one of the most desolate sights possible was presented to the eye. Thousands of tons of *débris* were lying everywhere. The road leading up the hill was washed away all its length to a depth in some places of 5 feet. The *débris* before the office door are still several feet deep. By yesterday afternoon we succeeded in cutting pathways to admit of our getting along and to allow the water to drain off. Eels were found wriggling in my house on Sabbath evening. The house and distillery resisted the storm and flood, but the large bridge is swept away. To-day all hands are busy carting the *débris* away, but a month must elapse before the damage can be repaired. By to-night (17th inst.) we shall have a direct passage to the house, but the burn has to be crossed on planks, the bridge being away 'on the ocean wave.' Fully 100 tons of stones are piled up at the front and end of the house. The like was never known here nor recorded in the history of Skye."

Reports of Societies.

Cryptogamic of Scotland.—The third annual conference of this Society took place at Dunkeld last week, and though fungi were scarce, and the season rather too advanced, yet on the whole the meeting was a decided success. The proceedings may be said to have begun on Tuesday, the 16th, when some of the officials of the Society arrived at Dunkeld and had an excursion along the slopes of Birnam Hill as far as Rohallion, where, on Dr. Carrington, the well-known hepaticologist, joining them, the weather made a vigorous effort and got up a snowstorm for the benefit of the Southern visitor. The party were, however, in a mood to be content with only a limited number of "finds." The lovely scenery amongst which they strolled more than compensated for the scarcity of fungi. Had Mr. Worthington Smith been able to attend the meeting his facile pencil might have afforded the means whereby the readers of the *Gardeners' Chronicle* might have formed some idea of the country in which the Cryptogamic Society's meeting was held. For example, the place where we left the members of the Society in the midst of a snowstorm is one that cannot be easily surpassed for beauty. A picturesquely designed shooting-lodge with tower and turrets stands on a well-kept lawn on the shores of a small lakelet lying in the bosom of the hills. The lake, which is about a quarter of a mile long, is framed by a dense mass of Rhododendrons, which have made themselves so much at home that their seedlings can be seen springing up at the edge of the drives and walks in every direction. A small rockery and Pine-crowned island break the uniformity of the surface of the water, while fine specimens of Abies Douglasii and Picea nobilis mingle with Oaks and Birches to form a background. On one side a bold Fir-clad hill rises directly from the lake; on the other a lower and slightly more remote hill bears on its summit a ruin, which marks the site of Duncan's Castle. At the far end of the lake a tree-clothed ravine, spanned high up by a rustic bridge, leads to the brown and rocky summit of Birnam Hill. Climb to the bridge, and a great expanse of lowland scenery bursts upon the view. Around us is Birnam Wood, in front is Duncan's Castle, far in the distance we see Dunsinane Hill and Macbeth's Castle.

About sixty or seventy species of fungi were noted during the day, but none of very special interest.

On Wednesday the business of the Society properly began with an excursion in the woods to the east of Dunkeld. In addition to the President (Colonel Drummond Hay), Secretary (Dr. F. Buchanan White), and Treasurer (Rev. J. Stevenson), Sir T. Moncreiffe, Dr. Carrington (Eccles), Mr. Ogilvie (Dundee), Dr. Geikie, F.R.S. (of the Geological Survey), Mr. Sim (Banchory), and other members were present. In a wood close to Dunkeld, Cortinarius sanguineus was found in abundance, as also Microsphæria penicillata, Uncinula Wallrothii, and U. bicornis. At the picturesque Loch of the Lows an *al fresco* meeting of Council was held, after which an ascent of the Pine-covered rocks of Craigie Barns was made. On the way abundance of Elaphomyces variegatus, with its parasite, Torrubia ophioglossoides, was found; but the mice of Dunkeld, unlike those of Hereford, did not seem to care for Truffles. Half-way up the hill is a cave, half natural, half artificial, shaded by great trees, and with a little waterfall in it. In this cave another meeting of Council was held, to transact some business that had been forgotten. Close to the cave are some bushes of Prunus Padus, on which Uredo padi was found in abundance and fine condition. Higher up the hill abundance of snow was found, amongst which the fungi were buried. Where uncovered by the snow they were often frozen hard and brittle. At the very summit of the hill is a fine ice-smoothed and striated surface, on which rests the "Rocking Stone," a great erratic block perched upon three smaller ones. Though there is no doubt that the big stone was brought there by ice, Dr. Geikie pronounced that it had been placed by human agency upon the smaller stones, no doubt in pre-historic times. Leaving the hill, the lower grounds were searched with success, the finds including Phelonitis strobilina, Polyporus intybaceus, Rœstelia cornuta, Leptothyrium pictum, Septoria stachydis, &c. In all, about 120 species of fungi were noted during the day.

In the evening the business meeting was held in the

City Hall, when a large audience assembled. After a number of new Fellows and Corresponding Members had been elected, the officials for 1877-78 were appointed, with Professor Balfour as President. Edinburgh was selected as the meeting-place for 1878, and September 10 and following days recommended as a suitable date. It was announced that it was intended to publish immediately, with the sanction of the Society, a set of dried specimens of Scottish fungi, especially of the new or rare species, each set to contain 100 specimens, and the price to be £1 1s. The editors of the *fasciculus* are the Rev. J. Stevenson, Glamis, and Dr. F. Buchanan White, Perth; to either of whom application should be made at once, as the number of sets will be limited. After several papers had been read a *conversazione* was held.

On Thursday morning another excursion was made. Setting out through the beautiful grounds of Dunkeld Cottage, the residence of the Duchess-Dowager of Athole, to whom the Society was much indebted for permission to go everywhere, the banks of the Tay were followed, the fine trees much distracting the attention of the members from their proper work. Many good fungi and mosses were found. Amongst the former may be mentioned Uromyces concomitans, B. and Br., a species first described in this journal a few years ago, and as usual mixed with Æcidium scrophulariæ, D.C. The specimens found were not growing in the circular manner described and figured in the original specimens, but had the pustules disposed in a more irregular manner. Sir T. Moncreiffe picked up a specimen of Corticium amorphum, growing as usual upon dead Silver Fir branches. Sir Thomas seems to have the knack of finding this species, as he has discovered it in three out of the four British (all Perthshire) localities in which it has been found. On the lawns Geoglossum glutinosum and G. glabrum abounded, and in some Spruce woods Phelonitis strobilina, a rare and curious fungus that grows upon the scales of Spruce cones, was not uncommon. Agaricus sequestris, A. cucumis, Orthotrichum Lyellii, Tortula lævipila, T. papillosa, &c., were also found. After crossing the Tay the south bank was descended, and a very fine wood of ancient Chestnuts and Oaks examined. Here Lentinus cochleatus, with its fragrant odour, was found not uncommonly, whilst among smaller things Puccinia cirsii and Uredo padi deserve mention. On reaching the railway tunnel an Inver search was made for the magnificent Agaricus aureus, which was found, but in bad condition. On the banks of the Braan, Lycoperdon pyriforme was seen closely covering several square yards of ground. As on the preceding day several other fungi were found, which will require further investigation.

In the evening the members of the Society and their friends dined together in the "Athole Arms" hotel. Esculent fungi were rather scarce, the more so that several specimens that had been selected for the dinner were so carefully locked away that they could not be got at in time. The following was the chief dish, and, as our gastronomic friends in Hereford may like to add the recipe to their club-book, we give it:—Take Coprinus comatus, Hydnum repandum, Cantharellus cibarium, and Agaricus campestris (adding, for the sake of flavour, if you like, Thelephora palmata and Phallus impudicus); put them all in a dish and fill up with Polyporus medulla-panis of Cook(e), not of Fries; stew them together and serve hot. The Cantharellus is improved by being soaked all night in milk (that of Lactarius torminosus is not recommended).

At the dinner one member was heard gravely enquiring of a friend if he had made his will.

After dinner several toasts were drunk, including "Our friends, the Cryptogamic Botanists of England," with the hope that they would muster strong at Edinburgh next year.

On Friday the show took place in the City Hall, and, though not so large an affair as that at Perth in 1875, it was a very good show. Most of the collections were from the district, the largest being one from Moncrieffe, shown by Sir T. Moncrieffe, and including some beautiful specimens of the larger Polypori, as also the rare and curious Hydnangium carneum, hitherto only found at Glasgow.

A small table was devoted to new or very rare species, amongst which where the beautiful Polyporus roseus recently found at Glamis by Mr. Stevenson, who also showed Rhizina undulata and Lenzites sepiaria, the latter being more like a Dædalea than one of the Agaricini. Dr. Carrington exhibited some new Hepaticæ, *e.g.*, Jungermannia nevensis, Carr. MSS.; Gymnomitrium crassifolium, Lejeunia diversifolia, Gott.; Riccia sorocarpa, R. minima, R. tumida, R. ciliata, R. glaucescens (MSS.), and R. nigrella. Mr. Sim had a lot of rare Sphagna, and Mr. Sadler brought, on behalf of Professor Balfour, some Pezizæ of great interest, including P. Adæ Sadler (= domiciliana, Cooke), P. cretea, P. tectoria, and P. cocotina. Mr. Rogers, Manchester, showed Chara fragifera, recently discovered in Cornwall by Mr. Curnow, a new British variety of Mnium punctatum, and Bartramidula Wilsoni.

In other parts of the show were a lot of magnificent specimens of Agaricus aureus, shown by Mr. Fisher, Dunkeld Gardens; Sparassis crispa, of large size, from Mr. Smith, Blair Castle; Hydnum imbricatum, from Mr. McLennan, Ardersier, Inverness; Fistulina hepatica, from Inver, by Mr. C. McIntosh. Lady Kinnaird sent from Rossie Priory Xylaria polymorpha; and Mr. Dufi, the local secretary, exhibited, in addition to a very nice collection of fungi, a curious form of Asplenium Ruta muraria, much approaching A. germanicum. We must not omit to notice that the centre of the hall was filled by a magnificent collection of living British and exotic Ferns from Dunkeld Gardens.

In addition to what we have mentioned there were many other interesting fungi.

In the afternoon the members of the Society lunched together upon Hydnum repandum and Cantharellus cibarius, a hamper of which had been sent from Glamis by Mr. Stevenson, but had arrived too late for the dinner. The poet-laureate of the Society (Mr. J. Young, C.E., of Perth) being present, delighted the company after lunch with his songs, "The Darwinian Theory" and "Menziesia cœrulea," which brought the conference to a happy termination, notwithstanding the snow and the frost. *F. Buchanan White.*

FLORISTS' FLOWERS

The New French Roses for 1877-78.—The trade in new Roses is a department in the nursery business quite by itself. It is carried on almost entirely at the great Rose establishments from which the smaller growers and the general public are supplied with these novelties as they come out year by year. Even the *élite* of English amateurs are dependent mostly upon this source for plants during the first season's issue, very few private cultivators venturing upon the expense and risk that attends speculation in such uncertainties as plants of which they know nothing except from their producers' florid descriptions. The costly nature of the importation of these novelties for propagation here may be judged when it is recollected that the usual price for each is twenty-five francs, exclusive of carriage, and that for some time, till the past two years, the number of new varieties ranged from sixty to seventy. It will be evident, therefore, that two or three hundred pounds is soon sunk, especially as from three to four plants of each variety is but a moderate allowance for propagating purposes, and that there is little prospect of recovering that outlay unless from the produce of the first season, as nine-tenths of every imported batch turn out useless here after that trial.

Notwithstanding, however, all drawbacks and discouragements, the advent of new Roses is as eagerly looked forward to by Rose culturists, professional and amateur, as the new productions in art and literature by connoisseurs. The translation, therefore, of such raiser's bits as have come to hand will be found as follows:—

Brassac.—H.P. Two.

Madame Theobald-Sernin.—Shrub vigorous; flowers large, full, well shaped; colour currant-red shaded carmine.

Rose à bois Jaspe.—Shrub vigorous; fine, large, green foliage; flowers large, full, globular; colour bright cherry-red, carmined (we have used this coinage as the most equivalent expression to the French term). The branches of this novel variety are ornamented with bands or stripes, yellow, red, and green, forming in their effect a remarkable marking. This peculiarity has induced us to give this Rose its name.

Hybrid Noisette.—One.

La Toulousaine.—Very vigorous; flowers medium, full, well formed, flesh white, passing to clear rose. This is very free-flowering and perpetual, of the highest merit for masses.

Veuve Ducher.—Teas only. Three.

Mde. Maurice Kuppenheim.—Yellow salmoned, sometimes flesh-coloured, reverse of petals lightly coppered; full, fine form, very vigorous.

Louis Richard.—Coppery rose, deep red in centre; large, full, fine form, very vigorous.

Souvenir de Mdlle. Marie Detry.—Light salmon-rose; large, full, fine form, very vigorous.

Fontaine.—H.P. One.

Mde. Dortia.—Bright cherry-red, shaded purple; very large and full, opening well, growth vigorous.

Hybrid Bourbon.—One.

Angèle Fontaine.—"Carmined" red, of medium size; full, opening well; perfect form.

Guillot Fils.—New class of Roses; hybrids of Teas.

Mde. Alexandre Bernaix.—Deep rose, changing to striking China-rose colour, border of petals lined white; large or medium, fine shape; vigorous and superb.

Mdlle. Blanche Durrschmidt.—Flesh-white, tinted salmon-rose, passing to white; medium or large, double, very vigorous; fine for bedding. Seedling from Madame Falcot. These two Roses received a silver medal this year at Lyons.

Gonod.—H.P. Two.

Mde. Jeanne Bouyer. — Fine China-rose, a new colour in this section; very large, full, well shaped; very vigorous, and a great bloomer.

Mde. Louis Donadine.—Flesh colour in the centre, lighter on the reverse side of petals. A fixed sport of Comtesse d'Oxford, the same vigour and size.

Mde. Anna de Besabrasoff.—Very bright cherry-red changing to purple; large, full, very vigorous. A seedling from Charles Lefebvre.

Moe. Lévêque et Fils.—H.P. Four.

Edouard Dufour.—Deep crimson-red; large, full, well shaped, very vigorous. Seedling from Anna Wood. Extra variety.

Grand Duc Nicolas.—Red shaded vermilion; large, full, fine form, vigorous.

Princesse Lise Troubetzkoi.—Light rose; medium or large, well shaped and vigorous.

Princesse Charlotte de la Trémouille.—Fine satin-rose; full, globular, very free flowerer, in the way of La France.

Liabaud.—H.P. Two.

Mde. Gabriel Luizet.—Fine satin-rose; very large, full, and vigorous.

Mde. de Laboulaye.—Light rose, deeper centre; large, full, and very vigorous.

Lacharme.—H.P. One.

Mde. François Pittet.—Beautiful white; globular, of medium size. "The finest miniature" (*sic*), "vigorous." Nothing has been forgotten in this fine plant. (M. Margottin's translation.) 1st prize at Lyons.

Tea.

Mde. Lumbard.—Fine bright red at first opening; large, full, very vigorous.

Margottin fils.—H.P. One.

Boieldieu.—Beautiful bright cherry-red, extra large; very fine shape, very full, very floriferous, often the size of Paul Néron. Seedling from Jules Margottin. The finest Rose in cultivation of its size: grand for exhibition.

H. Bourbon.

Mde. Joubert.—Carmine-red, medium or large, late bloomer, very vigorous, good garden Rose.

Climbing Hybrid Non-Perpetual.

La Saumonnée.—Beautiful, salmon-rose, large, full, well-shaped. This variety is a seedling from a H.P., and on old plants frequently blooms again in autumn.

Moreau-Robert.—H.P. Four.

Souvenir d'Adolphe Thiers.—Striking red shaded with vermilion, very large, very vigorous; seedling from Comtesse d'Oxford; first-class variety.

Mde. Roger.—Very light rose, almost white, large, full, very vigorous.

Fontenelle.—Carmine-red, very large and full, blooming in clusters, growth very vigorous.

Barthelemy Joubert.—Bright cherry-red, large, full, and very vigorous.

Pernet.—H.P. One.

Mde. Cheirot.—Salmon-rose, almost full, globular, vigorous; seedling from Victor Verdier.

Moss Non-perpetual.

Louis Gimurd.—Bright red, very large, full and vigorous.

Schwartz (successor to Guillot, sen.)—H.P. Two.

Alfred K. Williams.—Fine carmine-red, large, full, fine form, very vigorous.

Edouard Pynaert.—Bright currant-red, large, full, globular, vigorous, extra. Seedling from Antoine Ducher.

Soupert and Notting.—H.P. Three.

Amœna.—Large, full, fine form, bright rose, reflexed violet; carmine-red, superb, very free flowering. Seedling from V. Verdier.

Evêque de Luxembourg. — Very vigorous, flower large, form of Centifolia, deep purple-shaded violet and red-brown, centre crimson velvety, very fragrant.

Reverend Troutmann. — Large, full, well shaped; petals at the circumference bright carmine, centre very fresh rose, edged silvery, reverse of petals red lake; of great effect.

Bourbon robusta.—Very vigorous, foliage superb and grand; flower medium, well-shaped in corymbs; fiery, velvety red, changing to purple. Very effective.

Vigneron.—H.P. Four.

Dames Patronnesses d'Orleans (what a name for a

Rose !).—Deep crimson-red, large, full, growth vigorous.

Mde. la Marquise d'Hervey.—Velvety-red, shaded carmine, very large, full, well-formed. Growth very vigorous.

Mdlle. Anne Marie Danloux.—White, lightly tinted rosy; medium or large, full, vigorous.

Mde. Chignard.—Bright clear red, large, full, very vigorous.

These are all the raisers' lists yet come to hand. Eugène Verdier's, usually a copious issue, and Levet's, usually good, have not reached the writer. Remarks are therefore deferred to a future date.

Nothing is more tiresome than the constant iteration of the same encomiums which distinguish all new French Rose lists, at least if their producers may be believed. It must be admitted, however, that this season their flights of fancy are of more modest dimensions than usual, and that less hyperbolical phraseology sets forth their pretensions. *W. D. Prior.*

Foreign Correspondence.

Monte Video: *September* 2.—In your number of July 21 I read an article, by Mr. Andrew Murray, on the flow of the sap in trees, from which he appears to have satisfied himself that such flow is invariably upwards, and rejects the hitherto accepted theory that the fresh layers of wood are formed and deposited on the return of the sap downwards, after having been elaborated and assimilated by the action of the leaves. In support of his opinion he details an experiment made by him which he considers conclusive of his theory. I question whether your readers will consider the experiment of so conclusive a nature as to produce on their minds the same conviction that it has evidently produced on Mr. Murray's; and to myself, among others, there appear to be several points that require to be established before his theory can be accepted.

Even Mr. Murray will, I suppose, allow that new wood is deposited in external layers, that it is produced, as he himself says, "by the liquid parts of the sap being evaporated, the more solid part dried up, deposited, or crystallised, or what is called stored up for next year." Now what is wanting in Mr. Murray's experiments is to show the direction of depositions, whether from below or laterally. He already rejects deposition from above. To determine this important point I recommend this further experiment—namely, to tie a young branch, or, what is better, the stem of a young tree, from 1 to 1½ inch in diameter, tightly round with two or three turns of whipcord or strong durable twine, that will retain its strength during the continuance of the experiment. This should be done in early spring, before the sap begins to flow. In the course of the succeeding summer the sap will be deposited in the form of young wood—"alburnum." If it is deposited from below, the part of the stem below the ligature may be expected to be developed in greater proportion than the part above. If laterally, every part may be expected to be equally developed except that immediately embraced by the ligature. If, however, the old and formerly accepted theory should still be the true one, the deposition (or what is the same thing, the formation of new wood) would take place above the ligature, and notably so immediately above and close to it.

This experiment is constantly exhibited here by the Dichetieus, an insect or caterpillar that forms a cocoon of leaf-stalks, bound together by a strong silk secreted by the insect itself. In preparation for its transformation the insect secures the upper end of the cocoon round a young branch, and so strong is the ligature by which the cocoon is attached, that on being pulled it will generally, instead of breaking, strip off both the bark and leaves from the upper part of the branch to which it has been secured.

This ligature is formed during autumn, when the circulation or movement of the sap for the season has nearly ceased, and little or no alteration in the form of the branch can be noted during the first autumn. During the following summer the change begins: an enlargement of the branch immediately above the cocoon begins to show itself, and by the end of the summer a swelling, or deposition of sap will have been formed, probably, in a fast growing tree, double the diameter of the branch immediately below the cocoon.

If during the season the ligature be not severed, the first strong wind the year following generally breaks off the branch.

A similar effect has been observed when the ligature which secured trees newly planted out to the stakes placed for their support had been left too long without being loosened.

On one occasion I planted out a Pinus insignis, whose trunk at 9 inches from the ground was about 2½ inches in diameter. The tree grew with amazing rapidity, and, it having been forgotten to loosen the ligature, it was found in the summer following the year in which it was planted out that, while the trunk below the ligature had only increased half an inch in diameter, the part immediately above it had acquired a diameter of 5 inches.

I am curious to know how Mr. Murray will reconcile these phenomena with his new theory of the movement of the sap.

In the same number I observe a table of the rate of growth of several descriptions of trees in a plantation or pleasure ground in North Wales, in which Pinus insignis, planted in 1869, had reached the height of 16 feet; certainly either the soil, or climate, or both, would appear to be unfavourable to the growth of this beautiful Conifer, as compared with our experience here. I have a group of these trees planted out when 4½ feet high, in 1868, of which the tallest is by actual measurement 50 feet high, and the average of the group is estimated at 47 feet. Many of these plants have sent out a shoot in one season over 7 feet long, and some of last year's shoots of that length were shown to a gentleman now in England—Mr. Twentyman, an enthusiastic amateur, who resides near Wolverhampton, and who, no doubt, will contradict me if I have exaggerated; Captain Fairfax, R.N., now in England, also saw the trees.

Cupressus macrocarpa, or Lambertiana, planted the same year, 1868, are 43 feet high, against your correspondent's 16 feet, planted in 1869; and against his Eucalyptus of 15 feet in four and a half years I have 7 feet circumference of trunk at 4½ feet from the ground, and 90 feet high in fifteen years. *Thomas Tomkinson.*

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Oct. 24, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°				In.
Oct. 18	30.16	+0.45	52.7	29.0	23.7	39.2	−10.5	32.2	77	S.W.: WSW	0.00
19	30.05	+0.35	55.4	31.8	23.6	43.6	−5.9	35.7	74	S.W.: S.S.W.	0.00
20	29.96	+0.25	60.8	40.6	20.2	50.5	+1.2	41.0	73	WSW: W.	0.00
21	29.70	−0.01	55.5	46.0	9.5	51.2	+2.2	42.6	73	S.: S.S.W.	0.03
22	29.61	−0.10	62.3	49.8	12.5	55.6	+6.9	51.3	87	S.S.W.: S.W.	0.18
23	29.30	−0.42	56.0	41.5	14.5	48.3	0.0	47.7	98	S.S.W.: S.	0.36
24	29.34	−0.38	56.1	38.1	18.0	46.0	−1.9	37.4	73	W.	0.02
Mean	29.73	+0.02	57.0	39.5	17.5	47.8	−1.1	41.3	79	S.: S.W.	sum 0.59

Oct. 18.—A very fine clear day. Cold. Fog and hoar-frost in morning. Lowest reading of thermometer on grass was 20°.3.
— 19.—A fine day, but cloudy and cold. Little fog and hoar-frost in morning.
— 20.—A brilliantly fine day. Mild. Very cloudy at midnight. Lunar halo at night.
— 21.—A dull day, cloudy. Occasional slight rain in afternoon and evening.
— 22.—Fine but generally cloudy till 8 P.M., then cloudless. Occasional showers of rain.
— 23.—Overcast, dull, and wet till 4 P.M., fine and bright after. Cloudless at night.
— 24.—A very fine bright day. Cold. Rain fell between 7.30 and 9.30 P.M. Cloudless at night.

London: *Barometer.*—During the week ending Saturday, October 20, in the vicinity of London the reading of the barometer at the level of the sea decreased from 29.88 inches at the beginning of the week to 29.50 inches by the early morning hours of the 15th, rapidly increased to 30.40 inches by the evening of the 17th, and decreased to 30.13 inches by the end of the week. The mean reading for the week at sea level was 30.13 inches, being 0.01 inch above that of the preceding week, and 0.24 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 69° on the 14th to 50¾° on the 16th; the mean value for the week was 57°. The lowest temperatures of the air observed by night varied from 29° on the 18th to 53° on the 14th; the mean for the week was 38¾°. The mean daily range of temperature in the week was 18¼°, the greatest range in the day being 23¾°, both on the 18th and 19th, and the least 12¾°, on the 16th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—14th, 60°, +9°.6; 15th, 51°, +0°.8; 16th, 44°.5, −5°.5; 17th, 41°.7, −8°.1; 18th, 39°.2, −10°.5; 19th, 43°.6, −5°.9; 20th, 50°.5, +1°.2. The mean temperature of the air for the week was 47°.2, being 2°.6 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 120½° on the 14th, 112° on the 20th, and 109° on the 15th; on the 19th the highest reading was 77½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 20¼° on the 18th, 24½° on the 19th, and 28° on the 17th. The mean of the seven low readings was 32¾°.

Wind.—The direction of the wind was chiefly S.S.W. and S.W., and its strength moderate, except on the 15th, when there was a very heavy gale. The weather during the week was generally dull, though fine at times. Fog prevailed on the 17th, 18th, and 19th. A lunar halo was seen on the 20th.

Rain fell on two days during the week, the amount measured was 0.07 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 69½° at Cambridge, 69° at Blackheath and Nottingham, and 68¾° at Liverpool; the highest temperature at Portsmouth was 61°, and at Brighton 61¾; the mean value from all stations was 66°. The lowest temperatures of the air observed by night were 26° at Bristol, 27° at both Wolverhampton and Hull, and 29° at Blackheath, Cambridge, and Nottingham; the lowest temperature of the air at Liverpool was 38½°, and at Portsmouth was 35°; the general mean from all stations was 31°. The range of temperature was the greatest at Bristol, 42°, and the least at Portsmouth, 26°; the mean range of temperature from all stations was 35°.

The mean of the seven high day temperatures was the highest at Truro, 58½°, and Blackheath, Cambridge, and Plymouth, all about 57¼°, and the lowest at Bradford, 52°; the mean from all stations was 55°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 36½°, and Bristol, 37¾°; and the highest at Portsmouth, 43¼°; the mean value from all stations was 40¾°. The mean daily range of temperature in the week was the least at Sunderland, 10¾°, and the greatest at Bristol, 19°; the mean daily range from all stations was 14¼°.

The mean temperature of the air for the week from all stations was 47°, being 6¾° lower than the value for the corresponding week in 1876. The highest was 49½° at Truro, and 49° at both Portsmouth and Plymouth, and the lowest 43½° at Wolverhampton, and 45¼° at both Hull and Bradford.

Rain was measured at Eccles to the amount of 1¼ inch, at Truro and Liverpool 1 inch fell, whilst at Norwich no rain fell. The average fall over the country was half an inch.

The weather during the week was generally dull, and the sky cloudy. Snow fell at Bradford on the 15th. Thunderstorms occurred at Bristol on the 15th and 16th.

Wind.—A violent gale was experienced all over the country during the night of the 14th and morning of the 15th, doing much damage, and in some cases resulting in loss of life. Lightning was seen at Liverpool on the 16th.

Scotland: *Temperature.*—The highest temperatures of the air varied from 64° at Perth to 57½° at Aberdeen; the mean value from all stations was 61¾°. The lowest temperatures of the air ranged from 28° at Dundee and Perth to 33° at Leith; the mean from all stations was 29¾°. The mean range of temperature from all stations was 32°.

The mean temperature of the air for the week from all stations was 43¾°, being 8° lower than the value for the corresponding week in 1876. The highest was 46¼°, at Leith, and the lowest 42°, at Aberdeen.

Rain.—The amounts of rain measured at the several stations during the week varied from 1½ inch at Glasgow to four-tenths of an inch at Aberdeen; the

average fall over the country was nine-tenths of an inch.

Dublin.—The highest temperature of the air was 68½°, the lowest 29°, the range 39½°, the mean 49¼°, and the fall of rain 0.86 inch

JAMES GLAISHER.

Variorum.

Gardenias for Cut Flowers.—Gardenias are, perhaps, taken in a general way, about the worst-managed plants to be found about a gentleman's establishment, simply because they are grown in pots, either in dry hot pits or under the shade of other plants, under neither of which conditions will they thrive to any really enjoyable satisfaction. Gardenias may be had in considerable abundance the whole year round by simply planting them out in a close, damp pit, where they can be afforded abundance of light, for the Gardenia is a sun-loving plant. It also requires a good bottom-heat, but not too much top-heat, or at least top-heat derived from pipes, for then the atmosphere is apt to get too dry. The soil required is a good fibrous peat, to which plenty of river-sand should be added. Before placing the compost put a foot or so of drainage over the pipes, as Gardenias require an enormous quantity of water both at the root and from the syringe overhead, which latter should be applied vigorously, in order to keep them free of insects, to which they are extremely liable. A constant temperature winter and summer of not less than 65° should be maintained. When the compost gets full of roots the bed should be top-dressed weekly with horse-droppings, and also be occasionally watered with guano and soot water. Attention to the above points will secure to the grower the reward of almost any quantity of Gardenia flowers. *Wm. Denning, Coombe Lane, Kingston, in "Florist and Pomologist."*

Cottage Nursing.—Let me draw a little picture of the cottage where ignorance prevails. The heavy hand of sickness has been laid on the dwelling—the mother is laid low. What happens? Poor little Polly has leave to stay away from school. She does her best. She knows nothing about the poison of bad air and of fresh air being all-important—her one object is warmth, and warmth too often means foul air. She draws the bed-curtains close, stuffs up the chimney, and shuts every window and door. Neighbours assemble round the sick bed talking, gossiping, wondering, almost killing with well-intended kindness, and all helping to exhaust the air and disturb the patient—fuss prevails, and every one has a piece of ignorant advice to give; but where is common-sense and presence of mind? Let us now look at another picture, and see the contrast. Here we have little Jenny, no older than Polly, but Jenny has had a few sensible rules put into her head. She has learnt that four good things are first of all to be secured in a sick room, namely, fresh air, cleanliness, quiet, and comfort; these Jenny can see to before the doctor arrives. Before helping her mother to bed she thinks of what is needed to make the bed tidy and comfortable. Whatever is likely to be wanted she puts neatly upon a table, which is cleared of other matters, so that medicine, a feeding cup, clean glasses, spoons, &c., are always at hand. If there is, as we must hope a chimney in the room, she takes care that nothing may block it up, no stuffing of boards or paper to exclude air; she knows the chimney will carry off the impure air, she manages to have some window open, if possible at the top, so as to gain fresh air and avoid a draught. We can see how in these little ways a child can practise presence of mind, and gain that confidence which in itself soothes and comforts the patient. *Mrs. Gladstone, in the "Society of Arts Journal."*

Enquiries.

He that questioneth much shall learn much.—Bacon.

213. Purple Ivy.—I want some plants of the purple-coloured Ivy. I have tried several nurserymen without success; but am aware that one man, whose *specialité* this is, can supply it. I should be much obliged if you could give me his name and address. *C. H. C.*

214. Earwigs.—Can any of your correspondents favour me with their own experience of the most effectual mode of ridding a house of earwigs? In my house in Hampshire in certain summers they come into it in swarms, and no plan that we have tried has been successful in stopping their ingress. *Hants.*

Answers to Correspondents.

Boilers and Heating: *W. G.* We know nothing of the boiler in question; and, as regards your heating arrangements, we would advise you to consult a properly qualified hot-water engineer. Such questions as yours cannot be satisfactorily answered without knowing all the detals of construction, &c.

Coloured Leaves.—Dry them as rapidly as possible between sheets of old newspaper, or botanical drying paper, laying the leaves as flat as possible, and placing above the paper a board with a heavy weight thereon. Change the damp papers every day or every other day, and replace by dry sheets. A more rapid process is to place the leaves between sheets of paper, and pass a hot iron over them, taking care that the iron is not too hot.

Heating Small Greenhouse: *J. N.* There is nothing so efficient and safe as a small hot-water apparatus adapted to the size of the structure, the boiler being heated by a ring of gas-burners placed in an outside "furnace," from which the gas fumes may be carried off by means of a flue pipe.

Insects: *W. & J. B.* We do not think that either of the two insects sent (both Myriapods) have had anything to do with the injury to the roots of the Larch. The one (Lithobius forficatus) is a carnivorous animal, and must therefore be acquitted of vegetable rapine. The other (Armadillo vulgaris), although a vegetable feeder, has not very strong jaws, and prefers softer food than Larch bark or wood. The marks left on the wood are very like those left by the beetle, Hylobus abietis, but its work is above-ground, whereas this is below. The other most probable culprit is the larva of Otiorhynchus notatus. A better search may find some of the grubs still at work, or beetles on the plants. *Andrew Murray.*

Perforated Flower-pot: *Crocus.* The illustration given below (fig. 107) will give you an excellent idea how to plant a vase of this kind. The holes in the

Fig. 108.—Vase of Spring Flowers.

sides may be planted either with Crocuses or Squills, and the top with Hyacinths, Tulips, or Narcissus.

Grapes: *W. P. D.* We only know of one Black Alicante Grape, but it has many *aliases.* What is sometimes called the Kempsey Alicante is really the Morocco, or Black Morocco as usually so called. Both are good late Grapes, but the last-named generally sets badly, and on that account is not much grown. 2. If the wood is stout and hard cut them back to about 5 feet. Four or six fair-sized bunches would not hurt them next year.

Names of Fruits: *F. W. P.* 1, Broom Park; 2, Autumn Bergamot; 3, Beurré de Capiaumont; 4, Winter Nelis.—*H, A. B.* 3, 9, Yorkshire Greening. Pears: 1, Catillac; 2, Glou Morçeau; 3, Franc Real d'Hiver—very miserable examples.—*E. H. B.* 1, Hawthornden; 2, Rymer; 3, Downton Pippin; 5, King of the Pippins; 7, 8, Small's Admirable. The others are too miserable examples for any one to name, several not larger than a schoolboy's marble.—*M. D.* Pear quite smashed. 1, Beauty of Kent; 4, Golden Reinette; 3, not known.—*H. H.* 1, Claygate Pearmain; 3, Somersetshire Deux Ans; 6, Duke of Beaufort; 7, Duck's Bill. The others not recognised.

Names of Plants: *J. M.* The Spindle-tree, Euonymus europæus.—*C. E. F.* Fraxinus heterophylla.—*P. T. N.* Silene Armeria.—*C. D. Smith.* We cannot determine the name of the Marrow. The other plants are Panicum violaceum (Millet) and a species of Bupleurum, which we cannot determine from the piece sent.—*J. Dismorr.* Seems to belong to the genus Phaseolus, but we cannot say what it is from such scanty materials.—*J. Gray.* Stokesia cyanea.

Nuts: *E. W.* No. They are always preserved and sent to table in the husks.

Raising Conifers from Seed: *H. P.* Grigor's *Arboriculture*, published by Edmonston & Douglas. Seeds of various coniferous plants are sometimes sold by Mr. Stevens. Ask him to send you catalogues.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

Erratum.—At p. 495, col. *c*, twelfth line from the bottom, for "regenerated" read "rejuvenated."

Catalogues Received.—Charles Turner (Royal Nurseries, Slough), Catalogue of Roses, Fruit Trees, Coniferæ, Trees, Shrubs, Climbing Plants, &c.—T. Tucker (The Nurseries, Faringdon, Berks), Forest, Fruit, and Ornamental Trees, Shrubs, and Roses.—James Bromwich (25, Buckingham Palace Road, S.W.), Catalogue of Dutch Flower Roots, Plants, Seeds, Ferns, Shrubs, &c.—V. Lemoine (Rue de l'Etang, Nancy), General Catalogue of New Plants, &c.—Louis Van Houtte (Ghent, Belgium), Catalogue of Hardy Herbaceous and Alpine Plants, Ornamental Trees and Shrubs, Fruit Trees, &c.—Messrs. W. Drummond & Sons (Stirling, N.B., and 58, Dawson Street, Dublin), Catalogue of Forest, Ornamental and Fruit Trees, Coniferous Plants, &c.—John Casbon (Belle Vue Nursery, Millfield, Peterborough), Fruit and Ornamental Trees, Shrubs, Greenhouse Plants, &c.

Communications Received.—T. S. J.—J. W.—J. R. J.—W. G.—D. W. H.—J. K. D.—R. G.—B. F.—J. M.—H. P.—J. W.—J. M. C.—E. R.—W. C.—G. S.—R. D.—J. J.—E. O.—F. J. H.—W. C.—West Riding.

Markets.

COVENT GARDEN, October 25.

Our market is overdone with Apples, large quantities remaining on hand, prices for common sorts being exceptionally low. Grapes are heavy, but Pines meet with a ready sale. Kent Cobs are easily cleared at firmer rates. Business still very dull. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 0– 5 0	Peaches, per doz.	6 0–15 0
Grapes, per lb.	0 9– 6 0	Pears, per doz.	1 0– 3 0
Lemons, per 100	8 0–12 0	Pine-apples, per lb.	4 0– 8 0
Melons, each	2 0– 5 0	Figs, green, doz.	1 0– 3 0
Nuts, Cobs, per lb.	0 4– 0 6	Walnuts, per bushel	5 0– 8 0
Oranges, per 100	12 0–20 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Herbs, per bunch	0 2– 0 4
Asparagus, Sprue, per bundle	1 6– ..	Horse Radish, p. bun.	4 0– ..
Beans, French, per packet	1 0– ..	Leeks, per bunch	0 2– 0 4
— Scarlet Runners, per bushel	10 0– ..	Lettuces, per score	2 0– ..
Beet, per doz.	1 0– 2 0	Mint, green, bunch	0 6– ..
Brussels Sprouts, p. bush.	8 0– ..	Mushrooms, per pott.	1 0– 3 0
Cabbages, per doz.	1 0– 2 0	Onions, 12 bunches	3 6– ..
Carrots, per bunch	0 4– 0 6	— young, per bun.	0 6– ..
Cauliflowers, per doz.	1 6– 4 0	Parsley, per bunch	0 9– ..
Celery, per bundle	1 6– 2 0	Peas, green, p. bush	3 0– 6 0
Chilis, per 100	3 0– ..	— shelled, per qt.	1 6– ..
Cucumbers, each	0 3– 1 0	Radishes, per bunch	0 1– 0 3
Endive, per doz.	1 0– 2 0	— Spanish, doz.	1 0– ..
— Batavian, p. doz.	2 0– 3 0	— New Jersey, doz.	2 0– ..
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
		Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Asters, 12 bun.	6 0–12 0	Mignonette, 12 bun.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, (Paper White), per doz.	3 0– 6 0
Calceolaria, p bun.	0 6– 1 0	Pelargoniums, 12 spr.	1 0– 3 0
Camellia blms., doz.	5 0–12 0	— zonal, 12 sprays	0 6– 1 6
Chrysanthem. 12 bun.	4 0– 9 0	Primula, double, per bunch	1 0– 2 0
Cornflower, 12 bun.	6 0– 9 0	Pyrethrum	0 6– 1 0
Dahlias, 12 bun.	6 0–12 0	Roses (outdr.), 12 bun.	6 0–12 0
Eschscholtzia, dozen bunches	2 0– 6 0	— (indoor), per doz.	1 6–12 0
Eucharis, per doz.	4 0–12 0	Stephanotis, 12 spr.	6 0–12 0
Gardenia, per doz.	5 0–12 0	Stocks, 12 bunches	4 0– 8 0
Heartsease, 12 bun.	1 6– 6 0	Sunflower, 12 bun.	2 0– 6 0
Heliotropes, 12 spr.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 4 0
Hyacinths, Rom. doz.	2 6– 6 0	Violets, 12 bunches	1 6– 3 0
Jasmine, per bunch	1 0– 2 0		

Plants in Pots.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	6 0–12 0	Ferns, in var., p. doz.	4 0–18 0
Bouvardias, do.	12 0–24 0	Ficus elastica, each	2 6–15 0
Chrysanth., per doz.	5 0–12 0	Fuchsias, per dozen	6 0–12 0
Clematis	6 0–24 0	Lilliums in var., each	1 6– 6 0
Coleus, per dozen	3 0– 9 0	Mignonette, per doz.	6 0– 9 0
Cyclamen, per doz.	18 0–24 0	Myrtles, do.	3 0– 9 0
Cyperus, do.	4 0–12 0	Palms in variety, each	3 6–21 0
Dracæna terminalis	30 0–60 0	Pelargon., scarlet, p. dozen	2 0– 9 0
— viridis, per doz.	18 0–24 0	Solanums	9 0–24 0
Euonymus, in var., per doz.	6 0–24 0	Valotta purpur., doz.	9 0–18 0

SEEDS.

London: *October* 24.—No new samples of English red Clover seed yet appear; and the opinion is generally held that our home crop this year will prove exceedingly short. Nevertheless, there is scarcely any inclination to purchase foreign samples; in view of the large supplies which may presently be expected from France and America, seed merchants seem resolved to postpone operating until the consumptive period is nearer at hand. No further decline has taken place during the present week, and it may be, as many think, that the lowest point has now been reached. Mail advices just received from the Western States confirm all earlier reports as to the abundance and excellence of this year's growth; it is worth noting that whereas the price in Chicago just a twelvemonth ago was 8 dols. per bushel of 60 lb., to-day's quotation there for better seed is only 5 dols. In Trefoil there have been some more transactions at full rates. Alsike is neglected, but for white Clover rather more inquiry is felt. The moderate terms on which foreign Italian is obtainable have induced a certain amount of buying. In consequence of the recent rains winter Tares have met a revived demand. Feeding Linseed is 1*s.* per quarter higher. For blue Peas there is a steady sale at Monday's currencies. Bird seeds are this week without quotable variation. Moderate prices are asked for new brown Mustard seed. There is no change in the value of English Rape seed. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday superior Wheats, either English or foreign, were very difficult to move, while on the sales made there was a reduction of quite 1*s.* per quarter. Barley was generally well held. In malt transactions were unimportant; the new produce was offered at from 69*s.* to 75*s.* per quarter. Oats were the turn dearer. Maize was in better demand, and prices advanced. Peans and peas were quiet and unaltered, while no material change took place in flour.—On Wednesday a very quiet feeling pervaded the market, business remaining particularly slow, while there was no new incident in connection with the trade upon which any important change could be established in price. Holders of the better qualities of produce, having a true knowledge of the statistical position of the trade, were not in the least anxious to realise. A large inroad will soon be made upon the heavy supplies now at hand and to come, and ultimately it is clear a scarcity will be felt of thoroughly good produce. Inferior corn may be brought occasionally on rather easier terms.—Average prices of corn for the week ending October 20:—Wheat, 52*s.* 9*d.*; Barley, 42*s.* 6*d.*; Oats, 23*s.* 5*d.* For the corresponding week last year:—Wheat, 48*s.* 9*d.*; Barley, 39*s.*; Oats, 24*s.* 8*d.*

CATTLE.

At Copenhagen Fields on Monday the demand for beasts was equal to the supply, and recent prices were maintained. The number of sheep was considerably larger than at last market, and there was a consequent dulness in the trade; yet choicest qualities readily made late quotations, and a fair clearance was effected. Choice calves were in demand at fully late rates. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 4*s.* 8*d.* to 6*s.* 2*d.*; sheep, 5*s.* 4*d.* to 5*s.* 8*d.*, and 6*s.* 4*d.* to 7*s.*; pigs, 4*s.* to 5*s.* — Thursday's market was very quiet. Supplies were short, but sufficient for the demand. Fine breeds, both of beasts and sheep, met a fair demand, and realised the full prices of Monday; but in other respects the tone was weak. Calves were dull, and rather less firm.

HAY.

The Whitechapel market report for Tuesday states that owing to the unsettled weather trade was very dull, and quotations were weaker. The supplies were large. Prime old clover, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; good new clover, 100*s.* to 132*s.*; prime meadow hay, 90*s.* to 110*s.*; inferior, 75*s.* to 85*s.*; and straw, 44*s.* to 55*s.* per load.—On Thursday a rather large supply of fodder was offered. There was a dull trade, and, weather being bad, prices were again lower. Quotations:—Prime old Clover, 100*s.* to 138*s.*; inferior, 85*s.* to 95*s.*; good new, 100*s.* to 132*s.*; prime meadow hay, 90*s.* to 107*s.*; inferior, 75*s.* to 85*s.*; and straw, 44*s.* to 55*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 100*s.* to 110*s.*; inferior, 80*s.* to 90*s.*; superior Clover, 128*s.* to 136*s.*; inferior, 95*s.* to 112*s.*; and straw, 54*s.* to 60*s.* per load.

POTATOS.

The Borough and Spitalfields reports state that a limited supply of Potatos has been on sale, and the trade steady, at the subjoined currency:—Kent Regents, 140*s.* to 165*s.* per ton; Essex ditto, 120*s.* to 145*s.*; Rocks, 90*s.* to 105*s.*; kidneys, 100*s.* to 130*s.*; Victorias, 120*s.* to 170*s.*; and flukes, 160*s.* to 170*s.*—The imports into London last week comprised 46,509 bags from Hamburg, 12,154 Antwerp, 11,970 Bremen, 1388 Boulogne, 1212 Harlingen, 1142 bags 218 sacks Dunkirk, 594 bags Brussels, 148 Ghent, 510 bags 95 baskets Rotterdam, and 940 sacks and 172 tons Rouen.

COALS.

At market on Monday business was dull, through a sudden change in the weather, and the price of house coal dropped 1*s.* per ton. On Wednesday a further fall of 1*s.* had to be submitted to. Quotations:—Bower's West Hartley, 17*s.* 3*d.*; Walls End—Hetton, 21*s.*; Hetton Lyons, 18*s.* 9*d.*; Original Hartlepool, 21*s.*; Tunstall, 18*s.* 9*d.*; South Kelloe, 19*s.* 6*d.*; Tees, 20*s.* 9*d.*

Important Notice to the Trade.

SEAKALE, ASPARAGUS, RHUBARB,
EXTRA STRONG ROOTS FOR FORCING.

H. THORNTON,

Having devoted great attention to the production of fine roots, and having an immense stock on hand, invites the inspection of large Buyers, or he will be happy to forward Prices for large or small quantities on application.
H. THORNTON, 12, Maxwell Road, Fulham, S.W.

COCOA-NUT FIBRE, PEAT, LOAM, SAND, all MANURES as supplied to Veitch & Sons, Carters, Wills, Bull, Ewing, &c. Russia Mats, Raffia, and every kind of Nurserymen's and Seedmen's Sundries.
M. H. BENTOTE, 8, Castle Street, Long Acre, Covent Garden, W.C.

COCOA-NUT FIBRE REFUSE, newly made. Reduced price:—In 4 bushel bags, at 1*s.* 3*d.* (not less than 5 bags), or truck load for 30*s.* (truck load delivered free to rail in London). J. STEVENS and CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

PEAT.—For Sale, a quantity of Brown Fibrous and Black. For price, &c., apply to Mr. G. HILLS, Tekels Estate, Frimley, Farnborough, Hants

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendroos, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
WALKER and CO., Farnborough Station, Hants.

PEAT SOIL, PEAT SOIL.—Brown Fibrous, good quality, for Orchids, Pot Plants, Ferns, &c., £6 6*s.* per truck. Black, good quality, for American Plants, Rhododendrons, Azaleas, Heaths, &c., 17*s* per ton, or 6-ton truck for £4 10*s.* Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Cash with order.
HOLDER and SON, Crown Nurseries, Reading.

B G L Oilcake.

ARREST YOUR PURCHASES of all other Cake until you have read the "Book of Testimonials" from users of this cake. Sent post-free by the Agent for the County, or by the Makers.
Mills, Shad Thames, London, S.E.

AMIES' CHEMICAL MANURE.

USED BY THE ROYAL HORTICULTURAL AND BOTANIC SOCIETIES.

This Manure, after six years' trial, is unapproached in its results by any other manure. It is suitable for all soils, and permanently improves the fertility of even the poorest. It provides the necessary foods for plants, creates a vigorous growth without over-stimulating, and it increases the produce. It is a powerful insecticide. It has been used with perfect success on

FLOWERS, SHRUBS, VEGETABLES, FRUITS, GRASS, VINES.

PREPARED IN A FINE, DRY, INODOROUS POWDER.

Price, £12 per Ton; 15s. per Cwt.; and in Canisters, 1s., 2s. and 4s. each.

Trial Orders of the Manure are invited, to be used in comparison with other Manures.

Write for Further Particulars to
AMIES' CHEMICAL MANURE CO. (LIMITED),
79, MARK LANE, LONDON, E.C.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen, in Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

RUSSIA MATS for Covering from Frost, from 30*s.* to 70*s.* per 100; good for packing, from 20*s.* GUNNY BAGS, from 3½*d.* each. Delivered free to any station in London.
SUTHERLAND, SON and CO., 11, Fenchurch Buildings, Fenchurch Street, London, E.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*s.* to 100*s.* per 100, superior close-wove, 40*s.*, 50*s.* and 55*s.* per 100; Packing Mats at 20*s.*, 30*s.*, and 35*s.* per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN and SONS, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
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Wholesale Russia Mat Merchant.

NEW ARCHANGEL MATS, ST. PETERSBURG MATS, of all qualities and sizes. RAFFIA FIBRE, &c. Firms are requested to send cash or reference in first transactions.
MARENDAZ and FISHER, James Street, Covent Garden.

ARCHANGEL, PACKING **MATS** PETERSBURG ETC.

RAFFIA for TYING,

TRAINING STICKS and LABELS,

Bamboo Canes, Virgin Cork, &c.

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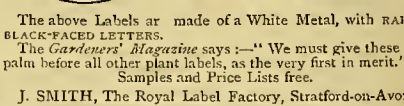

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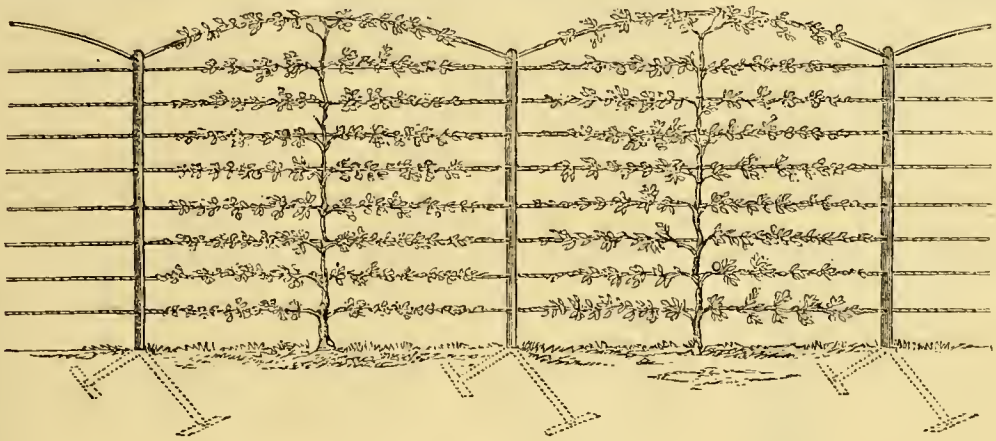

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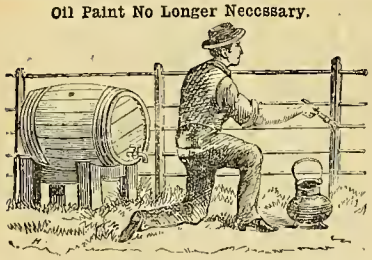

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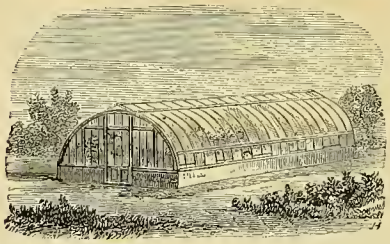

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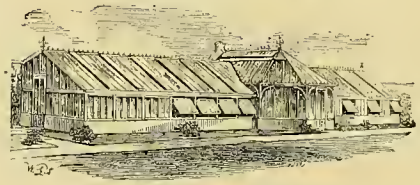

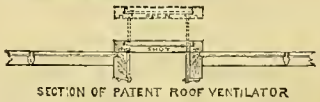

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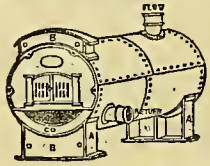

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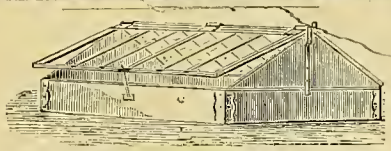

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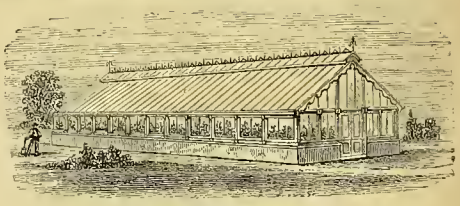

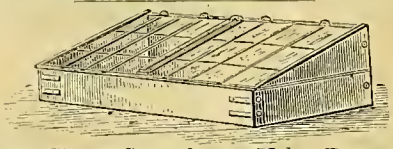

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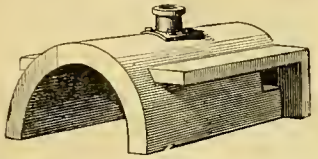

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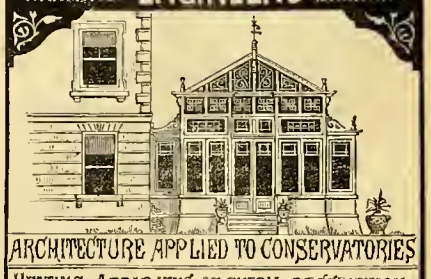

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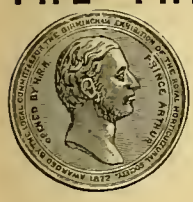

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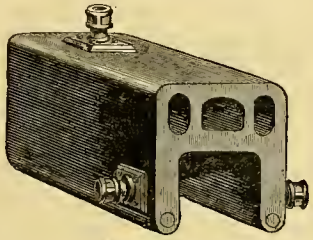

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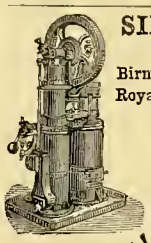

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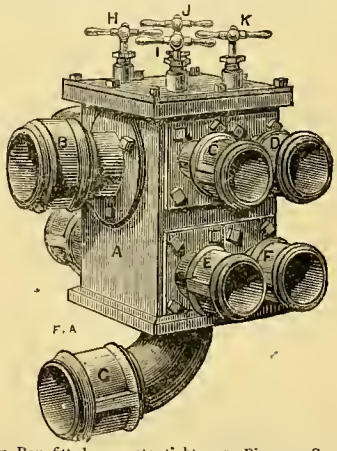

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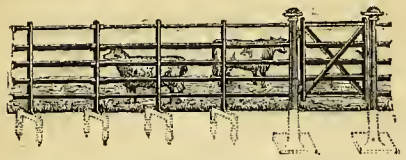

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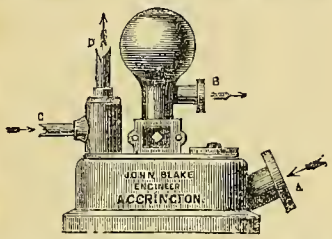

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(The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

From Captain Townsheno, *Wineham, February* 10, 1877.

"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000."

From John Barnes, Esq., *Contractor, Chatburn and Hellifield Railway, Contractor's Office, March*, 1877.

"Dear Sir,—I have the pleasure to inform you that the three Hydraulic Rams you erected for me on this contract about two years ago, have continued to work very satisfactorily, without requiring any repairing. With a fall of 5 feet sufficient water has been raised daily by each Ram to supply two of my locomotive engines: they have fully answered my expectations and all that has been said of them."

Deanwater, Wilmslow, November 20, 1873.

"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house aboout 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required, namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—I am, yours truly, L. Hanmer."

From Mr. Thomas Mason, *Alkincoates Hall, Colne, September* 30, 1871.

"Sir,—Your self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours to a height of 194 feet."

From John Pennington, Esq., *Emmott Hall, near Colne, December* 21, 1868.

"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

JOHN BLAKE,
ENGINEER, ACCRINGTON.

IMPORTANT AUCTION SALE.

THE

LAWSON SEED & NURSERY COMPANY

(LIMITED),

IN CONSEQUENCE OF EXTENSIVE BUILDING OPERATIONS,

Necessitating the clearing part of the Nursery Grounds, also the removal and rebuilding of Greenhouses, &c., have resolved to expose for SALE, on

WEDNESDAY and THURSDAY, November 7 and 8,

A large portion of the splendid Stock of

HOTHOUSE AND GREENHOUSE PLANTS,

COMPRISING

CAMELLIAS, AZALEAS, ERICAS, PALMS,

CHOICE FERNS,

Including magnificent plants of TODEA SUPERBA, &c.;

EVERGREEN TREES AND SHRUBS,

All in fine condition for removal with safety, comprising:

SPECIMEN and other sizes of ARAUCARIAS,

CEDRUS DEODARA, CEDRUS ATLANTICA, CUPRESSUS LAWSONIANA, PICEA NOBILIS,

And a large Assortment of the finest Ornamental Plants of other descriptions.

CATALOGUES MAY NOW BE HAD, AND THE STOCK TO BE SOLD MAY BE SEEN AT

THE NURSERIES, INVERLEITH ROW, EDINBURGH.

Messrs. LYON & TURNBULL,

AUCTIONEERS, 51, GEORGE STREET, EDINBURGH.

N.B.—The ANNUAL CATALOGUES of FOREST TREES, ORNAMENTAL TREES and SHRUBS, will be published as usual.

HYACINTHS, TULIPS, AND OTHER BULBS.

WM. PAUL & SON

BEG TO ANNOUNCE THAT THEIR

NEW CATALOGUE OF HYACINTHS, TULIPS,

AND OTHER BULBS, CAMELLIAS, AZALEAS, &c.,

is now ready, and will be sent post-free on application.

COLLECTIONS of BULBS, from 10*s.* 6*d.* to 84*s.*

A CHOICE COLLECTION OF CAMELLIAS, 30*s.* per dozen [and upwards.

SPECIMEN CAMELLIAS, from 1 to 30 Guineas each.

"Hyacinth's were again the main feature—Mr. Wm. Paul taking first prize with a collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardeners' Chronicle.*

"Hyacinths formed the most important feature of the show, the principal exhibitor being Mr. Wm. Paul, of Waltham Cross, who was far in advance of any other in the size and beauty of the noble spikes which he placed in competition."—*Journal of Horticulture.*

"It is due to Mr. Wm. Paul's wonderful group of 24 Hyacinths, to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist.*

PAUL'S NURSERIES and SEED WAREHOUSE,

WALTHAM CROSS, HERTS.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by William Richards, at the Office of Messrs. Bradbury, Agnew, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, October 27, 1877.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 are 1s. each.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE

VOLUME for JANUARY to JUNE, 1877.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC and FRUIT and FLORAL COMMITTEES' MEETINGS, on TUESDAY next, November 6, in the Council Room, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS at 3 o'Clock.

SCOTTISH ARBORICULTURAL SOCIETY. — The TWENTY-FOURTH ANNUAL GENERAL MEETING of the Society will, by the permission of the Regius Keeper, be held in the Rooms at the Royal Botanic Garden, Edinburgh, on TUESDAY, November 6, at 11 o'Clock A.M. The Right Hon. W. P. Adam, of Blairadam, M.P., President, in the Chair.

Edinburgh, October 20. JOHN SADLER, Secretary.

BOROUGH of HACKNEY CHRYSANTHEMUM SOCIETY. — The Thirty-first Annual Exhibition (open to all England) of the above will be held at the Royal Aquarium, Westminster, S.W., on TUESDAY and WEDNESDAY, November 20 and 21. Schedules may be had on application. Entries will be received up to and including Friday, November 16, by JOHN RAINBOW, Jun., Hon. Sec., London Road, Clapton, E.; or WILLIAM HOLMES, Jun., Superintendent, Frampton Park Nursery, Hackney, E.

KINGSTON and SURBITON CHRYSANTHEMUM SOCIETY.—The FIRST ANNUAL EXHIBITION of the above Society will be held in the Drill Hall, Kingston-on-Thames, on WEDNESDAY and THURSDAY, November 21 and 22. Schedule of Prizes can be had on application to T. JACKSON, Hon. Sec.

Fife Road, Kingston-on-Thames.

DRACÆNA GOLDIEANA. BOWENIA SPECTABILIS SERRULATA. These two remarkable New Plants are now being sent out by Mr. WILLIAM BULL, Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO. (established 1822), Cox's and Hammond's Quays, Lower Thames Street, London, S.E.—Forwarders to all parts of the World.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Planting Season.

E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet; Spruce FIRS. Prices on application.

The Nurseries, London Road, Cheltenham.

LYCOPODIUM DENTICULATUM. Fine stuff, in 48's, 25s. per 100.

W. F. BOFF, 203, Upper Street, Islington, N.

Astilbe (Spiræa) japonica.

F. AND A. SMITH can now offer strong blooming, well ripened clumps of the above, at moderate prices. The Nurseries, West Dulwich, S.E.

HAMPTON COURT BLACK HAMBURGH VINES.—Strong Fruiting Canes of this well-known Grape, 5s., 7s. 6d. and 10s. 6d. each; Planting Canes, 3s. 6d. Also a large stock of all the principal kinds at the above prices.

T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

Vines for Fruiting and Planting.

JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

VINES.—Magnificent Canes, splendidly ripened, short jointed, all leading kinds, for Fruiting or Planting. Cannot be surpassed. Warranted clean. Inspection invited. The Trade supplied. Priced LIST on application to FRANCIS & ARTHUR DICKSON & SONS, The "Upton" Nurseries, Chester.

For Sale, for want of room,

POT VINES.—About forty good fruiting, all the best varieties; also a number of beautiful clumps of Neapolitan VIOLETS cheap.

ARTHUR WEBB, Kelham Gardens, Newark-on-Trent.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.

JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

PRICKLY COMFREY.—An invaluable Perennial Forage Plant. 150 tons have been grown to the acre. October and November good months to plant. Special Prices on application.

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Common Sainfoin and Giant Sainfoin.

MESSRS. LEVAVASSEUR AND SON, SEEDSMEN, Ussy, Calvados, France, offer their services for the Purchase of the above Seeds on Commission.

Roses on their own Roots.

J. J. MARRIOTT has a limited quantity of good plants of the above to offer. Also a choice Collection of HARDY EVERGREEN TREES and SHRUBS suitable for Winter Bedding.

The Limes, Mellish Road, Walsall.

Roses, Fruit Trees, &c.

WILLIAM FLETCHER'S CATALOGUE for the present season is now ready, and may be had on application. The stock is very large and most healthy.

The Ottershaw Nursery, Chertsey.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.

THOMAS RIVERS AND SON, Sawbridgworth, Herts.

Roses, Fruit Trees and Coniferæ.

CHARLES TURNER'S New CATALOGUE of the above is now ready, and can be had post-free on application.

The Royal Nurseries, Slough.

HYACINTHS in POTS.—Pots made expressly for Hyacinths can be supplied by J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List Free.

Spanish Chestnuts.

WANTED, for Underwood, 2½ to 3 feet. State lowest price, cash, per 1000. Also LARCH FIR, 3 feet.

HOLDER AND SON, Crown Nurseries, Reading.

To the Trade.

WANTED, LARCH FIR, 2¼ to 3½ feet high; SCOTCH FIR, 12 to 18 inches; AUSTRIACA, 12 to 18 inches. The lowest price per 1000, for cash.

W. LORD, Nurseryman, St. Neots, Cornwall.

WANTED, 16 Standard PORTUGAL LAURELS, to match, with stems of 3½, 4, 4½ or 5 feet, and heads 2 to 3 feet diameter. State price and when transplanted, to

GEORGE JACKMAN AND SON, Woking Nursery, Surrey.

Extra strong Fruiting Peach and Nectarine Trees.

MESSRS. JAMES VEITCH AND SONS desire to meet with the above, stems 2 to 3 feet. Must be well trained, guaranteed true to name, and not less than 5-yr. old. The following varieties desired to select from:—Early Alfred (P.), Dymond (P.), Early Rivers (P.), Dr. Hogg (P.), Abec (P.), Lord Napier (N).

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WANTED, straight, clean grown, Standard APPLE, PEAR, and PLUM TREES of the best Market kinds. State price and sorts per 100 to

EDWARD THOMAS, Harold Nursery, Sittingbourne, Kent.

Cattleya maxima.

FROM A LARGE IMPORTATION JUST RECEIVED.

MR. WILLIAM BULL can offer very fine Plants, in good condition, at a merely nominal price. Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

ORCHIDS.—Pleione Wallichiana, strong Bulbs, 24s. to 42s per dozen.

Apply to S. WOOLLEY, Nurseryman, Cheshunt, Herts.

DENDROBIUM NOBILE — Everybody's Orchid—2s. 6d., 3s. 6d., 5s., 7s. 6d.; good plants, to flower next spring, 3s. 6d. each; also a few GREENHOUSE PALMS, 4 to 6 feet, cheap.

GEORGE EDWARDS, Balham Nursery, S.W.

Lily of the Valley.

F. AND A. SMITH are now sending out strong blooming Clumps and single Crowns of the above, at moderate prices.

West Dulwich, S.E.

WHITE DOG'S-TOOTH VIOLETS. Price per 1000 on application.

PARKER AND BUSH, St. Michael's Hill Nursery, Bristol.

Tree Carnations.

CHARLES TURNER can supply these in great variety, fine healthy plants, showing bloom, at 18s. to 30s. per dozen; also PINKS for immediate planting, 9s. and 12s. per dozen pairs; and extra strong forcing PINKS, 9s. and 12s. per dozen.

The Royal Nurseries, Slough.

A Specially Cheap Offer.

PICEA NORDMANNIANA, perfect symmetrical specimens, 3, 4, 5, to 6 feet, at 3s., 4s., 5s., and 6s. each; less per dozen. Quotations to the Trade on application to

GEORGE JACKMAN AND SON, Woking Nursery, Surrey.

Choice named Rhododendrons of all Colours.

W. H. ROGERS, Red Lodge Nursery, Southampton, offers the above, very fine, in any quantities, at £5 and £7 10s. per 100.

80,000 Ponticum Rhododendrons.

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Royal Nurseries, Ascot, Berks.

YEWS, about 2000, from 3½ to 4½ feet, 90s. per 100; 4½ to 5 feet, £5 per 100; 4½ to 5½ feet, 120s. per 100. All in fine condition for making Hedges, &c., well rooted and furnished.

JOSEPH SPOONER, Goldworth, Woking.

English Yews, English Yews.

ENGLISH YEWS, 3½ to 4 feet, 12s. per doz., 80s. per 100; 4 to 4½ feet, 18s. per doz., 100s. per 100. All recently transplanted. Every plant a perfect specimen.

JOHN PERKINS AND SON, 52, Market Square, Northampton.

Planting Season, 1877-78.

JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks, invite the attention of Intending Planters to their large and varied STOCK, which, having been recently transplanted, is in the finest possible condition for removal. Liberal terms to large buyers.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium, CATALOGUES free on application.

Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Dutch Bulbs, Extra Picked.

J. SCOTT has to offer a large quantity of BULBS, exceedingly cheap. Priced descriptive CATALOGUE free on application to

JOHN SCOTT, The Royal Seed Stores, Yeovil.

DUTCH BULBS, &c.—The most complete Catalogue in the Trade, post-free for 3d., returned to purchasers.—GIBBS AND COMPANY, Seedsmen and Importers of Bulbs, Woodbridge, Suffolk.

BLACK and RED CURRANT BUSHES.—For Sale, 2000 good, healthy, and strong 4-yr. old plants, for planting out. Full particulars on application to

ARTHUR ROLFE, West Row, Soham, Suffolk.

Schoolmaster Potato.

CHARLES TURNER has harvested a fine healthy stock of the above, which has the past season maintained its position as the finest round variety in cultivation, and can supply the same at 7s. 6d. per peck. Price to the Trade on application. The Royal Nurseries, Slough.

Cucumber Seed.—To the Trade.

E. COOLING can now offer choice Stocks of TELEGRAPH KING, TENDER and TRUE, FEARNOUGHT, LONG GUN, CARTER'S MODEL, &c. Prices on application.

Mileash Nurseries, Derby.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

SALES BY AUCTION.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during November, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 13, at half-past 12 o'Clock precisely, 30 Plants of PHALÆNOPSIS SCHILLERIANA and AMABILIS; several small collections of Established ORCHIDS, comprising many choice sorts; several importations, including Cattleya Aclandiæ, Galeandra Devoniana, Cattleya maxima; a small collection of STOVE and GREENHOUSE PLANTS, 20 small Plants of BARKERIA ELEGANS, 1000 fine Bulbs of LILIUM AURATUM, just arrived from Japan.

On view morning of Sale, and Catalogues had.

Beverley.

An Important Property, well known as the Norwood Nurseries, situate on the south side of Norwood, in the occupation of Mr. W. E. Dixon, the owner.

N. EASTON AND SON are instructed by the Proprietor, who is leaving Beverley, to SELL by AUCTION, at the "Holderness Hotel," Beverley, on THURSDAY, November 8, at 3 o'Clock P.M., and subject to conditions which may be inspected prior to the Sale, the valuable FREEHOLD PROPERTY known as the Norwood Nurseries, situate on the south side of Norwood, Beverley, in the immediate vicinity of the centre of the town, and consisting of a commodious Family Residence, containing spacious Drawing and Dining Rooms (the latter 24 feet by 16 feet), Library, two Kitchens, six Bed and two Dressing Rooms, two Attics, W.C., and the usual Domestic Offices; the extensive range of modern Buildings, consisting of Sale Shop, Warehouses, Offices, Stables, Coach House, Harness Room, Van Shed, &c.; noble Conservatory, of recent erection, and fitted on the most approved principles, size, 50 feet by 40 feet; thirteen Greenhouses, about 1750 feet in length, containing about 12,500 superficial feet of Glass, the whole heated by about 3000 feet of 4-in. piping; four Potting Sheds, and the extensive and well laid out Nursery Grounds, the area of the whole being about 7260 square yards, with a frontage to Norwood of 87 feet or thereabouts.

The situation of the property is a most central one for the extensive business now being carried on, and the present Sale offers a most favourable opportunity for purchase to any person wishful to embark in the Nursery and Seed Business. The property is also well worthy the attention of Speculators and Others, as a large portion of the land might be utilised for Building Purposes. Early Possession can be given.

N.B.—This Sale does not include the Nursery Stock.

For plans and further particulars application may be made to the Auctioneers, Bowlalley Lane, Hull; to Mr. W. E. DIXON, on the Premises; or to SHEPHERD, CRUST, TODD, AND MILLS, Solicitors, Beverley.

Unreserved Sale of a Large Consignment of Choice selected HYACINTHS for Pots or Glasses, TULIPS, CROCUS, POLYANTHUS, LILIES, GLADIOLI, SNOWDROPS, and other BULBS, from Holland.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, near the Bank of England, London, E.C., on MONDAY NEXT, at half-past 11 o'Clock.

Catalogues may be had of the Auctioneers, 98, Gracechurch Street, London, and Leytonstone, Essex.

Highgate, N.

CLEARANCE SALE of a fine assortment of EVERGREEN CONIFERÆ and DECIDUOUS SHRUBS, comprising several fine specimens and a quantity of Border SHRUBS and other useful stock; a fine assortment of AMERICAN PLANTS, STANDARD ORNAMENTAL TREES, selected FRUIT TREES, fine Standard and Dwarf ROSES.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Eagles, who is retiring from business, to SELL the above by AUCTION, without reserve, on the Premises, the Nursery, Southwood Lane, Highgate, close to Highgate Station, on FRIDAY, November 9, at 11 for 12 o'Clock precisely.

May now be viewed, and Catalogues had of the Auctioneers.

Woking.

CLEARANCE SALE of NURSERY STOCK, by order of the Executors of the late Mr. William Collyer.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, the Horsell Birch Nursery, Horsell, about 1 mile from the Woking Station, Surrey, on TUESDAY, November 13, and two following days, at 11 for 12 o'Clock precisely each day, a large quantity of well-grown NURSERY STOCK, comprising 40,000 Green Hollies, including many fine specimens; 18,000 English Yews, 18 inches to 5 feet, 1000 variegated; 5500 Portugal Laurels, 2 to 5 feet; 10,000 Common Laurel; 1000 Aucubas, Laurustinus, and numerous other Shrubs; 1500 Standard Roses; 100,000 Fruit Stocks, 800 Daphne indica, 1000 Horse Chestnuts; and large quantities of other useful stock in capital condition for removal.

N.B. This Sale is specially attractive to Contractors, Builders, the Trade, and to others engaged in making extensive plantations.

The Stock may be viewed any day prior to the Sale. Catalogues may be had on the Premises, of Mr. KNOWLES, and of the Auctioneers and Estate Agents, 38, Gracechurch Street, E.C.

Edgware, N.W.

IMPORTANT CLEARANCE SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, on FRIDAY, November 16, at 12 for 1 o'Clock precisely, a portion of the valuable and remarkably well-grown NURSERY STOCK, comprising a great variety of handsome Lawn Trees, a splendid assortment of other Coniferæ and Evergreen shrubs, which have all been recently transplanted, together with a fine collection of Orchids, and a number of Camellias and other Greenhouse Plants.

May be viewed the day prior to the Sale. Catalogues may be had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Thames Ditton, Surrey.

CLEARANCE SALE of a large quantity of very useful and well rooted NURSERY STOCK. By order of the Executors of the late Mr. J. Lewis.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Ember Nurseries, Thames Ditton, on TUESDAY, Nov. 20, and following days, at 11 for 12 o'Clock precisely each day, the whole of the valuable NURSERY STOCK, consisting of a large and varied assortment of choice Evergreen and Coniferæ shrubs, ranging all sizes, and adapted for immediate effect. Also 8000 Common Laurels, 3 to 7 feet; 1500 Cupressus Lawsoniana, 2 to 10 feet; 500 Thujopsis borealis, 2200 Thuja Lobbii, 2 to 10 feet; 1000 Gold and Silver variegated Hollies, 1 to 3 feet; 1000 Standard Ornamental Trees, and a great variety of Fruit Trees.

May be viewed prior to the Sale. Catalogues may be had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. The LEASE of the NURSERY, which comprises Dwelling-house, Seed-shop, 9 Acres of productive Land, several modern Glass Erections, containing about 11,500 feet of glass, together with the Indoor Stock, Seeds, Shop Fixtures, &c., are to be SOLD by PRIVATE TREATY on easy terms.—Apply to the Auctioneers for further particulars and price.

The Potteries, Ilkeston.

To NOBLEMEN, GENTLEMEN, NURSERYMEN, FLORISTS, and OTHERS.

MR. WRIGHT LISSETT begs to announce that he is honoured with instructions from Richard Evans, Esq., to SELL by AUCTION, at his Gardens, the Potteries, Ilkeston, on MONDAY, November 5, at 11 o'Clock precisely, the whole of his very choice collection of CAMELLIAS, STOVE and GREENHOUSE PLANTS, and FERNS; also all the HOTHOUSES, GREENHOUSES, and a splendid CONSERVATORY, with the Heating Apparatus and Fittings belonging to each; likewise sixty-four GREENHOUSE LIGHTS, 7 feet 6 inches by 4 feet, quite new, suitable for Garden Frames; quantity of FLUE COVERS 18 by 9 inches, ditto, 18 by 12 inches; patent Garden ROLLER, by Tindale; large Iron TANK, and various other items.

The Camellias, for which Mr. Evans has long been noted, are in robust health, and well set with bloom, and are altogether a very fine collection, as well as the largest in the district for many miles round. The conservatory is nearly new, of artistic beauty, and in good condition, built from a desigo by Mr. Foster. One of the Vineries is equal to new.

Catalogues will be ready seven days prior to the Sale, and may be had at the place of Sale, and of the Auctioneer at his offices, Town Hall, Ilkeston, and Maypole Yard, Nottingham, on Saturdays.

Farfield House, Armley, Leeds.

MESSRS. HEPPER AND SONS beg to give notice that they are instructed by Mrs. Wood to SELL by AUCTION, on the Premises, on TUESDAY, November 6, commencing at 11 o'Clock prompt, the well-known Collection of STOVE and GREENHOUSE PLANTS, embracing very choice specimens of the following kinds, viz.:—

In AZALEAS.—Chelsoni, Rubens, Duchesse Adelaide de Nassau, Duc de Nassau, Apollo, Juliana, William Bull, Stella, Perfection, Mrs. Fry, Souvenir de Prince Albert, &c.

In CAMELLIAS.—Henri Favre, Marchioness of Exeter, Mathottiana, &c.

In PALMS.—Dæmonorops fissus, Areca aurea, Areca lutescens, Areca Verschaffeltii, Euterpe edulis, Cocos Weddelliana, Latania borbonica, &c.

In FERNS.—Selaginella denticulata, robusta and Willdenovii, gymnogramma, Platycerium alcicorne, Adiantum formosum, farleyense, cuneatum, &c.

Also a great variety of Ericas, Dracænas, Yuccas, Spiræa japonicas, Clerodendrons, Crotons, Orchids, Poinsettia pulcherrima, Stephanotis floribunda, Anthurium Scherzerianum, Gloxinias, Dipladenias, Pimeleas, Euphorbias, &c.

Plants from this collection have been frequently exhibited at Leeds, York, and elsewhere, and the owner has been awarded numerous leading prizes.

Catalogues are now ready, and will be forwarded to applicants.

The plants can be seen by holders of Catalogues only on application to the Gardener, ROBERT SLEIGHTHOLME, on Monday, November 5, between the hours of 10 and 4 o'Clock.

To Gentlemen Engaged in Planting.

Magnificent Specimen EVERGREENS, comprising Wellingtonias, Cupressus Lawsoniana, Thujopsis boreale, Golden Yews, Cedrus Deodara, &c., from 6 to 12 feet high, all grown singly, and will lift with large balls of earth; also ROSES, RHODODENDRONS, THUJAS, and other choice Trees and Shrubs.

MESSRS. OLIVER, NEWBOLD, AND OLIVER have received instructions from Mr. E. Cooling to SELL by AUCTION, as above, at the Mile Ash Nurseries, Derby, on TUESDAY and WEDNESDAY, November 13 and 14, at 11 o'Clock.

Catalogues may be had at the Offices of the Auctioneers, Wardwick; or from Mr. E. COOLING, 18, Irongate, Derby.

Swiss Nursery, Loughborough Road, Brixton, S.W.

(Close to the Loughborough Junction Station.)

MR. W. ABRAHAM is instructed to SELL by AUCTION, on the Premises, as above, on SATURDAY, November 17, at 1 o'Clock punctually, a choice and varied assortment of NURSERY STOCK, including some fine Cryptomeria elegans, Junipers, Yew, Pampas Grass, Cupressus, Gold and Silver Holly, Standard and Dwarf Roses, Coniferæ and Evergreens in pots, large Myrtles, Palms, Agave, Oleander, trained, pyramidal and bush Fruit Trees, and many others.

Catalogues one week before the Sale, on the Premises; or of the Auctioneer, Goldworth Nursery, Woking, Surrey.

To Florists.

A SMALL BUSINESS REQUIRED, the neighbourhood of London preferred; or a SMALL HOUSE, with GROUNDS suitable for the purpose.

A. B., 8, Beaufort Buildings, Strand, W.C.

To Florists, Seedsmen, &c.

FOR SALE, by Private Treaty, the BUSINESS of a Nurseryman, Seedsman, and Florist, carried on by William Rushforth (formerly by Mr. Kearsley) for many years at Leeds, together with the STOCKS at the Nurseries at Woodhouse Hill and Shadwell. The Shop is situate in the principal Leeds thoroughfare. For particulars apply to

W. H. BURRELL, 18, Albion Street, Leeds.

To Nurserymen and Florists.

TO BE LET, on LEASE, about three-quarters of an ACRE of GROUND, situated near a flourishing Town in the South of England, where there is little or no monopoly. To a young beginner with small capital the above is an opportunity seldom to be met with. For particulars apply to

Mr. S. SHORT, Queen's Holt, Bournemouth, Hants.

THE ROYAL METROPOLITAN ROOT and VEGETABLE SHOW, under the exclusive management of JAMES CARTER & Co., will be held at the Agricultural Hall, London, N, on WEDNESDAY and THURSDAY, November 14 and 15, when TWO HUNDRED and FIFTY POUNDS will be awarded, including the following Prizes for Vegetables:—

CLASS 28.—For the best 12 dishes of Vegetables, 1st, £3 3s.; 2d, £2 2s.; 3d, £1 1s.; 4th, 10s. 6d.

CLASS 29.—20 tubers of Porter's Excelsior Potato, 1st, £1; 2d, 10s.

CLASS 30.—20 tubers of Snowflake Potato, 1st, £1; 2d, 10s.

CLASS 31.—20 tubers of Carter's Improved Red-skinned Flourball Potato, 1st, £1; 2d, 10s.

CLASS 32.—20 tubers of Carter's Improved Magnum Bonum Potato, 1st, £1; 2d, 10s.

CLASS 33.—20 tubers of Carter's American Breadfruit Potato, 1st, £1; 2d, 10s.

CLASS 34.—12 roots of Onions, spring sown, 1st, £1; 2d, 10s.

Full particulars on application to CARTER'S, The Queen's Seedsmen, High Holborn, London, W.C.

SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16s. per 100, £7 per 1000, or £60 per 10,000.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

CHRISTMAS ROSES, 20,000.
HEPATICA CŒRULEA, 8,000.
May be had from
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPIGELIA MARYLANDICA.—Beautiful perennial, of gay appearance. Strong flowering plants, with many crowns, at 64s. per 100.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

PANDANUS UTILIS.—Extensive stock of this splendid ornamental plant, at 20s. per 100, 180s. per 1000. Extremely healthy, 6, 8 and 10 inches high and upwards.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.
N.B. English CATALOGUE post-free.

Hyacinths, Crocus, Snowdrops, &c.

JAMES FARRAR AND CO. offer, on very low terms, HYACINTHS, CROCUS, Double and Single SNOWDROPS, Pheasant-eye and Double White NARCISSUS. Prices on application.

Seed Warehouse, 86, Golden Lane, Barbican, London, E.C.

Vines.—To the Trade.

WILLIAM F. TAYLOR has to offer a few hundred splendid Planting Canes, principally Black Hamburgh, well ripened and short jointed. Price £12 10s. per 100, 36s. per dozen.

Market Gardens, Upper Hermitage, Lochend Road, Leith.

ASPARAGUS ROOTS.—Very superior lot of Connover's Colossal, 1, 2, and 3-yr. Also very fine CLUMPS for forcing.

C. R. FREEMAN, Seed Grower, Norwich.

ASPARAGUS, for Forcing or Planting.—A large quantity for Sale for cash. For samples and prices, apply to

H. McMILLAN, Nurseryman, Kingston-on-Thames.

First-class Nursery Stock.

WITTY AND SON have to offer dwarf-trained PEACHES and NECTARINES. Also pyramid and standard APPLES, PEARS, PLUMS, and CHERRIES. An immense stock of EVERGREEN SHRUBS of first-class quality.

The Nurseries, Cottingham, near Hull.

Mulberries! Mulberries!

PONSFORD AND SON can supply the above in any quantity, and various sizes, to the Trade as usual.

Loughborough Park Nurseries, Brixton, Surrey.

New Early and Show Pelargoniums.

F. AND A. SMITH beg to announce that they are now sending out strong plants of the above, highly valuable and distinct varieties, at moderate prices, as per List on application. West Dulwich, S.E.

WONDERFUL (Smith's).—The best Geranium in cultivation, 3s. 6d. per dozen, 25s. per 100. Special prices to the Trade for larger quantities.

A lot of good Stock Plants of VESUVIUS, from the ground, 1s. 6d. per dozen, 8s. per 100.

RAPER AND CO., Seedsmen and Florists, Fern Nursery, Leamington.

To the Trade.

VINES, strong planting Canes of all the leading varieties. Sorts and Price on application.

HIRAM SHAW, Richmond Hill Nursery, near Sheffield.

PHEASANT-EYED NARCISSUS.—For Sale, Bulbs of this sweet-scented Narciss, 10s. per bushel. Likewise Bulbs of LILIUM BULBIFERUM, 12s. per 100. Terms cash with order. Package free. Post-office Orders payable Vauxhall.

C. W. ALDERSON, Langley Lane, South Lambeth, Surrey.

SEAKALE for FORCING.—Largest roots in the Trade, 90s. per 1000; any number under 500, 10s. per 100; many acres for sale. Remittances to accompany all orders.

ALFRED ATWOOD, Market Gardener, 3, Althorpe Road, Upper Tooting, Surrey (late of 5, Simpson Street, Battersea).

For Present Planting or Sowing.

CABBAGE PLANTS.—Gee's Superior Early Enfield Market, Drumhead, and Thousand-headed, all at 3s. per 1000; Purple Sprouting BROCCOLI, and BRUSSELS SPROUTS, 5s. per 1000; Winter LETTUCE PLANTS, Brown Cos and Hardy Green, at 7s. 6d. per 1000. Terms cash with order. Gee's noted stocks of Winter ONIONS, CAULIFLOWER, CABBAGE, and all other kinds of Seeds and Plants for present use, of best quality. CATALOGUES on application to FREDK. GEE, Seed and Plant Grower, Nurseryman, &c., Biggleswade, Beds.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.
The New CATALOGUE, just issued, sent to applicants.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANNI.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

HEATHERSIDE NURSERY, between Farnborough and Bagshot, Surrey. The attention of Gentlemen and others is called to the large and varied stock of CONIFERS, Hardy, Evergreen, and Flowering SHRUBS; Trained, Pyramid and Standard FRUIT TREES; Forest and Ornamental TREES, ROSES, &c.; Hardy CLEMATIS and IVIES, &c., in Pots, at low and reduced prices.
Priced CATALOGUE sent post-free.
Address, HENRY SHEPHERD, Manager.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.
Hale Farm Nurseries, Tottenham, London.

Orchard Planting, &c.

H. F. SMITH AND SONS, SEED MERCHANTS, Selby, being about to give up their Nurseries, will offer the whole of their splendid stock of FRUIT TREES, &c., at about half the usual price. It comprises about 10,000 Apples, Pears, and Plums; 10,000 Gooseberries, of best sorts; 5000 Black Naples Currants; 6000 Northumberland Fillbasket Rasps (extra strong canes), &c., as well as fine stocks of FOREST and ORNAMENTAL TREES, SHRUBS, CONIFERS, &c., all clean and healthy. A dozen or 100 sent as sample if required.

New Roses for this Year.

3000 strong dwarf MARÉCHAL NIEL ROSES, from the open ground.

LÉVÊQUE ET FILS, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have just now, per 1000, MARECHAL NIEL, GLOIRE DE DIJON, and other strong Tea and Perpetual sorts, Dwarfs, Standards, and on their own roots. Their fine NEW SORTS of ROSES this year are "Edouard Dufour," "Grand Duc Nicholas," Princesse Lise Troubetskoi," and "Princesse Charlotte de la Tremoille." Also forty-six sorts of other Raisers.
Price LISTS and CATALOGUES on application.

Plants for Hedges.

JOHN LUFF, St. Helen's Nursery, Hastings, offers:—
50,000 QUICKS, strong, transplanted, 15s. per 1000.
500,000 QUICKS, extra strong, transplanted, 3 to 3½ feet, 20s. per 1000.
25,000 PRIVET, Evergreen, extra strong, transplanted, 3 to 4 feet, 20s. per 1000.
5,000 PRIVET, Box-leaved, extra strong, transplanted, 3 to 4 feet, 60s. per 1000.
Stout healthy Plants, grown on high and exposed land.
Sample Hundreds at same rate.
CATALOGUES of General Nursery Stock on application.

Florists' Flowers, and Roses.
Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.
Hale Farm Nurseries, Tottenham, London.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to
EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

PETER DE COCK AND COLLUMBIEN, The White Flower Nursery, Meirelleke, Ghent, Belgium, offer to the Trade:—
SPIRÆA JAPONICA, forcing clumps, 14s. per 100, £6 per 1000.
DEUTZIA GRACILIS, for forcing, 18s. per 100, £8 per 1000.
HELLEBORUS NIGER (Christmas Rose), for bloom, 14s. per 100, £6 per 1000.
CAMELLIAS, AZALEAS, PALMS, FERNS, &c.

Kent—The Garden of England.

THOS. BUNYARD AND SONS offer the finest Stock in the Trade of
10,000 Standard CHERRIES,
15,000 Standard PEARS,
1,000 Standard MULBERRIES,
KENT COB NUTS, and other FRUIT TREES.
Prices of which may be found in their Trade LIST, just published.
Also cheap and fine AUCUBAS, 2 to 6 feet; trained PLUMS and PEARS, RHODODENDRON PONTICUM, SPRUCE, large; YUCCAS, ELMS, LIMES, and other FOREST TREES, CLIMBERS, &c.
THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

HOTEIA (SPIRÆA) JAPONICA.—100,000, in very strong and sound condition.
SPIRÆA JAPONICA, 16s. to 20s. per 100; have been awarded several First Prizes, and always considered best shown.
DIELYTRA SPECTABILIS, very strong, 20s. to 26s. per 100.
LILIUM LANCIFOLIUM ALBUM MONSTROSUM, 30s. to 40s. per 100; very free flowering.
" " ROSEUM, strong, 20s. to 26s. per 100.
" " RUBRUM, strong, 20s. to 26s. per 100.
" CHINENSIS TIGRINUM, 5s. to 7s. per 100.
Trade Catalogues on application. Post-office Order or good reference from unknown correspondents.
BUDDENBORG BROS., Nurserymen, Hillegom, near Haarlem, Holland.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.
NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each. For Detailed List see BULB CATALOGUE.
NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10s. 6d. each. Extra sized fruiting plants, 21s. each.
B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

JOHN PERKINS AND SON beg to offer the following, the whole of which have been recently removed, and are fine healthy plants:—
ABIES DOUGLASII, 4 to 5 feet, 18s. per dozen.
ACER NEGUNDO, var., Pyramids, 40s. per 100.
ABIES MENZIESI, 4 to 5 feet, 18s. per dozen.
CEDRUS DEODARA, 2½ to 3 feet, 21s. per dozen.
HOLLY, Gold Queen, 1½ to 2 feet, 18s. per dozen.
LIMES, fine Standards, 10 to 12 feet, 12s. per dozen.
LAURELS, Common, 2 to 2½ feet, 12s. per 100; 10os. per 1000.
LAURUSTINUS, 1½ to 2 feet, 40s. per 100.
PICEA NOBILIS, 2 to 2½ feet, 30s. per dozen.
" PINSAPO, 3 to 5 feet, 24s. per dozen.
" NORDMANNIANA, 3 to 5 feet, 30s. per dozen.
PINUS EXCELSA, 4 to 5 feet, 18s. per dozen.
" CEMBRA, 4 to 5 feet, 60s. per 100.
LAURELS, Portugal, 3½ to 4 feet, 70s. per 100.
THUJA AUREA, 1 foot, 50s. per 100.
Wholesale and Retail CATALOGUES on application.
52, Market Square, Northampton.

To Exhibitors and Others.

STOVE PLANTS.—Large specimens to be disposed of, on account of not having sufficient room to house them:—
PANDANUS VEITCHII, 4 feet high and 6 feet through, and 5 feet high and 6 feet through.
CROTON INTERRUPTUM, fine specimen, well coloured, 6 feet by 6 feet.
" UNDULATUM, 5 feet by 5 feet.
ALOCASIA METALLICA, 3 feet by 4 feet.
MARANTA ZEBRINA, 3 feet by 6 feet.
" VEITCHII, good half-specimen.
" ROSEA PICTA.
Also the following healthy and useful WINTER FLOWERING PLANTS:—Solanums, Bouvardias, Libonias, Eranthemums, Linums, Gardenias, Erica hyemalis, gracilis, Caffra, and other varieties; Camellias, Azaleas, Cyclamens, Poinsettias.
Now being the time to obtain stock of the following Carpet Bedding Plants, W. MILES can supply Alternantheras, Antenarias, Arenaria, Achillea, Cerastiums, Leucophyton, Mentha, Mesembryanthemums, Nertera, Sagina, Santolina, Tecoma, Echeverias, Sempervivums, &c. All particulars and prices on application to
WM. MILES, West Brighton Nursery, Cliftonville, Sussex.

PEARS.—Williams' Bon Chrétien and Hessel, a splendid lot of young pyramids, 70s. per 100.
T. EVES, Gravesend Nurseries. Established 1810.

APPLES. — Lord Chancellor, Ecklinville, Lord Suffield, and other heavy cropping kinds, from 70s. per 100.—T. EVES, Gravesend Nurseries. Established 1810.

PLUMS.—Victoria, Orleans, Prince of Wales, and other kinds suitable for market growers, from 60s. per 100.—T. EVES, Gravesend Nurseries. Established 1810.

CHERRIES.—A splendid lot of tall clean-grown standard Bigarreaus.
T. EVES, Gravesend Nurseries. Established 1810.

LIMES, from 10 to 12 feet. Stout straight stems and good heads.
T. EVES, Gravesend Nurseries. Established 1810.

AUCUBAS, EUONYMUS, BOX, &c., suitable for potting. To be Sold cheap.
T. EVES, Gravesend Nurseries. Established 1810.

To the Trade.

PRIMULA SINENSIS FIMBRIATA, red and white, in 54-pots, 3s. per dozen, 20s. per 100.
CINERARIAS, in 48-pots, 4s. per dozen, 28s. per 100.
WALLFLOWERS, Young's Blood-red, transplanted, extra fine, 2s. 6d. per 100, 22s. 6d. per 1000.
" double German, fine, 4s. per 100, 35s. per 1000.
ROCKETS, double white, from cuttings, 3s. per dozen, 21s. per 100.
DAISIES, AUCUBÆFOLIA, strong, 8s. per 100. On application to
THOMAS PERKINS AND SONS, 42, Drapery, Northampton.

The Weeping Wellingtonia.
(WELLINGTONIA GIGANTEA PENDULA NOVA.)
Awarded the First Prize at the Carlisle International Flower Show for the "most distinct hardy Conifer of real merit."

LITTLE AND BALLANTYNE, NURSERYMEN and SEEDSMEN to the Queen, Carlisle, are now sending out healthy plants of their WEEPING WELLINGTONIA, which is allowed by all who have seen it to be the most graceful pendulous tree ever seen of its kind, and perfectly distinct in habit from any other. The original plant is now 8 feet high, and may be seen at L. & B.'s Nurseries, near Carlisle, where it was raised from seed in 1870.
Prices of plants in pots, from £2 2s. to £5 5s. each.
Knowefield Nurseries, Carlisle.

Hollies and Rhododendrons.

HOLLY, Common, 1½ to 2 feet, 30s. per 100; RHODODENDRONS, hybrids, 12 to 15 inches, 20s. per 100; PRIVET, oval-leaved, 1½ to 2 feet, 6s. per 100; also other Nursery Stock, well-grown, with good roots.
CATALOGUES free on application.
HENRY DERBYSHIRE, Darley Hillside Nursery, near Matlock, Derbyshire.

C. W. MIETZSCH, Dresden, Bergstrasse, 36, offers to the English Trade:—
CAMELLIAS, alba plena, without buds, very bushy, 90 marks per 100.
" in varieties, 100 marks per 100.
" Lady Campbell, 60 marks per 100.
AZALEAS, bushy, well set with buds, 60 to 75 marks per 100.
ROSES, Tea, dwarf and bushy, extra strong and fine plants, worked on Rosa canina, 60 marks per 100.
Packing will be done very carefully. Shipped *vid* Hamburg.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.
SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)
Agents: Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.
CATALOGUES post-free on application.
Lion Walk, Colchester.

Notice to Potato Growers.

MESSRS. CHANDLER AND BULL, ENGLISH AND FOREIGN FRUIT AND POTATO SALESMEN, Covent Garden Market, W.C., have a Cargo of best SNOWFLAKE POTATOS, direct from America, for disposal, 16s. 6d. per cwt., or £16 per ton. Terms cash. Orders immediately attended to.

TUBEROUS BEGONIA SEED.—Saved from our unrivalled collection, fresh harvested, and only a very small quantity to offer. In sealed packets at 2s. 6d. and 5s. each.
RODGER McCLELLAND AND CO., Nurseries, Warrenpoint Road, Newry.
P.S.—Our NEW CATALOGUE of New and Old Varieties will shortly be issued, and will be sent on application.

FINE STANDARD ORNAMENTAL TREES, &c., for Immediate Effect.
ASH, Mountain, 8 to 10 feet, fine, 10s. to 12s. per dozen.
BEECH, Green, 10 to 12 feet, fine, 18s. to 24s. per dozen.
BIRCH, Silver Weeping, 12 to 15 feet, fine, 18s. to 24s. p. doz.
CHESTNUT, Horse, 8 to 10 feet, fine, 10s. to 12s. per dozen.
" Scarlet, 8 to 10 feet, fine, 12s. to 15s. per dozen.
ELMS, Giant Canadian, 15 to 20 feet, fine, 25s. to 30s. per doz.
" English grafted, 10 to 12 feet, fine, 18s. to 24s. per dozen.
LAURELS, well furnished, 4 to 6 feet, fine, 20s. per 100.
LIMES, 8 to 9 inches in circumference, 12 to 14 feet, fine, 28s. to 30s. per dozen; 10 to 12 feet, 10s. per dozen.
LABURNUMS, 10 to 12 feet, fine, 9s. to 12s. per dozen.
OAK, English, 10 to 12 feet, fine, 18s. to 24s. per dozen.
POPLAR, Silver, 12 to 15 feet, fine, 18s. to 24s. per dozen.
" Black Italian, 12 to 15 feet, fine, 9s. to 12s. per dozen.
" Lombardy, 10 to 12 feet, fine, 9s. to 12s. per dozen.
PRIVET, Evergreen, 3 to 3½ feet, fine, 14s. per 1000.
SYCAMORE, 15 to 20 feet, fine, 18s. to 24s. per dozen.
Descriptive CATALOGUE of General Nursery Stock post-free on application.
W. BALL AND CO., The Nurseries, Bedford Road, Northampton.

Important Notice to the Trade.

SEAKALE, ASPARAGUS, RHUBARB,
EXTRA STRONG ROOTS FOR FORCING.

H. THORNTON,

Having devoted great attention to the production of fine roots, and having an immense stock on hand, invites the inspection of large Buyers, or he will be happy to forward Prices for large or small quantities on application.

H. THORNTON, 12, Maxwell Road, Fulham, S.W.

To Exhibitors and Others.

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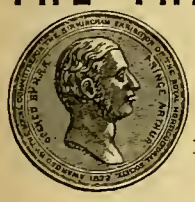

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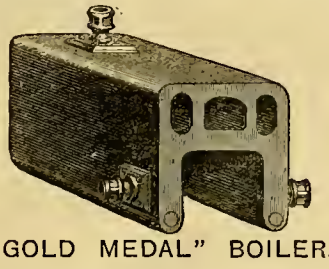

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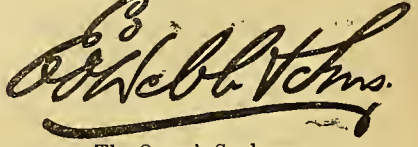

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THE QUEEN'S SEEDSMEN, READING.

SATURDAY, NOVEMBER 3, 1877.

RENOVATING OLD FRUIT TREES.

THERE are few fruit cultivators even with only a very limited number of trees who do not at some time or other find a portion of them get into a barren or otherwise unsatisfactory condition. Such a state of things may arise from various causes, such as unsuitableness of soil, want of drainage, or from water being carried too rapidly away through having a loose gravelly bottom. A subsoil of this kind is no doubt well adapted for growing most of the stone fruits, but it would be starvation to Pears and Apples, both of which require a good holding loam, and the deeper this is the more healthy and lasting will they be.

The quantity and quality of the food, and the way it is assimilated, has probably as much to do with disease in the vegetable world as it has in the animal, and when trees are inclined to a mossy, stunted growth or to over-luxuriance, the cause lies beneath the soil, unless it has been brought about by heavy cropping or bad management, such as injudicious pruning or thinning. Crude watery shoots, like obesity in ourselves, is by no means a sign of health, but that the trees are living too fast and doing the work in one year that should be extended over two or three. Wood so formed rarely attains that degree of solidity and ripeness necessary to build up a durable healthy plant, or one that will fruit freely in a climate like that of most parts of England. This objectionable plethoric habit, if not to be traced to the want of drainage, most frequently results from the land at the time of planting having been heavily manured—a practice that prevails to a great extent and often causes much mischief.

If the nature of the ground is such as to require manure it should be given as a surface dressing by way of mulching, and never incorporated with it, as then it does not come in contact with the roots, and can be added or withdrawn at pleasure according to the season and the kind of crop the trees may be carrying. Where it can be had without much labour, sewage is unquestionably the best form of stimulant to apply to all fruit trees, and more particularly to Pears, which when swelling a crop in dry seasons will take almost unlimited supplies. It is astonishing how fertile they become when so treated, over what they are if allowed to depend for the supply of moisture they receive on what falls from the heavens, as then they have as much as they can possibly do to finish and perfect their fruit, and are quite unable to form flower-buds for another year. This is why it is that trees bearing a good crop one season have few or none the next, whereas were they assisted they would bear regularly, unless, as is the case this year, spring frosts destroy the blossoms. Not only does sewage aid fertility, when applied at the proper time, but it likewise improves the size and quality of the fruit; for, as is well known by those who have to do with them, if Pears receive a check while swelling they invariably become hard and gritty, and never finish with that rich buttery flesh and full juicy flavour that all possess, more or less, according to their several varieties, when they ripen off properly.

Although over-robustness in fruit trees is to be avoided, by not using solid manure at the time of planting, poverty on the other hand is as much to be guarded against, as contraction of the bark immediately follows, or, what is equally as bad, moss forms on the branches, and it is just as necessary to have these free from all parasitic growth as it is that our skins should be clean and healthy if we wish to attain to old age. This being the case, any that are found to be infested with lichen or other conferva should be seen to at once, and the best way to get these eradicated is to scrape the main stem with some blunt iron instrument, such as a small hoe that has been in use some time and has become worn, as then there will be no danger of lacerating the bark. The mossy growth having been removed in this way, together with the more rugged portion of the bark, the next thing is to give a good coat of lime, applied hot and in a liquid state, of the consistency of whitewash. This may be put on with a large brush, and will effectually settle any insects, such as scale or American blight, the latter of which is often most troublesome in old Apple orchards. The branches and twiggy part of the trees may easily be dealt with by using the garden engine or syringe to squirt on the wash, but in order to get it through the tubes of either of these it must first be strained through a fine sieve, to take out any small lumps that remain unslaked and that would be liable to block the passage. The best time to use this lime dressing is when the bark of the trees is just moist from a heavy night dew, as then it sticks and covers more readily than when they are dried by sun and wind; a still fine day is necessary for the operation, otherwise the stream of liquid lime would be diverted from its course, and the work take at least double the time to accomplish. A handy man, expert in the use of either of the above tools, will go over a great number of trees in a day, and a coating of lime will not only be the means of effectually cleaning them, and making their bark bright and healthy, but will keep off birds, which are so destructive to the buds of Plums, Damsons, and bush fruit, so that it is often worth while using it for that purpose alone. The requisite pruning or thinning should of course precede the application of the lime, to avoid handling the branches afterwards, which would not only be an unpleasant task, but would scale off a great portion of it.

In cases where soil is unsuitable from being too light it is surprising what an invigorating effect clay has if trenched in and well mixed as the operation proceeds. I have a quantity of Pears now on the Quince stock that used to flag during dry weather and never bore a fruit worth eating, but since they have been treated to some clay and syringed with lime, they have improved wonderfully, and are now all that can be desired. The trenching was carried out to the depth of nearly a yard, in doing which we worked round the trees, and left them standing on a good sized base of soil to avoid disturbing them too much, as would have been the case had we removed all from under them. The job may appear a heavy one, but then the trees were useless in the state they were, and the improvement has been such that they will now last a lifetime, and amply repay for the labour bestowed on them. The staple of the soil too has benefited in such a manner that it will now grow anything, and will require nothing more done to it beyond a mulching the trees get during the summer, and, when time can be spared, a soaking of sewage in addition.

In regard to old trees whose branches are cankered and hide-bound, beheading them, in addition to the above remedial measures, is the best course to pursue, as they then make shoots free from the former defects, and that soon come into bearing. Spurious or unsatisfactory kinds may be treated in the same way, and grafted when the proper time arrives, as with Apples

or Pears it matters little whether the branches are small if the scions are put in under the rind or worked in other ways, as the circumstances of the case may require. There appears such an amount of vitality in old trees that when beheaded and regrafted they appear to take a fresh lease of life, and soon again become healthy and vigorous, and to all appearance rejuvenated. To destroy such and get up young ones to replace them would be a work of time, and, besides the interest attaching to old favourites, it is therefore desirable to keep them as long as possible. As regards young fruit trees that are over luxuriant and make too much wood, corrective measures must be applied at the roots, as it is useless to attack the tops if the feeding power is not restricted, for the removal of one strong branch only makes room for more of the same kind to follow.

In carrying out such an important work as root-pruning it is necessary that it should be performed by some one who has been accustomed to it, or who possesses the requisite amount of intelligence to do it in a proper manner. Root pruning and root mutilation are two very different things, the one bearing comparison to a skilful surgical operation, while the other is nothing but hacking and hewing at every part that comes in the way. The right course to pursue is to open a wide trench round the plant to be treated, in doing which all fibrous roots should be carefully preserved, and any that are thong-like severed with a sharp knife, as these are the offenders that feed low down in the earth, from whence pump up the crude sap which causes rank growth and general unfruitfulness. The distance at which these may be cut from the tree will depend on its age and size, but may be roughly stated at from 2 to 4 feet, and if the plant is large it will be the safest way to work round only a portion of it—say, from a half to three-quarters, and to leave the other part till next autumn or some future time. The filling-in of the trench will afford an opportunity to work in a little fresh and more suitable soil by mixing it up with the other, the whole of which should then be cast in and firmly trodden down, bringing the main roots to a higher level as the operation proceeds. Like transplanting, root-pruning should be done early, as then the trees have time to recover before the drying winds and frosts of winter are upon them; otherwise they get robbed of their sap faster than it can be supplied them, and when spring comes, with its increased demand, even if the few newly-formed fibres could respond, the bark and sap-vessels will have become so contracted from being so long empty that a free circulation to meet the wants of the fast swelling buds would be impossible. Where root-pruning fails in producing satisfactory results is when it is deferred till too late in the season, or is carried out in an unskilful manner, thereby causing such mutilation and so great a check as to derange the health of the tree. Once get them into a fruit-bearing state there is no difficulty in maintaining them in that condition afterwards, as that is Nature's way of correcting over-luxuriance, and all that is necessary in cases where soil is too rich is to aid her in her work. *J. S.*

New Garden Plants.

ONCIDIUM MACULATUM, *Lindl.* (O. DONIANUM, *Rchb. f.*, *alias* ODONTOGLOSSUM LINDLEYI, *Galeotti*; ONCIDIUM MACULATUM, *Lindl.*; O. LINDLEYI, *Lindl*)

It is a very curious fact that while the grand majority of Orchids are so constant and complete in the shape of of the lips that many subdivisions of genera are established on this very character, yet there are a few cases where the same species bear a lip of a shape diverse enough to serve as a point of distinction of groups. Experience alone can guide us, and teaches over and over again that there are no general rules without exceptions. A very interesting plant of this category is the old Oncidium maculatum, Lindl., which is rather scarce now in gardens, though at one time it was much in favour for its wide panicle of green flowers with blackish brown blotches, and its wide pandurate white lip with an apiculus in front and sometimes some purple on the crests, which are of a very lamentable variability. A very good odour was one of the most appreciated virtues of the plant. Now there is a variety with a narrow lip that has a triangular narrow middle lobe. It is highly curious that this variety occurs with great constancy, though it has no higher claim to the rank of a species. I saw it the first time from Mr Pescatore's gardeo, whither it was sent by my invaluable correspondent, M. Luddemann. I am pleased to see it again from M. Klaboch, who has just gathered it in Guatemala. *H. G. Rchb. f.*

MASDEVALLIA XANTHODACTYLA, *n. sp.**

This is once more one of the Roezlian discoveries. I have obtained it from Mr. Sanders at our friend's instigation, and it stands now in flower (middle of October) in the Hamburg Botanic Garden. It is quite like Masdevallia melanopus. Its flowers are greenish white, with yellow tails, and there is a similar violet spot at the base of the flower, on both sides of the chin, as I have very often observed in Masdevallia Davisii. The lip and column are nicely mottled and marbled with dark brownish violet. There is also a thick knob of that colour at the inferior base of the very elegant petals, which are nicely serrated towards their upper edge, and bear a membranous crest on their inner surface under the middle vein. It is exceedingly well distinguished from Masdevallia melanopus by its very long pedicels—far longer than the bracts; by its only one-nerved anterior lacinia of the lip; and by its totally different petals. *H. G. Rchb. f.*

CATASETUM MACROGLOSSUM, *n. sp.*†

One day an Ecuadorian (I believe a photographer), having watched Mr. Wallis and his friends, Dr. Krause, Messrs. Klaboch, and Mr. Lehmann packing Orchids for Europe, thought he could manage it likewise, sending *cepovillitas*,‡ worth their weight in gold. (By a similar mistake I have just at hand a little bill from tropical America of £11 for Orchids, which would have scarcely fetched 11*s.* at Mr. Stevens' rooms.) Whether he proceeded himself to the woods, or sent peones, I don't know. One day there came a grand cargo, chiefly consisting of Maxillaria foveata, Gongora grossa, and Catasetum macroglossum. If the poor plants fetched so low a price that the freight of sending was not nearly covered, science had indeed the benefit of two new species, which those clever collectors who care far nothing but making money, never would have touched. This one, the Catasetum macroglossum, is near Catasetum serratum and planiceps, but is immediately distinguishable by the large semicircular internal callus of the lip of the much larger flowers. Their greatest merit is the wonderful variations of colour in the flowers. I have had them ochre coloured, with green sepals and petals, quite light green, dark green, light yellow, dark yellow, and brownish purple. I have seen it rather frequently, first from Messrs. Veitch, at different times from Mr. Day, and then from Sir C. W. Strickland, and various other correspondents since last November. *H. G. Rchb. f.*

HYPOXIS ARNOTTII, *Baker*, *n. sp.* §

A native of the province of Colesberg, Cape Colony, sent by its discoverer, Dr. Arnott, to the Kew collection in 1855, and flowered there June, 1870. It is marked in the section Euhypoxis by its small racemose flowers and narrow densely pilose leaves. Its nearest ally is H. Jacquini, Baker (H. villosa, Jacq., Ic., t. 370, non Linn.).

Tuber large, globose, firm, perennial, 3—4 inches in diameter, crowned all over the exposed part of the top with stiff, erect fibres. Leaves 5 or 6, produced, clasping each other and the scapes at the base for a couple of inches, a foot long at the flowering time, 3—4 lines broad, erect, falcate, coriaceous, bright green, closely veined, dotted all over with soft spreading or ascending white hairs half a line long. Scapes two to a tuft, half a foot long, slender, arcuate, densely pilose. Flowers 6 or 8 in a raceme, which is dense at the top, but lax in the lower part; erecto-patent pedicels $\frac{1}{8}$—$\frac{1}{4}$ inch long; bracts linear-subulate, densely pilose, $\frac{3}{8}$—$\frac{1}{2}$ inch long. Ovary clavate, densely pilose, $\frac{1}{4}$ inch long; limb $\frac{3}{8}$ inch long, bright yellow inside, green and pilose on the outside, the outer segments lanceolate, the inner oblong. Stamens about a third as long as the limb; anthers lanceolate, affixed a little above the sagittate base; filaments very short, deltoid. Style entire, $\frac{1}{6}$ inch long, stigmatose in the upper half.

* *Masdevallia xanthodactyla*, n. sp.—(Aff. M. melanopodæ, Rchb. f.).—Pedunculo elongato; racemo paucifloro distantifloro secundifloro; bracteis scariosis triangulis uninerviis ovaria pedicellata longe non æquantibus; ovario brevi triptero, alis crenulatis retusis; tubo brevi superne curvato obtusangulo carinato; pone mentum parvum infra constricto; caudis latiusculis tubo subæqualibus; tepalis ligulatis, antice dilatatis serratis apice subretuso emarginatis seu si mavis angulato excisis cum apiculo; basi ima inferne umbonatis; carina membranacea serrulata iosiliente; labello trifido; laciniis lateralibus obtusangulis, lacinia media lineari obtuse uninervi ceterum ecallosa; columna apicem versus trilobulo marginata. *H. G. Rchb. f.*

† *Catasetum macroglossum*, n. sp.—(Affine C. serrato eplanicipiti.)—Racemo paucifloro; sepalis tepalisque latioribus ob longo-ligulatis acutis; labello saccato angulato excavato antice trifido; lacinia media triangula lata parva; laciniis lateralibus semi-oblongis altis minute serrulatis; tumore transverso semicirculari, antice ante laciniam mediam et in laciniis laterales excurrente; columna bicirrhosa.—Ecuador. *H. G. Rchb. f.*

‡ The vernacular expression for bulbs.

§ *Hypoxis Arnottii*, Baker, n. sp.—Tubere magno globoso fibris setosis ubique coronato; foliis productis 5—6 linearibus pedalibus pilis albidis mollibus ubique vestito; scapo semipedali arcuato dense piloso; floribus 6—8 racemosis, pedicellis brevissimis; bracteis lineari-subulatis; ovario clavato dense piloso; perianthii parvuli segmentis facie luteis dorso viridibus pilosis interioribus oblongis, exterioribus magis lanceolatis genitalibus perianthii limbo subtriplo brevioribus; antheris leviter versatilibus; stylo integro.

THE BOTANY OF THE ROCKY MOUNTAINS.

IN company with Dr. Asa Gray, Professor of Botany of Harvard University, Cambridge, U.S., I availed myself of an oft-repeated invitation to us both from Dr. Hayden, the distinguished chief of the Topographical and Geological Survey of the United States Territories, to join the Survey in Colorado and Utah; this we did with the view of instituting a comparison between the floras of these central and elevated territories and those of other parts of the continent, and thus obtaining some insight into the origin and distribution of the North American flora. In order to comprehend the importance of Colorado and Utah as the basis for such investigations, I should state that they occupy a very central position in the continent, and include a section of the Rocky Mountains about 300 miles long and about as broad, namely, from N. lat. 37° to 41°, and from W. long. 105° to 112°.

The mountain region thus limited consists of extensive and often level floored valleys, sometimes many miles broad, and elevated 4000 to 5000 feet above the sea, called "parks" in local topography, which are interposed between innumerable Rocky Mountain ridges of very various geological age and formation, which often reach 12,000 feet, and sometimes 14,000 feet elevation, the maximum being under 14,500.

Those of the so-called parks which are watered by rivers that flow to the east are continuous with the prairies that lie along the eastern flanks of the Rocky Mountains; those watered by rivers that flow to the west are continuous with the so-called desert or salt regions that lie along the western flanks of the range; but the "divides" between the head waters of the streams that flow either way are often low, and the botanical features of the east and west may hence meet and mix in one park.

Such a section of the Rocky Mountains must hence contain representatives of three very distinct American floras, each characteristic of immense areas of the continent. There are two temperate and two cold or mountain floras, viz: (1) a prairie flora derived from the eastward; (2) a so-called desert and saline flora derived from the west; (3) a sub-alpine; and (4) an alpine flora; the two latter of widely different origin, and in one sense proper to the Rocky Mountain range.

The principal American regions with which the comparison will have first to be instituted are four. Two of these are in a broad sense humid; one, that of the Atlantic coast, and which extends thence west to the Mississippi River, including the forested shores of that river's western affluents; the other that of the Pacific side, from the Sierra Nevada to the western ocean; and two inland, that of the northern part of the continent extending to the Polar regions, and that of the southern part extending through New Mexico to the Cordillera of Mexico proper.

The first and second (Atlantic plus Mississippi and the Pacific) regions are traversed by meridional chains of mountains approximately parallel to the Rocky Mountains, namely, on the Atlantic side by the various systems often included under the general term Appalachian, which extend from Maine to Georgia, and on the Pacific side by the Sierra Nevada, which bounds California on the east. The third and fourth of the regions present a continuation of the Rocky Mountains of Colorado and Utah, flanked for a certain distance by an eastern prairie flora extending from the British possessions to Texas, and a western desert or saline flora, extending from the Snake River to Arizona and Mexico. Thus the Colorado and Utah floras might be expected to contain representatives of all the various vegetations of North America except

the small tropical region of Florida, which is confined to the extreme south-east of the Continent.

The most singular botanical feature of North America is unquestionably the marked contrast between its two humid floras, namely, those of the Atlantic plus Mississippi, and the Pacific one; this has been ably illustrated and discussed by Dr. Gray in various communications to the American Academy of Sciences, and elsewhere, and he has further largely traced the peculiarities of each to their source, thus laying the foundations for all future researches into the botanical geography of North America; but the relations of the dry intermediate region either to these or to the floras of other countries had not been similarly treated, and this we hope that we have now materials for discussing.

Our course and direction in America was directly westward to Colorado, where we followed the eastern flanks of the Rocky Mountains for about 300 miles, that is from Denver in the north, to near the borders of New Mexico, ascending the highest northern and southern peaks, and visiting several intermediate parks and valleys, watered by tributaries of the Arkansas, Platte, Colorado, and Rio Grande. From Denver we proceeded north to Cheyenne in Wyoming, and thence westward by the Central Pacific Railway, across the range to Ogden, and the Great Salt Lake in Utah, which lies on the base of the Wahsatch Mountains, themselves the western escarpment of the Rocky Mountains proper in that latitude. After ascending these we proceeded westward by rail through Utah to Nevada, thus crossing the great dry region that intervenes between the Rocky Mountains and the Sierra Nevada, which is variously known as the Desert, Salt, or Sink region of North America, in accordance with the prevailing features of its several parts. It is elevated 3000 feet to 4000 feet, and traversed by numerous short meridional mountain ridges, often reaching 8000 feet, and rarely 10,000 feet elevation; unlike the Rocky Mountains or over the Sierra Nevada, these present no forest-clad slopes, or even a sub-alpine flora.

From Reno, at the western base of the Sierra Nevada, we proceeded south by Carson City, flanking the Sierra for some 60 miles to Silver Mountain, when we struck westwards, ascending the Sierra, which was crossed obliquely into the Pacific slope. There we visited three groves of the "big trees" (Sequoia gigantea) at the head-waters of Stanislaus and Tuolome Rivers, and the singular Yosemite Valley, whence we descended into the great valley of California, and made for San Francisco.

From the latter place we made excursions first to the old Spanish settlement of Monterey, which is classical ground for the botanist, as being the scene of Menzies' labours during the voyage of our countryman, Captain Vancouver, in 1798 (whose surveys are held in the highest estimation by Professor Davidson and the officers of the Coast Survey of the United States), whom he accompanied as botanist. Then we went northwards along the coast range to Russian River to visit the forests of Redwood (Sequoia sempervirens), the only living congener of the "big trees," and almost their rival in bulk and stature. Then to Sacramento, and up the valley of that name for 150 miles to Mount Shasta, a noble forest-clad volcanic cone about 14 400 feet in elevation. Returning thence to Sacramento we took the Union Pacific Railway eastwards, and from the highest station visited Mount Stanford, on the crest of the Sierra Nevada, and Lake Taho, which occupies a basin in the mountains at about 7000 feet elevation, and with which we finished our western journeyings.

Fig. 109.—Agave striata (see p. 556.)

In California the Coniferæ were a principal study, with a view of unravelling their tangled synonymy and tracing the variations and distribution of these ill-understood trees, which attain their maximum development in number of species and in stature on the Pacific slope of the American continent.

The nett result of our joint investigation and of Dr. Gray's previous intimate knowledge of the elements of the American flora is, that the vegetation of the middle latitudes of the continent resolves itself into three principal meridional floras, incomparably more diverse than those presented by any similar meridians in the Old World, being, in fact, as far as the trees, shrubs, and many genera of herbaceous plants are concerned, absolutely distinct. These are the two humid and the dry intermediate regions above indicated.

Each of these, again, is subdivisible into three, as follows:—

1. The Atlantic slope plus Mississippi region, subdivisable into (α) an Atlantic, (β) a Mississippi valley, and (γ) an interposed mountain region with a temperate and sub-alpine flora.

2. The Pacific slope, subdivisible into (α) a very humid cool forest-clad coast range; (β) the great hot drier Californian valley, formed by the San Juan River, flowing to the north, and the Sacramento River flowing to the south, both into the Bay of San Francisco; and (γ) the Sierra Nevada flora, temperate, sub-alpine, and alpine.

3. The Rocky Mountain region (in its widest sense, extending from the Mississippi beyond its forest region to the Sierra Nevada), subdivisible into (α) a prairie flora, (β) a desert or saline flora, (γ) a Rocky Mountain proper flora, temperate, sub-alpine, and alpine.

As above stated, the difference between the floras of the first and second of these regions is specifically and, to a great extent, generically absolute; not a Pine or Oak, Maple, Elm, Plane, or Birch of Eastern America extends to Western, and genera of thirty to fifty species are confined to each. The Rocky Mountain region again, though abundantly distinct from both, has a few elements of the eastern region and still more of the western.

Many interesting facts connected with the origin and distribution of American plants, and the introduction of various types into the three regions, presented themselves to our observation or our minds during our wanderings. Many of these are suggestive of comparative study with the admirable results of Heer's and Lesquereux's investigations into the pliocene and miocene plants of the north temperate and frigid zones, and which had already engaged Dr. Gray's attention, as may be found in his various publications. No less interesting are the traces of the influence of a glacial and a warmer period in directing the course of migration of Arctic forms southward, and Mexican forms northward in the continent, and of the effects of the great body of water that occupied the whole saline region during (as it would appear) a glacial period.

Lastly, curious information was obtained respecting the ages of not only the big trees of California, but of equally aged Pines and Junipers, which are proofs of that duration of existing conditions of climate for which evidence has hitherto been sought rather amongst fossil than amongst living organisms.

I need hardly add that the part I played in the above sketched journey was wholly subordinate to Dr. Gray's, who had previously visited both the Rocky Mountains and California, though not with the same object. But for his unflinching determination tha nothing should escape my notice which his knowledge and observant powers could supply, and Dr. Hayden's active co-operation, my own labours would have been of little avail.

Moreover, throughout the expedition we experienced great hospitality, and enjoyed unusual facilities, not only from the staff of the Geological Survey, but from the railway authorities, who franked us across the Continent, and on all the branch lines which we traversed. *Sir J. D. Hooker in "Nature."*

A PLEA FOR HERBACEOUS PLANTS.

One good of this peculiar season will be, I hope, a more rapid appreciation of herbaceous plants, and that they may have justice done them, and a fair trial given them in the parks, for it is there that new fashions are seen and make their way. It is all very well to be advised to look through the hardy borders at Kew, Chiswick, and Regent's Park, but no one would be attracted by any such examination—rather, in fact, repelled from attempting to grow such a class of plants. Botanic collections must have all good, bad, and indifferent species and varieties massed together in the most untaking although convenient fashion for such gardens; but exhausted soil, and existing, not happy plants (as is the case particularly where the collections are in beds on grass), will never popularise herbaceous plants. There must be a portion of the time spent on them which is at present wasted over the very artificial carpet bedding now so much the rage, and which I hold a true lover of plants must consider but one step above the coloured glass and stone beds of a few years past.

In public parks all fashions, I suppose, are necessary, as all varieties of taste have to be gratified. Each style is sure to please some who can never enjoy a garden of their own, and it is well to have specimens

and the very best examples of carpet and tropical flower and foliage bedding. But why should herbaceous plants not be represented, also beds of hardy Heaths? No weather would destroy these; no month in the twelve would be without a certain amount of flower. The expense and time at first spent on these two classes of plants ought to be sufficient for many years, if the borders and beds are thoroughly prepared, and there be no stinting of suitable soil and the working thereof, without which the beds would be a failure.

I saw a far greater variety of herbaceous plants at Parker's and Ware's, and more attractively grown, than at all the three botanical and horticultural gardens put together. Surely Kew might set the example of a thoroughly good, and, therefore, taking set of herbaceous and Heath beds, or alternate with such excellent beds of Heliotrope (and other sweet-smelling plants) as are there this season. The perfume was delicious from each side as one walked along. Any provincial attempts that I have happened to see of the newest carpet-bedding have been caricatures of the perfection of the same at Clapham, Victoria Park, and Battersea; and the same remark holds good with the tropical style.

I was not surprised, and was glad to hear from Mr. Legg, the inventor of this ultra-artificial style—artistic I believe is the technical word proper to use—that he had to plant with his own hands all the little mounds, and could entrust such portions of his plans to no one. I was not surprised, because such correctness of eye is perhaps one of the rarest gifts one meets with in gardeners; and I was glad because such a style will never instruct and elevate the lover of plants, it is so utterly artificial, and Nature is tortured and mutilated at every turn. All Mr. Legg's perfection of execution is required to make it attractive, and the time and labour lavished seems something frightful. However, one is independent of sun, and rain improves such beds; possibly, too, the eye may be trained to a greater degree of correctness. It struck me this style looked best by gravel walks. The quantity of green groundwork used is to a certain extent lost when the beds are on turf, and the constant manipulation required to pinch off every attempt at flower or ambitious leaf is apt to destroy the turf around the beds. No beauty of beds can make up for imperfection of the turf.

To come back to a trial of herbaceous plants, it has always struck me in a mixed bed or border seasons should be considered even before heights and colours. Thus summer and autumn flowering plants should be alternate, that there be not a blank in the group or line, and between each strictly herbaceous plant there should be a permanent plant of interesting habit or foliage, coniferous or evergreen, perhaps, any way one not dependent on weather or flowering; and in the back rows such subjects as Acers of sorts, cut-leaved and purple Birches, Oak and Hazel, gold-leaved Catalpas and Elders, the finer and small-growing variegated Elms, Willows, and such small trees whose weeping or peculiar growth of spray would come out against the evergreen wall or background with interest when the leaves drop.

There is a great and distinct beauty in a mixture of deciduous and evergreen growths, each lightens up the other, whether in summer or winter. Then pillars of Roses, Clematis, Honeysuckles, Ivies, Cotoneasters of sorts (beautiful both when in flower or fruit), all firmly supported, but not tied and trimmed up like a Maypole; and Hollyhocks, not in stiff rows, but grown in half circles of five, seven, or nine plants, colours properly arranged, as I have seen at Drummond Castle (Perthshire), the effect of which is excellent; grand curves they made into the border.

With Delphiniums, Aconites, Irises, and Campanulas there would be no want of blue of all heights for summer, and in autumn there are other Aconites, Asters, and Salvias. Red and pink can be dispensed with until the great Poppies, Pæonies, Lychnis, and, of course, Roses (of all heights) come on, as with a choice and plentiful background of early flowering shrubs there would be abundance of red, white, yellow, and lilac—in fact every colour save blue. Early Tritomas, Lilies and Œnotheras succeed, and in autumn there is abundance of all colours and heights. Lists of varied and suitable plants are easily made out, and the placing of such, but selection is necessary, and to keep always in view that herbaceous borders are not torn up at the first frost, but will continue saving time and labour, and increasing in beauty, season after season.

I am quite sure such mixed borders would be both instructive and attractive, and when imitated (as all beds and borders are) would create, and in many cases revive, a wholesome taste for hardy plants. The variety might be endless, and the plan, although systematic, and to a certain extent regular, could never be caught hold of like a ribbon border—duplicates when repeated being at long intervals.

This is merely a rough sketch, but I hope it may be worked out by some one in some place where many will see, and be converted to what is called old fashioned borders. *F. J. Hope, Wardie Lodge.*

NEW PLANTS CERTIFICATED

AT THE ROYAL BOTANIC SOCIETY'S EXHIBITIONS, 1877.

*** *B.C., Botanical Certificate; F.C., Floricultural Certificate; both being equal to a First-class Certificate.*

Acalypha Macafeeana.. ..	Veitch & Sons, June 13—B.C.
Acalypha musaica	Veitch & Sons, April 18—B.C.
Adiantum æmulum	Veitch & Sons, March 21—B.C.
,, Capillus-Veneris corymbiferum	Bell & Son, May 16—B.C.
,, neoguineense	B. S. Williams, April 18—B.C.
,, Williamsii..	B. S. Williams, May 16—B.C.
Alsophila philippinensis ..	Veitch & Sons, March 21—B.C.
,, pycnocarpa	Veitch & Sons, March 21—B.C.
Anthurium Brownii	Veitch & Sons, May 16—B.C.
,, Veitchii	Veitch & Sons, June 13—B.C.
,, Warocquianum	Veitch & Sons, June 13—B.C.
Aquilegia hybrida californica..	Douglas, June 13—F.C.
,, ,, cœrulea	Douglas, June 13—F.C.
Aralia filicifolia	B. S. Williams, May 16—B.C.
,, ornata	Bull, June 13—B.C.
Araucaria excelsa albo-spica ..	Bull, June 13—B.C.
Azalea indica imbricata ..	Veitch & Sons, June 13—F.C.
Azalea Rollissoni	Rollisson & Sons, May 16—B.C.
Begonia Gloire de Nancy ..	Laing, June 13—F.C.
Blandfordia flammea elegans	E. G. Henderson & Son, May 16—B.C.
Carnation (tree) Rose Perfection	C. Turner, March 21—F.C.
Cineraria Jane	James, March 21—F.C.
,, Lord George Hamilton	James, April 18—F.C.
,, Mary	James, March 21—F.C.
,, Mrs. Watson	James, March 21—F.C.
,, Mrs. Winter	James, March 21—F.C.
,, Purple Gem	James, March 21—F.C.
,, Sarah Winter	James, April 18—F.C.
,, Thomas Stent	James, March 21—F.C.
,, Thomas Winter	James, March 21—F.C.
Clematis Florence	G. Jackman & Son, May 16—F.C.
,, Countess of Egmont ..	G. Jackman & Son, May 16—F.C.
,, Margaret Dunbar ..	Noble, May 16—F.C.
,, Mdlle. Torriani	Noble, May 16—F.C.
,, Xerxes	Noble, May 16—F.C.
Coleus multicolor	Veitch & Sons—April 18—B.C.
,, pictus	Bull, June 13—B.C.
Croton Andreanus	B. S. Williams, May 16—B.C.
,, Bismarckii	Bull, June 13—B.C.
,, Earl of Derby	Veitch & Sons, Mar. 21—B.C.
,, hybridus	Veitch & Sons, June 13—B.C.
,, M'Arthurii	Veitch & Sons, April 18—B.C.
,, reginæ	Veitch & Sons, June 13—B.C.
,, splendidus	Bull, June 13—B.C.
Cyathea Dregei	Bull, June 13—B.C.
Cycas media	Bull, June 13—B.C.
,, media latissima	Bull, June 13—B.C.
Cyclamen persicum roseum grandiflorum	Edmonds, March 21—F.C.
Cyclamen persicum White Swan	Edmonds, March 21—F.C.
Dendrobium suavissimum ..	Low & Co., May 16—B.C.
Dennstædtia davalliodes Youngii	B. S. Williams, Mar. 21—B.C.
Dicksonia Berteroana	Veitch & Sons, June 13—B.C.
Dieffenbachia Chelsoni ..	Bull, June 13—B.C.
Dracæna Robinsoniana ..	Veitch & Sons, May 16—B.C.
,, terminalis alba	B. S. Williams, May 16—B.C.
Eurycles australis	Veitch & Sons, Mar. 21—B.C.
Gymnogramma Muelleri ..	Veitch & Sons, June 13—B.C.
Hæmanthus Terryi	Roberts, April 18—B.C.
Hyacinth Globosa	Veitch & Sons, Mar. 21—F.C.
,, Marquis of Lorne ..	Veitch & Sons, Mar. 21—F.C.
,, Orange Queen .. .	Veitch & Sons, Mar. 21—F.C.
,, Queen of Lilacs	Veitch & Sons, Mar. 21—F.C.
Hydrangea Thomas Hogg ..	Veitch & Sons, May 16—B.C.
Liparis elegantissima	Veitch & Sons, June 13—B.C.
Lomaria Dalgairnsiæ	Bull, June 13—B.C.
,, discolor bipinnatifida ..	Veitch & Sons, May 16—B.C. B. S. Williams, May 16—B.C.
Masdevallia Chimæra	Veitch & Sons, March 21—B.C.
Microlepia anthriscifolia ..	B. S. Williams, May 16—B.C.
Mimulus, Henderson's strain	E. G. Henderson & Son, June 13—F.C.
,, pardina flore-pleno ..	E. G. Henderson & Son, May 16—F.C.
Nephrolepis Duffii	Veitch & Sons, March 21—B.C.
Odontoglossum vexillarium roseum	Bull, June 13—B.C.
Panax laciniatus	B. S. Williams, March 21—B.C. Veitch & Sons, March 21—B.C.
Pelargonium Bertie	Rev. A. Matthews, June 13—F.C.
,, Sylvia	C. Turner, June 13—F.C.
,, Toby	Foster, June 13—F.C.
,, Venus	C. Turner, June 13—F.C.
,, (fancy) Henry King ..	C. Turner, June 13—F.C.
,, (fancy) Miss Geddard ..	C. Turner, May 16—F.C.
,, (fancy) Mrs. Pope ..	C. Turner, June 13—F.C.
Petunia Mount Beauty ..	Kingsbury, May 16—F.C.
Philodendron Holtonianum ..	Veitch & Sons, April 18—B.C.
Pteris ensiformis variegata ..	Veitch & Sons, June 13—B.C.
Pultenæa rosea	Rollisson & Sons, Mar. 21—B.C.
Rhododendron Maiden's Blush	Veitch & Sons, June 13—F.C.
Rose (H.P.) Emily Laxton ..	Paul & Son, May 16—F.C.
,, (H.P.) Margaret Brassac	Paul & Son, April 18—F.C.
Viola Freedom	Ware, June 13—F.C.
Zamia Roezlii	Bull, June 13—B.C.

PRINCE'S PARK, LIVERPOOL.

(*Concluded from p.* 525.)

THE best view of the flower ground is from an elevated seat of rockwork situated on an island in the lake, which is spanned by a curiously constructed Chinese bridge, which spans the lake at one point of the island. Of the island itself, we may say that it is in true character with its situation, and contains some curiosities of note, amongst which may be mentioned a singular form of weeping Elm which overhangs the lake. This "curiosity"—for such it really is—seems in excellent health; its form is that of an expanded umbrella, but its freaks of growth are singular in the extreme; it warps its branches in every inconceivable way, but the external shape is neatness to a degree—one leaf laps over another as if they had been placed there by some artificial process. The internal appearance gives one the idea of some aberration of Nature, of which I suppose there are not a few instances in vegetable history. Whatever may be the cause the effect is, as we have stated, a "curiosity," and it is no doubt admired by many a visitor to the gardens. The main attraction within the private grounds is of course the flower garden, laid out in grass, and a smaller one of surpassing beauty which is planted in what is known as "carpet bedding," but mixed beds of old favourites and trees and shrubs are also well cared for. Conifers, except the Austrian Pine, will not thrive here, and needless attempts in a hopeless case are not persevered in. There are from seventy to eighty of the newer varieties of hybrid Rhododendrons, and many large specimens of older sorts. To this tribe of plants much care and attention is given, useless varieties being assigned to some out-of-the-way place, and newer varieties as they are nursed up and furnished filling their places. Paul's double scarlet Thorns are amongst the finest samples we have seen, and are in vigorous health. Male and female Aucubas in large plants occupy sheltered places, and in ordinary seasons do well, but this year they are minus their usual crop of berries.

One or two large specimens of Hodgios' Hollies are worthy of notice for the effect they produce in close proximity to a summer-house; here also may be seen the compartively new Virginian creeper, Ampelopsis Veitchii, which is self-supporting, requires no nailing, and when better known will doubtless become a general favourite. Adjoining this summer-house is a beautiful arch covered on one side with Laburnums, and on the other with Clematis verticillata. Circular dots here and there are observed, with a Clematis running up a rustic stick, and having a base of Phlox Drummondii. Whole beds of Fuchsia of the gracilis type are charming for autumn effect, and make good relief beds.

On a sloping bank between clumps of Rhododendrons, by way of variety, are beds of Clematis rubella, edged with variegated Ivy; four circular beds of Clematis Jackmanni, edged with Euonymus radicans variegata are of pleasing and graceful appearance, and are a good change where there is plenty of room for variety. We also notice four beds of Fuchsias, varieties of gracilis, edged with a miscellaneous lot of herbaceous plants which are quite at home in the spot selected for them and are an agreeable change from other arrangements.

A stray scroll on a sloping bank is a novelty in itself from the fact of its being planted with Miss Kingsbury Pelargonium and Verbena venosa, edged with English Oak raised by planting the acorns round the margin of the bed—a novel mode of planting, and curious if not interesting.

Coming to the larger of the two flower gardens from the Liverpool side, we find it occupies a narrow stretch of land which is on a raised slope and debouches from the lake beneath; both ends run out to narrow points, and of course the design is worked out accordingly. In a literal sense, or rather looked upon as a plan, this garden is divided into three sections, the centre forming a large circle which is cut out in appropriate design of flower-beds, both ends running into points almost Pear-shape. There is a relief bed of shrubs in the centre of each section, and four large beds, mainly consisting of shrubs, fill up the intervening spaces between the different sections and run to points in the form of a triangle opposite each other on either side.

To particularise the entire bedding of this garden would be a work of considerable length, so that our remarks must be confined to those arrangements that

were thought most striking at the time of our visit, which was when the garden was at its best.

The first bed is of triangular shape, and is planted with Abutilon Thomsoni, Dell's Beet, Centaurea ragusina, Iresine Lindeni, Mesembryanthemum cordifolium variegatum, and Echeveria secunda glauca. A circle of Lancashire Witch Pelargonium and Viola Blue Bell is also a good arrangement, but to our mind the four mixed beds are the most subdued in tone and are altogether a happy combination of colours; they are planted as follows—the centres with Perilla and Abutilons, then scarlet and white Pelargoniums mixed, Beet and yellow dwarf double Tagetes, scarlet Pelargoniums, and Dactylis glomerata variegata. An oval bed of Miss Kingsbury Pelargonium, edged with a seedling Lobelia speciosa nana, raised by Mr. Mason, is another agreeable arrangement, and is worthy of recognition as a showy bed. A relief bed in the centre of this plot is planted with variegated Hollies, Thujas, hardy Heaths, Euonymus, Daphnes, Gladioli, &c., and finished off with a miscellaneous edging of dwarf bedding plants.

Another very effective combination of colours is worked out on a large scale, and is a simple groundwork of Lobelia edged with Golden Feather, with dots of Centaurea and Beet, Chamæpeuce diacantha, and variegated Pelargoniums; this is one of the grandest beds in the garden.

Oblong beds of scarlet Pelargonium, Aigburth Beauty, with Virgo Marie, with Blue Bell Viola and Golden Superb Nosegay Pelargonium, are very telling; and so are circles of Happy Thought Pelargonium and dwarf Ageratums. Small beds of Sophie Dumaresque and seedling Lobelias go well together, the former growing freely and fine in colour. Double Tagetes, with Lancashire Witch Pelargonium, followed with dwarf dark Violas, and edged with Cerastium, answer well in rotation; and a similar good effect is observable in another bed of Cleopatra Pelargonium, with Viola cornuta Perfection, Little David Pelargonium, and Pyrethrum aureum; whilst Viola Blue Perfection, Pyrethrum Violet Hill, with Centaurea candidissima and Little David Pelargonium, are nothing behind. Beds with the centre and edge of corresponding colours go well, as, for instance, Abutilon Thomsoni, Pelargonium Lancashire Witch, Viola Blue Bell, edged with Golden Feather. Another exceedingly sprightly bed is of Miss Kingsbury Pelargonium, with dots of Verbena venosa, and band of dark Beet edged with Crystal Palace Gem Pelargonium.

Three mixed beds of Canaas and Artemisia argentea, with a groundwork of Lobelias, are prominent and changing features, and occupy important places in the garden when viewed as a whole.

Dark Beet, with double Tagetes, Little David Pelargonium, and Gnaphalium lanatum is very striking; and so is another bed of Bijou Pelargonium, with Blue Perfection Pansy and Pelargonium Memnon, edged with Pelargonium Manglesii. Another form of bedding, all in Pelargoniums, is worked out with Cleopatra as a centre, with band of Virgo Marie edged with Little David. Two large oblong beds planted in design of circles for a centre are planted with Chamæpuce diacantha, dark Violas; next to which is a band of Pyrethrum aureum, with a band all round of Lobelia Blue King, filling in the points between the circles with Mesembryanthemum cordifolium variegatum, and edged with Echeveria secunda glauca.

A match bed to this again, in design of circles, is of Dickson's Beet, Crimson King Verbenas, white Lobelia Purity, Lobelia speciosa nana, Golden Feather, and Echeveria secunda glauca. Mass beds in circles to match are done with Jean Sisley, Königa variegata, with a couple of stray dots of Yucca gloriosa as relieving objects.

We now come to the garden which is set apart for "carpet bedding," and which is the fascinating element of Prince's Park. From various points of the island previously mentioned this garden can be seen in its entirety and in its best dress.

The garden, which is semicircular in shape, is quietly ensconced in a sheltered nook which renders it all the better adapted for the style of bedding to which it is so judiciously set apart by Mr. Mason. The background is composed of a healthy mass of beautiful evergreen shrubs in neat order. On the front it is bounded by the splendid winding lake, with its waterfowl from various climes, its dots of Lilies, and its numerous other attractions.

The planting of this garden is of an artistic description, the plants being selected with due regard to soil and climate, and the arrangements throughout are (as might be expected from a manager of such lengthened experience as Mr. Mason) as near perfection as it is possible to get.

It will be evident, from our description of the shape of this garden, that the two extremities run out to triangular points, and the beds are therefore planted to match, two and two alike. The beds have all "raised edges," with the exception of the small circular ones, all the raised edges being neatly planted with Echeverias. The corner or triangular shaped beds are planted to represent each other with Coprosma Baueriana pegged down, Alternanthera spectabilis, Lobelia pumila grandiflora compacta, and Lysimachia aurea—a beautiful golden-leaved plant. Two oblong beds are designed in five circles of Lobelia pumila grandiflora compacta, surrounded by a band of Alternanthera spectabilis, groundwork of Mesembryanthemum cordifolium variegatum, edged with Echeverias. Further on are two more oblongs on the circular line of the half-circle, planted with Bijou Pelargonium; then Viola Blue Perfection and Golden Superb Nosegay Pelargonium, edged with Echeverias. Crystal Palace Gem, with band of Viola Blue Bell and margin of Echeverias, comprise the arrangement of two more; whilst two beds of dwarf striped Petunias, surrounded by Golden Feather and Echeverias, are significant of useful changes being introduced into the carpet system. Two half-moons of Pelargonium Robert Fish are well together, as are two beds of Pelargonium William Sandy edged with Lobelia Blue King. Next we come to two other match beds, planted carpet in design, with dots of tall-growing Lobelias, followed by Alternanthera spectabilis, Achillea umbellata (a beautiful dwarf-foliage plant), Lobelia grandiflora compacta, and Alternanthera amœna, with a margin of Echeverias. Were there a prize to be awarded, we should award the palm to these truly magnificent beds, which are strikingly effective. The key-bed on the front line is planted with Pelargonium Cleopatra, next to which is Centaurea, followed by Iresine Lindeni and Golden Feather, and edged with Echeverias.

In conclusion we may just remark that, under the excellent curatorship of Mr. Mason, Prince's Park is not very likely to fall behind as a public place of interest, where the most fastidious will find ample scope for their tastes, however complex or varied. *Q. H. W.* [By an oversight the name of the donor of this park was printed in our last issue as Richard Vaughan Bates, instead of R. V. Yates. We hasten to make the correction. Eds.]

THE PRINCIPLES OF GARDENING.

At the annual dinner of the Shropshire Horticultural Society, held at Shrewsbury on Tuesday, October 16, the Earl of Powis, who presided, in proposing the toast of "Prosperity to the Shropshire Horticultural Society," said:—From the earliest ages of the world tribes of the most varied character and different in race have all turned instinctively to the arts connected with the cultivation of the garden and the field as those which called forth the purest instincts in our nature. Whether there are some fixed principles which direct insensibly the imagination to the poetry of our nature, or whether it was the expiring light of primitive revelation and the primitive traditions of Eden, are matters upon which we might speculate and raise ingenious arguments on either side; but the fact is, the bucolic age is, as it has always been, a theme for poets and the ideal of perfection. As time advances, as the human race multiplies, and as cultivation increases, we feel naturally a great interest in everything that relates to the cultivator of the field, perhaps upon the larger scale, and the cultivator of the garden, who is more minute in his processes, for neither can dispense with the services of the other. The jeweller who cuts the diamond into innumerable facets, so as to make it give back the innumerable rays of the sun, cannot afford to look down upon or despise the workers in stone; so the gardener cannot dispense with the field worker. Who gave us the idea of the Corinthian capital, or the Apollo Belvidere? The Corinthian capital owes its existence to the vegetable world—we might say to the gardener, because it was from a plant drooping over some neglected stone that the first Grecian architect derived the idea of that most graceful of all architectural orders. In the cultivation of foliage and the cultivation of wood the gardener and the agriculturist united. The largeness of the trees and the extent of the forests gave to the gardener's cultivation a breadth and imposing appearance.

The gardeners and the agriculturists sometimes became together great elements of natural prosperity. Take, for instance, the cultivation of Tea. In the early days in which this beverage was known to the Western world, in the days when they were told Queen Anne sometimes took counsel and sometimes took Tea, it was taken as a curiosity and sometimes as a liqueur, and the cultivation was exclusively a monopoly of China. By the aid of the gardener and agriculturist, however, it has now become a large cultivation in India, and formed a considerable base to the country's prosperity. Another plant of a more medical character, the Cinchona, or Peruvian bark, which is such a great necessity to the world generally, is also being largely cultivated in India and with great success. These are plants which it was said could not be naturalised in another country, and would not have been if the science of the gardener had not been supported by the larger labour of the agriculturist. At the present time, in the fertile lands of Sicily there is in cultivation a tree called the Eucalyptus, which provides a most valuable timber, and has most wonderful properties of absorbing by its leaves the malaria and bad humour of the volcanic soil. I am also reminded of the late Lord Palmerston, who took an interest in various sports, and would ride down to the Derby, or go elsewhere, and finish up the day by joining in a debate in the House of Commons. He was distinguished by bringing from some distant parts a strong grass, which he had sown on the sandhills of his Sligo estates, and which prevented the sand being driven by the wind over the good portions of the land, and thus spoiling it. In this case the science of the gardener was added to the cultivation of the farmer.

A gardener must be a chemist and a geologist, he must know something of the soil and how it effects the growth of his flowers. Such a plant as the Hydrangea in England produces a beautiful pink, while in Ireland it gives a blue flower, showing that the absence of lime in the soil affects the colour. He must be an engineer to be able to regulate the heating of the hothouses; he must also be an architect, and have a taste for the picturesque if he is to till the modern garden with taste and delight. What is the most difficult of all, he must have good taste, for here in a rich country, where men's fortunes rapidly accumulate, there must be a certain number of persons whose purses increase more quickly than their taste, but because of this the gardener must not desert the lines of beauty, or be captivated by senseless profusion and extravagance. In all these things the gardener of the present day participates in the general progress of science. Mr. Bright at Manchester the other day, spoke of the advantages which had been derived from the mechanical art as applied to railroads by the aid of steam. In gardens a similar improvement has taken place, mechanical art being brought into use to improve the various processes by which houses are heated. The gardener of the present day has greater advantages than those of the beginning of the present century; the old-fashioned stone flue has been supplanted by steam and hot water, which have now been adopted in most conservatories.

When I spoke of the influence which gardening has over the imagination of man, and particularly of poets, I could not bring an instance where it is more strongly shown than by quoting Milton. He was a Republican in politics, and in religion he belonged to the stern school of Puritans, at the time when religious strife made that school assume its sternest character. Yet he records, with a feeling of delight, old stories connected with gardening, and with the old poets expresses the duty of the gardener in a which any professor of horticulture at the present day might approve of and give to his pupils. He says:—

> "To-morrow, 'ere fresh morning streak the East
> With first approach of light, we must be risen,
> And at our pleasant labour, to reform
> Yon flowery arbours, yonder alleys green
> * * * * * *
> That mock our scant manuring, and require
> More hands than ours to lop their wanton growth;
> Those blossoms also, and those dropping gums,
> That lie bestrewn, unsightly and unsmooth,
> Ask riddance if we mean to tread with ease."

And as there is no gardener in existence who does not want just one more man it may console him when he reflects that Milton informs us that Adam in the Garden of Eden felt himself short-handed. In cor-

trolling the bounteous provisions of Nature's gifts and colours, the workers in the gardens of the tropics have as much labour as is given their brethren who toil amongst the deciduous foliage of the gardens in Northern climes. There are many romances connected with gardens. We all remember reading how Proserpine herself cut the Crocus, and was carried off to the infernal regions by rather an ardent suitor. But amidst all the changes since the days of mythology there are still garden parties in which ladies achieve their triumphs, but in a milder manner, for you cannot suppose that they would accept violence from their ardent suitors of the nineteenth century. Among the teeming populations of our great towns the formation of ornamental parks is a great source of enjoyment to all working classes. The amateur of the town who looks to his garden gets an hour of exercise, and is enabled to free his constitution from the depressing influences and close atmosphere of the confined room in which he works.

Those who see in the east of London the pretty plants brought forward by them to compete for prizes at the garden societies' exhibitions, or see the flowers which the Duke of Westminster gathers around him from the school children of St. George's, can feel what a great deal of good this pursuit creates. Neatness and habits of cleanliness are inculcated by the simple knowledge of the cultivation of flowers. I have spoken of principles which ought to direct the gardener. I think he should not endeavour to tie Nature down to any strict formal rule, but accommodate his designs and the various styles to the country in which he is working. A style which may be suitable in a suburban garden at Twickenham, would be out of place on the rocks of Wales, or the undulating woodlands of Shropshire and Herefordshire, and it is by adapting himself to the beauties of the natural features of the district in which he works, and not by forming incongruous designs, however ingenious, that he achieves triumphs in landscape gardening. I again refer to Milton, who says :—

> Let Nature here
> Wanton as in her prime, and play at will
> Her virgin fancies, pouring forth more sweet,
> Wild above rule or art, enormous bliss.

THE GENUS AGAVE.

(*Continued from p. 490.*)

SERIES I.—CORIACEO-CARNOSÆ.—Texture of the leaf rigid, not fleshy, nor yielding to the touch when mature. End-spine large, hard and pungent.

Group VI. Striatæ.—Edge of the leaf without any distinct border, only minutely serrulate or subentire.

* Surface of the leaf strongly, closely ribbed; edge serrulate.

56. *A.* (*Littæa*) *striata*, Zuccarini; Kunth, Enum., vol. v., p. 832; Hook. in Bot. Mag., t. 4950; Jacobi, Monogr., p. 154, fig. 109, p. 553.—Acaulescent, or shortly caulescent; leaves 150—200 in a dense rosette, linear-ensiform, 2—2½ feet long, ¼—⅜ inch broad above the deltoid dilated base, where they are ¼ inch thick and 1 inch broad, narrowed gradually from the top of the base to the point, rigid in texture, not at all falcate in the typical form, glaucous-green, $\frac{1}{12}$ inch thick in the centre, the face rather keeled and the back more so, the point brown and pungent, ½ inch long, the edges minutely serrulate, the surfaces marked with close, distinct vertical ribs. Scape 6—8 feet high, including the inflorescence, furnished with numerous spreading subulate bracts, which are 2—3 inches long. Spike dense, 2—3 feet long; bracts linear from a broad base, shorter than the flowers; pedicels very short. Perianth, including the ovary, 1—1½ inch long; ovary oblong-trigonous, about ½ inch long; segments oblong, brownish-green outside, yellow inside, about equalling in length the broadly funnel-shaped tube. Filaments 1½ inch long, dark brown, inserted low down in the tube; anthers ⅜—½ inch long. Style reaching nearly to the top of the filaments.

A native of Mexico, now common in our collections. One of the most distinct and best known species. There is a full account and a coloured figure of the plant in the *Botanical Magazine*, as above cited, from a specimen from Real del Monte that flowered at Kew in 1856. I have a photograph of a plant that flowered in October, 1876, with Signor Fenzi at Florence. There are several well-marked varieties, of which the following are the most striking.

Var. 1. *A. recurva*, Zuccarini; Kunth, Enum., vol. v., p. 832; Jacobi, Monogr. 158, fig. 110.—Leaves longer than in the type, reaching 3—4 feet, and more or less falcate, narrower (⅛—⅙ inch broad at the middle) and decidedly convex on both surfaces.

Var. 2. *A. stricta*, Salm-Dyck; Jacobi, Monogr., p. 153; *A. hystrix*, Hort.—Leaves about 1 foot long, very stiff, ¼ inch broad at the middle, both faces convex.

Of this the inflorescence is described by Jacobi (*Nachtrage*, ii., p. 86), from a plant that flowered in 1869 in the Botanical Garden at Darmstadt. It also flowered with Mr. Saunders about 1870, and a coloured drawing was made of this plant, which has not yet been published. The inflorescence quite agrees with that of the typical striata.

Var. 3. *A. echinoides*, Jacobi, Nachtrage, i., p. 48; *A. ensiformis*, Hort. Engl.—Still dwarfer and stiffer in habit than in var. stricta, the leaves about half a foot long, ⅛ inch broad at the middle, flat on the face.

FIG 110.—AGAVE STRIATA VAR. RECURVA.

A plant I have seen in the Peacock collection under the name of *A. Richardsii*, comes very near the last. There are good typical specimens of all the four forms in the Succulent-house at Kew at the present time.

57. *A.* (*Littæa*) *californica*, Jacobi, Nachtrage, p. 47; *A. falcata*, Engelm. Notes, p. 16.—Acaulescent. Leaves 20—30 in a rosette, linear-ensiform, 1—1½ foot long, 4—6 lines broad above the dilated base, narrowed gradually to a short pungent point, rigidly coriaceous, flexible, glaucous, falcate, distinctly striated, flat or slightly channelled down the face, the back keeled, the edge minutely serrulate. Scape 3—8 feet long; bracts dry, filiform. Flowers in a dense spike; pedicels very short. Perianth, including the ovary, 1—1¼ inch long; ovary and oblong segments each ⅛—¼ inch long; tube broadly funnel-shaped, ½ inch long. Filaments inserted at the middle of the tube, exserted about 1 inch beyond the segments; anthers above ½ inch long.

Gathered near Saltillo and Buen Vista in North Mexico by Drs. Wislizenus and Gregg in 1846—1848. The two plants named by Jacobi and Engelmann are evidently the same. My description of the leaves

is taken from the Kew plant, and of the inflorescence entirely from Dr. Engelmann. It is still rare in cultivation, and has not been known to flower. Its only close alliance is with A. striata.

58. *A* (*Littæa*) *dasylirioides*, Jacobi and Bouché, Monogr., 150; Hook. in Bot. Mag., t. 5716; (fig. 111); *A. dealbata*, Lemaire; Jacobi, Monogr., p. 152.—Acaulescent. Leaves 80—100 in a dense rosette, linear-ensiform, 1½—3 feet long, ¾—1 inch broad above the dilated base, where it is ½ inch thick, and 1 inch broad, narrowed gradually from the middle to a short brown pungent point, pale glaucous green, rigidly coriaceous, stiff or in the longer forms falcate, flat on the face, and nearly so on the back; ⅛ inch thick in the centre, finely striated vertically, the edge minutely denticulate. Scape 6 feet long, densely clothed with spreading subulate bract-leaves, the lower ones 1 foot long. Spike as long as the scape, often decurved; lower bracts much longer than the flowers; pedicels obsolete. Perianth 18—21 lines long, including the ovary; ovary oblong trigonous, ½—¾ inch long; segments oblong, yellow inside, equalling in length the broadly funnel-shaped tube. Filaments 1½ inch long, inserted near the throat of the tube; anthers ½—¾ inch long.

A native of Mexico, introduced about 1860, and now widely spread in cultivation. There is a coloured figure and full description from a specimen that flowered in the Regent's Park in 1868. A. dealbata of Lemaire is simply a variety with leaves more glaucous than in the type. It flowered some time ago at Reigate, where a coloured drawing was made. The species is one of the best marked of the genus, resembling striata both in the fine ribbing and minute serrulation of its leaves.

Fig. 111.—Agave dasylirioides.

** Surface of the leaf not ribbed; edge not serrulate.

59. *A.* (*Euagave*) *Newberryi*, Engelm. Notes, p. 21.—Acaulescent. Leaves ensiform, 7—10 inches long, ¾ inch broad above the dilated base, narrowed gradually from the base, to the point, rigid, entire, the pungent dark brown end-spine ½ inch long. Scape slender, 8 feet long. Panicle narrow, lax, the branchlets 1—3 inches apart, 1—2 inches long, bearing each 2—5 flowers; bracts lanceolate, about ½ inch long. Perianth including the ovary about 1 inch long; ovary as long as the limb; tube very short, campanulate; segments oblong. Stamens little exserted, inserted low down in the tube; anthers ⅜ inch long.

North-west Arizona, between the San Francisco Mountains and Colorado River, at an altitude of 4000 feet; discovered by Dr. J. S. Newberry in March, 1848. Not yet introduced into cultivation, and known to me only through Dr. Engelmann's *Monograph*.

60. *A. Houlletii*, Jacobi, Monogr., p. 256.—Acaulescent. Leaves, 30—40 in a rosette, oblanceolate, 12—18 inches long, 2 inches broad at the middle, narrowed to an inch above the dilated base, where it is ½ inch thick, narrowed to a brown pungent point ½ inch long, flat on the face, where it is ⅛ inch thick; bright green, not striated, glaucous on the back towards the base, rigid in texture, the edge quite entire. Inflorescence unknown.

History not known. Described by Jacobi in 1865, from the Belgian Gardens. I have seen it in the Reigate and Kew collections, and it is included in Mr.

Saunders' series of photographs. In general habit and leaf-texture it is most like the small forms of Ixtli, and should be compared with the variety Sisalana. This ends the series of the Coriaceo-carnosæ. *J. G. Baker.*

GREENHOUSE HARD-WOODED PLANTS.

THEIR CULTURE AND MANAGEMENT.

ERICAS.—These belong to a very numerous family of evergreen hard-wooded plants, indigenous to the Cape of Good Hope, many of those that have been introduced no doubt being natural hybrids, from the seeds of which have been raised in this country numbers of the finest varieties in cultivation. In fact I know of no plants that have rewarded the patient manipulation of the hybridist better than these: patient, I repeat, for those who essay the raising of new varieties of Heaths need to exercise this virtue to an extent not required by those who confine their operations to plants of a more precocious nature. The most successful raisers of Heaths assert, and I have no doubt correctly, that it takes ten years to raise a variety from seed and propagate stock enough of it for letting out, as the greater portion, especially the hardest-wooded kinds, are slow growers, alike from the seed-pan or the cutting-pot.

As decorative plants Heaths stand second to none in cultivation, although in their individual blossoms they cannot lay claim to the gorgeous character possessed by many plants; but the simple beauty of their flowers, with the profusion in which they are produced, added to their wax-like substance and charming tints—ranging from pearly white all through the shades of blush and pale pink to red and the deepest crimson—render them unsurpassed. Their time of blooming varies in the different kinds so much that by growing even a limited selection they can be had in flower almost the whole year round. Like many other fine families of plants, they have at some times been more fashionable than at others, now and again giving place to things that need less attention and are of quicker growth. Nor is this to be wondered at, for they are by no means the subjects to be taken in hand by inattentive cultivators, or those who attempt to make plants collectively conform to some general course of treatment. Those who undertake to grow Heaths should in all cases realise the fact that they will not submit to a give-and-take sort of treatment, by paying them double attention to-morrow or next week, because their wants were neglected yesterday or the week before. Unless they receive continually the attention they need, it is of no use attempting to grow them. I do not know of any plants better calculated to induce in a young gardener the habits of observation, with continuous care and attention, essential to general success in the pursuit. As I have already intimated, the raising of seedling Heaths is an interesting operation, but, unless in the case of those who are disposed to go into the work in earnest, it is better left undone; and the same applies to raising them from cuttings, which to be successful needs especial care and attention.

In making a selection of young stock to commence with, it is of more than ordinary importance that they should be in a free, healthy condition, as if at all root-bound the chances are that a considerable percentage will die when moved into larger pots. Beginners are frequently tempted to choose plants from the size their heads have attained, rather than from the condition of the roots, which latter is of much more importance, as a comparatively young, small plant that has all along been supplied with enough root-space will quickly outgrow one that is double its size above the soil but cramped for room below. During the autumn up to the close of the year, is the best time to get in the plants, as at this season they are free from soft, young growth, and less likely to suffer from the effects of packing and transit. Another advantage thus gained is that they are in hand sufficiently early to admit of such as require it receiving a shift before the hot weather in spring sets in, which reduces the danger of moving them considerably. The plants thus obtained must be wintered in a cool airy light house or pit; if the latter it should be span-roofed, as the ordinary lean-to structures of this description are rendered too dark by the brickwork, which has a tendency to cause premature destruction of the foliage near the base of the plants, in which case they become much disfigured in addition to the weakening influence it exerts. Elevate them so that they stand well up to the glass in all stages of their existence. There is a two-fold advantage in this; increased light is secured to all parts of the plants, and a freer circulation of air around them—both of equal importance. A night temperature of from 35° to 40°, with 5° higher in the day, will answer for them. They must on no account ever be kept much above the highest of the above temperatures, or it will excite too much growth at a season when it would be highly injurious. The plants should be examined every other day as to their requirements for water, never giving it until it is needed, or withholding it for a single day after it is wanted, applying as much as will moderately moisten the whole of the soil. Look closely over them at intervals to see that they are free from mildew, to which they are more or less susceptible; and if any trace of the parasite is discovered dust the affected plant over with flowers of sulphur, laying it down on its side to keep the sulphur from getting to the soil, whence if washed down to the roots, as would occur in the operation of watering, it would be highly injurious. Allow it to remain on for a few days, after which wash clean off with the syringe.

I have tried the potting of Heaths at different times of the year, and found early, from the latter end of February to the middle of March, the best time for young stock, and September for older specimens; the hot summer months, when shoot-growth has commenced after flowering (a time often advised for shifting large specimens), is the worst possible season that can be chosen, as then the solar heat is so great that it necessitates the admission of a considerable quantity of air to the house in which they are placed, which quickly dries up the soil so as to make the application of water requisite sooner after potting than it should be given with a view to the well-being of the plants by permitting the roots to heal after the more or less breakage inevitable from moving, even when the operation is performed with the greatest possible care. Moderate shifts are the best for Heaths; young plants, say in 6 or 7 inch pots, will bear a 2-inch move—a little more or a little less according to the free or slow growing nature of the variety.

The soil should consist of good peat, varying according to the requirements of the particular varieties. The freest-growing kinds ought to have it somewhat softer, containing more fibre than the hardest-wooded, slowest-growing sorts; the latter also require more sand mixed with the soil than the stronger growers; and if a sprinkling of crocks, broken to about the size of small horse-beans, are added, these will contribute to keep the soil in a sufficiently open, porous condition. It must be borne in mind that the whole family cannot exist if their roots are placed in material that is at all of a retentive nature; on the contrary, it must be such that the water can pass freely through; and as the plants are never intended, or would bear the shaking out and the soil renewing which is practised with many things of a strong-rooted character, it follows that the material used to grow them in should be such as will maintain its porosity as long as they live, and, as Heaths frequently maintain a healthy vigorous condition for a score of years or more, it will be evident that more than ordinary attention should be paid to the selection and preparation of the soil in which they are grown. With these plants more than most things it is necessary to be careful that the soil is not too wet at the time of potting, as if it contains too much moisture it becomes a compact mass, in which the roots never ramify freely, the result of which is that an unhealthy condition of the plant usually follows.

As has been already intimated, the potting of the young stock should be performed about the beginning of March; see that all that are intended to be removed have the ball of soil in which their roots already exist sufficiently moist, so as to avoid the necessity for giving water after they are potted as long as possible, which will give any roots that are broken or bruised in removing the old crocks from the bottom of the balls time to heal up, as water coming in contact with the injured fibres is very likely to cause them to rot upwards. In this way numbers of Heaths, as well as other tender-rooted plants, are lost. Do not on any account disturb the roots more than is unavoidable; disentangling them from the old ball must on no account be attempted. Drain the pots well, using some of the fibrous pieces of the soil to cover the crocks. *T. Baines, Southgate.*

(*To be continued.*)

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Blooming subjects here begin to be scarce, but there are numbers of things that do not come under the denomination of stove plants, which are so far benefited at this time of the year by being subjected to a little warmth, that by being so treated they will flower in a way that goes far to make up for the paucity of flowers from the more legitimate occupants of the stove. Salvia splendens is one of those plants that I have found do better with a little more warmth at this season, its always brilliant flowers when so treated being produced of a size and intensity of colour that renders it unsurpassed for use at the present time; it is the most serviceable grown to a medium size by not striking the plants too early in the season, and somewhat limiting, but not starving them as regards pot-room, making up for the less liberty the roots thus have by free applications of manure-water as soon as the flowers begin to show. By bringing the plants on in a little warmth at two or three intervals they will make beautiful decorative subjects for the conservatory, or furnish flowers for cutting. S. Heerii is equally useful, and comes in to succeed the above, as with similar treatment it will bloom from the beginning of January all through the winter. If the plants of the last-named have now filled their pots very full of roots it will be an advantage to water them exclusively with weak liquid manure. This, like most of the family, makes such a number of roots that it very soon exhausts the soil, which, when reduced to this condition, if not assisted by liquid stimulants is not able to support the plants either to make their wonted quantity of flower or to maintain the foliage in a healthy state. Roses are held in such general estimation that where there is a demand for large quantities of cut flowers many gardeners are expected to produce them all the year round. Where this is the case it is necessary to grow a sufficient number of the Tea varieties to succeed those which were taken indoors some weeks back with a view to enable them to expand the flowers already set upon them; more should now be taken in and placed in warmth, say in a temperature of about 50° at night. If these have been well cared for through the summer they will now be furnished with a considerable number of strong shoots, which should be slightly, not too much, cut back, removing the thinner, weak shoots altogether. They ought to occupy a house or pit, and be well elevated up to the roof-glass, where they will at once start into growth; the shoots thus produced, if all goes well, will soon show flower, and if the plants are well attended to will keep on giving a succession for a considerable time; the stronger growth they make the larger and finer the flowers they produce will be, to promote which they should be supplied with tepid manure-water from the time they are placed in warmth. Before introducing them to the house it is well to make sure that they are free from either aphides or mildew, for the destruction of which I have found nothing more useful than a solution of Gishurst. If prepared two or three days before it is used it will leave much less sediment on the leaves, in this way not necessitating its being washed off with water, and so its effects are more potent. That most useful and continuous flowering of all Abutilons, Boule de Neige, should be grown in considerable quantities everywhere where cut flowers in winter are in demand, as it goes on producing a succession when submitted to a little warmth. Its flowers are alike useful in the choicest bouquet or drooping over the sides of a vase or basket. Of Tree Carnations some should now be placed in a little warmth, and likewise subjected to all the light possible as well as a little more air than the generality of other plants require. It is not much use attempting to grow these Carnations in dark, old-fashioned houses at a long distance from the glass; so treated they may open the strongest buds, but the later successional ones will not come to much. The beautiful Lasiandra macrantha, the dwarf variety, will shortly begin to open its flowers, for although by varying its treatment it may be induced to bloom considerably later, still the present seems to be its natural season. A temperature of 50° in the night is sufficient for it. One of the most useful plants for forcing is the common Laurustinus. I had a number of small standards of this near upon twenty years ago, which were regularly used every winter for a dozen seasons in succession, at the end of which time their heads were not so large as to be cumbersome. The severe cutting-in they were subjected to, by removing some 3 or 4 inches of the shoots along with the flowers, kept them within reasonable limits as to size. They ultimately occupied 12-inch pots, being partially shaken out and repotted in good soil before turning out in the spring when they had been gradually hardened off after forcing. The flowers are much purer in colour when opened in heat than in those produced in the open air. The first batch of Poinsettias, if wanted early in bloom, should now be subjected to a brisk heat. The new double sort will

evidently give a succession. A few plants of Epiphyllum truncatum may also with advantage be placed at the warm end of the stove. *T. Baines.*

ORCHIDS.—The remaining section of imported Orchids still to be spoken of, viz., Odontoglossums, &c., is one to which probably more have turned their attention and energies than either of the classes that have already been treated of. During the last fifteen years so much has been done in Central America in the searching for, collecting, and despatching home these veritable gems, that one is almost led to wonder whether there can now be anything new to find. Such thoughts, however, need not remain long in one's mind, for however much has been done in the days that are gone by, there can be no doubt that there are tracts rich and expansive still unexplored, and that for reasons known to the collectors there are many districts into which it may have been dangerous to force their way, which ere long perhaps even now will be as free and safe for travel as many of those that have been already laid under contribution for the enriching and adornment of our stoves and Orchid-houses. Since Weir and Blunt first journeyed thitherward what numbers of men have been sent on this errand, some losing their lives in their enthusiastic and intense devotion to their love of Nature, and their desire to behold these beautiful forms in their native habitats! Doubtless in the future men, also, will be found still anxious to proceed into the unknown and bring thence the bright and showy forms which, with those we already possess, may charm all who can see beauty in these interesting and often peculiar developments. It is true that vast numbers of Odontoglossums, &c., that were gathered and packed in the beauty and freshness of health, have on being unpacked at their destination presented a totally different appearance, shrivelled leaves, rotted bulbs, a heap of ruin and of loss, to be gazed upon with sadness and regret. Others, however, have arrived in every respect satisfactory, and of these it may be needful to say that when such green, plump and healthy clumps are procurable, they should be obtained in quantity if possible, for then the stage by being set apart for a goodly number can be treated much better than where only a few are at hand. Those, however, who can only obtain the smaller quantities, will do well to go carefully over the plants, cutting away any decayed or rotting portions, pot every piece separately in as small a pot as can conveniently be used, making the plant up almost entirely with small crocks, using just a little moss and peat on the surface, as much as anything to steady the plant; and to stand them altogether on a stage or bed having an ash or sandy bottom; or a little sphagnum moss spread on the stage and pushed in between the pots will answer the purpose better. The object is to keep the plants cool and moist so as not to require very heavy waterings at first, as the nature of the material in the pots would otherwise require. Keep the moss and surroundings very moist, and during the summer season shade from the direct action of the sun; in due time the new breaks will appear and the fresh roots will push away into the soil; gradually the new growths will increase in vigour and then will require regular and plentiful watering at the roots. After the first growth is formed they must be potted into larger pots, when it is again best if they all are stood together, it being so much more handy and better thus to get at them. These for the most part are very impatient of fire-heat, and if received in the spring will require but the least amount; as the summer advances giving none whatever. In the winter the imported pieces are a little more trying to manage, though by no means so difficult as to deter any from getting them and endeavouring to grow them. It is a bad practice to make these up by putting several pieces together, it being almost certain that varieties will differ, for scarcely can two be found exactly alike. Moreover, it may happen that not only varieties but species, differing when in flower as much as Alexandræ does from Lindleyanum, or as Pescatorei does from triumphans, may be found to have been made up in one pot, which having flowered will compel its being pulled to pieces, very often to the loss of one or more of the plants, or the whole of them may be thrown into a long-enduring state of ill health. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

The rapid advance which the season has lately made reminds one strongly of the near approach of winter, and the necessity for being ready to protect all plants that are not sufficiently hardy to stand severe weather. Where the common Fern is plentiful, secure a good supply, which may be stacked up in any out-of-the-way place where it can be conveniently got at. Whenever sharp weather sets in, it will be found most useful for protecting tender Roses, putting round Pampas-grass or any other plants that may require protection. In wet weather straw hurdles may be made which are useful for covering up Calceolaria frames, &c., and if made to project 6 inches or so over the glass it will afford better shelter. The outside of the frames may be banked up with cinder-ashes, broken Fern, or litter of any description, which will secure the plants from severe frost. Turf-pits are easily made, and are useful for storing away hardy plants. As the ground has now had a good soaking of rain, any shrubs or trees in clumps or shrubbery borders that may be growing out of their places will remove better than when the ground was so dry and hard. All ground-work should be pushed forward whenever the weather permits. During inclement weather, when men cannot work out-of-doors, their time may be employed in various useful ways, such as making flower sticks and putting them together in their different sizes, which will save time when these things are required for use. Dahlia roots, if not already secured, may be lifted and stored away for the winter. Gladiolus should be lifted as soon as the stems become ripe, and dried in an airy place before being stored. As the leaves are falling rather earlier than usual the lawns will be sooner cleared, but in the meantime it seems endless work to sweep up and in half-an-hour find the surface as untidy as before it was swept; still the grass, where most exposed to view, must be brushed up once a-day, which always gives a clean and fresh appearance for the time being, and lessens the amount of labour which would otherwise be required if this was not attended to. Roll walks on every favourable occasion. Nothing adds more to the appearance of a garden than having the walks as firm and smooth as possible. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—In a former Calendar we advocated the principle of full exposure to the force of natural elements of those trees of this kind of fruit when subject to a process of pot cultivation after they had properly matured the current year's growth. As this particular subject will not endure the effects of severe frost without sustaining injury thereby, the trees should now be removed into a place where its operation will be noneffective until they be required for forcing purposes or otherwise. As a rule, the best way of obtaining a very early crop of Figs is by means of having trees in pots, and the best method of effecting it is under the old-fashioned method of employing a fermenting bed of leaves or other fermenting matter in the house for generating heat for plunging and other purposes. Under such conditions great care is, however, necessary in order not to promote a too rapid development. At the first outset be content with merely standing the pots on the surface of the bed, and as fermentation in it diminishes and the heat subsides the pots may be gradually lowered and be finally plunged when it has receded to about 65°. For a very early crop, the first batch of trees should be gently excited at about the middle of the present month in a temperature of about 50° at night, 55° during daylight, and 5° or 10° when sunny weather occurs, as a considerable amount of moisture will arise from the bed, and that of a most invigorating nature. No fire-heat should be used unless absolutely required, and only a moderate degree of syringing indulged in for the present. In the most forward of other houses the leaves will be falling off fast. If any insect pests abound, the rule of collecting the leaves every day cannot be too strictly enforced. As soon as possible after the leaves are down, proceed with the pruning, cleaning, and dressing of the trees. Giving the utmost diligence to such matters now will more than fully compensate hereafter for the extra time it may take. In the latest house which contains these subjects there will still be fruit ripening—most valuable, too, at this season; and therefore a nice dry, warm, and airy state should, as far as possible, be preserved, using for the object a little fire-heat constantly. *George T. Miles, Wycombe Abbey.*

THE ORCHARD HOUSE.—Under the influence of an exceptionally fine autumn all kinds of orchard-house trees are going to rest well set with blossom-buds on thoroughly ripened wood, conditions which give every promise of fine crops of fruit next season, provided the trees are properly managed through the winter, but it frequently happens that stone fruits are kept too dry at the root when in a dormant state, and as this is the most fertile cause of the buds dropping in the spring, every pot should now be examined, top-dressed, if not already done, and thoroughly soaked with water. They may then be set moderately close together, and well covered up with dry Fern or litter to prevent evaporation and to protect the pots from injury by frost, should the winter prove severe. Let the ventilators be kept wide open by night and by day as long as the weather continues open and mild, and only close them when the temperature falls below freezing. Trees intended for potting should now be lifted from the open ground. Shorten back all strong roots; use clean carefully crocked 10 or 12-inch pots, ram the compost quite firm, and place them in the coolest part of the house, or plunge in a sheltered but open place out-of-doors. Figs in pots which have been carried to a warm house to finish off the second crop of fruit may, as soon as convenient, be returned to the warmest part of the orchard-house, where, with the protection of dry Fern, they will pass through the sharpest winter uninjured. Stone fruit trees, Pears and Plums growing in the open borders, can only be kept in a fruitful state by following up a regular system of lifting and root-pruning. Have a good supply of pure heavy turfy loam at hand; give each tree a few shovelsful to encourage the new roots, water freely, and after a few days level down and tread the surface soil firmly and evenly all over the borders. If mulching is resorted to the materials used should not be too rich. Dry Fern or stable litter best answer the purpose, and stimulants can be given where the trees are under the strain of full crops of fruit. *W. Coleman.*

HARDY FRUIT GARDEN.

Although the weather of late has had a most beneficial effect in ripening up the wood of fruit trees and developing plenty of flower-buds, the effect of the cold ungenial spring and early summer on Apricots, Peaches, and Nectarines is still seen by the crippled state they are in, which, except in the best districts, are so bad, that numbers will have to be replaced. This is a serious matter for many, as it takes years to get others established and in a bearing condition, but if the mischief is to be repaired there is no help for it but to set to work and plant the largest and best that can be got. Under the most favourable conditions Apricots will canker and trees die off, and therefore where there is much wall surface to keep furnished, it is a good plan to have a few reserve plants ready trained to fall back on in case of emergency. This may readily be done by taking advantage of any bare vacant spaces on buildings of any description where the aspect is suitable, or, failing situations of this kind, by tying to stakes in the way they do in the nurseries. By adopting this course much loss of time is spared, as trees may be so manipulated by root-pruning or occasional transplanting to have them bristling with fruit-buds, and if removed early in the autumn they will bear the following year, whereas such as are ordinarily to be had from the growers will not do so under at least two or three. Even if large trees can be purchased, the carriage comes heavy, and the price is proportionate, so that there is much economy in getting them in a small shape and growing them on till required for filling up gaps. Now that the leaves are fast falling, no time should be lost in procuring as many as are likely to be wanted within the next year or two, as not only will it be much better for the welfare of the plants to get them in thus early, but it is generally an understood thing that first-comers get the pick, and the demand during the present season is sure to be great, so that those who send in their orders early will benefit both ways. That there may be no delay when the trees are received in getting them planted those they are intended to replace should be uprooted, suitable soil prepared and got ready to hand on the spot, holes dug, and, where necessary, drained by putting in 6 inches or so of broken bricks, or by running a sunk gutter of the same along the front of the border. In very retentive soils both may be requisite, but it is generally better to plant on slightly raised mounds than to over-drain, and to correct the adhesive nature of the land by working in burnt clay, sand, or any light earth that will improve its texture and friability. The use of leaf-soil or other vegetable matter for such a purpose is one of the greatest mistakes possible, for unless in a very advanced stage of decomposition it is sure, sooner or later, to generate fungus—a parasite which, when once it fastens itself on the roots of plants, completely paralyses their growth, and eventually kills them outright. I have seen repeated instances of this, especially during the last few summers, the exceptional dryness of which has induced a condition in the soil highly favourable to its being generated, and afterwards spreading in a rapid manner. Where land is not naturally favourable there is nothing like good turfy loam for planting trees in, and the fresher this is the better, so long as the herbage has been rotted down, or has been pared off before carting. If a few barrow-loads of such stuff as this are afforded each plant they will start off vigorously, and at some future time more can be added, in which way they get it fresh as their roots spread, and the labour of moving a quantity of soil is extended over a series of years instead of having to be done all at once, which is a great convenience where there is a deficiency of labour. However poor the nature of the loam may be on no account should manure be incorporated with it, and more particularly if used for stone fruits, as it only induces a crude watery growth; and what assistance such trees require can always be afforded them by applying sewage-water or a surface-mulching during the summer when carrying a crop. Indeed the two are at that time necessary, and are important aids to successful fruit culture, the one supplying the requisite food in a form that it can be immediately made use of, and the other imparting shade to the roots and maintaining the soil in a moist healthy condition by intercepting evaporation. *J. Sheppard, Woolverstone Park.*

THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 3, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Nov. 5	Sale of Dutch Bulbs, at Stevens' Rooms.
TUESDAY,	Nov. 6	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M.; Scientific, at 1 P.M. General meeting at 3 P.M. Clearance Sale at Fillebrook Nursery, by Protheroe & Morris (three days).
WEDNESDAY,	Nov. 7	Sale of Hardy Shrubs and Dutch Bulbs, at Stevens' Rooms.
FRIDAY,	Nov. 9	Sale of Trees and Shrubs, at the Southwood Lane Nurseries, Highgate, by Protheroe & Morris.
SATURDAY,	Nov. 10	Sale of Dutch Bulbs, at Stevens' Rooms.

EVERY gardener is familiar with the white mealy substance in the grain of Wheat, with the white flesh of the Cocoa-nut, and countless similar substances in various seeds. To botanists this substance is from its external resemblance often called the ALBUMEN, but as objections may very fairly be raised to this term, that of perisperm or endosperm is now often used in its stead. The object of this perisperm is very obvious. It is a store-house of nourishment upon which the young seedlings draw before they have acquired the power of feeding for themselves. Hence we often find that in the case of those seedlings which have from the first a well-developed feeding apparatus in the shape of green seed leaves, as in the Turnip or Mustard, the albumen is at the time of germination either non-existent or in very small proportion. On the other hand, where the albumen is abundant, there the seed-leaves or cotyledons are very small and inconspicuous. The difficulty in inducing some seeds to germinate is connected with the fact that the seedling plant is often able to feed upon the albumen, but is not able to shift for itself; hence, when the supply of albumen is exhausted, the seedling fails. This is the secret of the difficulty in getting seedling Cocoa-nuts to grow in this country. They grow for a time—all the time the stores laid up by the mother-plant last; but when these are used up, they seem to have no power to run alone. All this is so well known alike to gardeners and to botanists that we should have hesitated to allude to it but for some very curious experiments which have lately been made M. VAN TIEGHEM, and recorded in a recent number of the *Annales des Sciences Naturelles*. The physiologist just named was anxious to know how the seedling plant got its nourishment from the albumen, and in the course of his experiments ascertained some very curious facts, from which it appears that this albumen in some cases acts as a nursing mother to the young embryo, while in others the young plant merely helps itself to what it finds handy. Albumen of an oily character, such as that of Poppy or Cocoa-nut, undergoes a change of structure and composition—digests itself, in fact, and the young plant does but take up the products of this change in the tissues and constitution of the albumen.

Floury albumen, such as that of the Wheat, is passive. It is changed, and ultimately absorbed and digested by the embryo itself. It is of the nature of food simply, and does not, as in the former case, also fulfil the office of a nursing mother. The germination of seeds, the length of time required for the process, and other matters of much interest to cultivators are thus seen to depend very materially on the nature of the albumen—a fact long suspected, but which has not, so far as we know, previously received so practical an illustration as it has now done in the hands of M. VAN TIEGHEM.

WE are happy to be able to announce that Sir JOSEPH HOOKER will favour us with some notes (with illustrations) on his recent journey in Colorado and California, with special reference to the Conifers of that district which have so much interest for our horticulturists. Sir JOSEPH speaks of forests of Sequoia (Wellingtonia) forty miles in extent, of Junipers vieing in age with the Sequoias and of singular pyramidal form, of trees cut through by natural sand blasts, and of other matters which arouse our interest and excite our curiosity.

—— IT is a fortunate circumstance that many BOTANIC GARDENS, both at home and abroad, have the advantage of proximity to fine architectural features. This association affords some compensation for the ugly arrangements which are thought, very erroneously, to be absolutely essential in a garden whose main purpose is educational. The Oxford Botanic Garden is a case where the proximity to the beautiful Magdalen tower lends an additional charm. The garden at Padua, illustrated in 1876, vol. vi., p. 686, with the remarkable group of buildings adjacent, afford another example. In our present issue we give a view taken from the BOTANIC GARDEN, PISA, with which we have been favoured by Professor CARNEL (fig. 112). The famous leaning tower of white marble here forms a very striking object. Of the garden itself, rich in interesting plants and noble trees, and well administered in all departments, we need not say anything now, but refer our readers to the account published in our number for August 8, 1874.

—— Some time since Mr. ANTHONY WATERER sent us a few leaves of a Vine which we may truly say were magnificent both in size and colour. In size they were as large as the largest dinner-plate and more, in form they were roundish ovate, nearly entire, or with a few minute teeth along the margins. The upper surface was of a rich claret colour, the lower surface covered with reddish felted down. The leaves were so superb in their autumn livery that we lost no time in endeavouring to ascertain to what species they belonged. Mr. WATERER himself could furnish us with no information on the subject. None of the gardeners to whom we showed them recognised them, but in the Kew herbarium, with the assistance of Mr. LE MARCHANT MOORE, we determined them to belong to Vitis lanata, a Himalayan species long ago introduced, but which seems to have been neglected in gardens, or, as is most probable, Mr. WATERER has in some way become the fortunate possessor of a very fine variety, for, as is well known, few plants are more variable than Vines. Moreover, it must be remembered that our determination was founded on specimens which, for botanical purposes, were very incomplete. Nevertheless, we have little or no doubt as to the correctness of our identification. In ROYLE'S *Illustrations of the Botany of the Himalayas* is a brief reference to V. macrophylla as a most conspicuous form, climbing trees, and hanging down in elegant festoons from their tops. This form, singularly enough, is only thus briefly mentioned, and the name has not been taken up botanically, so far as we can find, either by ROYLE himself or by any subsequent writer on Indian Vines. Professor LAWSON, in his Monograph of Indian Vines in HOOKER'S *Flora of India*, makes no mention of it, but gives the following account of Vitis lanata:—"Branches, petioles, and cymes more or less pubescent or tomentose; leaves cordate-ovate or shortly acuminate, membranous; peduncle bearing a simple or branched tendril; petals cohering at the top. Vitis Labrusca var. γ Regel; Kumaon, 6000—7000 feet; Kashmir, 1000—4000 feet. A very variable plant in the size, shape, and vestiture of the leaves." It is then, to say the least, probable that ROYLE'S V. macrophylla may be intended for our present plant, and that it is a variety of V. lanata. Be that as it may, we trust Mr. WATERER will speedily propagate and distribute this noble Vine.

—— The twenty-fourth annual general meeting of the SCOTTISH ARBORICULTURAL SOCIETY will, by the permission of the Regius Keeper, be held in the rooms at the Royal Botanic Garden, Inverleith Row, Edinburgh, on Tuesday, November 6, at 11 o'clock—the Right Hon. W. P. ADAM, of Blair Adam, M.P., President, in the chair. The following papers submitted by members will be read:—1. On Schools of Forestry. By Rev. J. CROMBIE BROWN, LL.D. 2. Note on a Liquid for Protecting Young Plantations from Game. By WILLIAM LENNOX, Assistant Forester, Kelly. The following subjects selected at the last annual meeting will be discussed:—1. Woods for Making Different Kinds of Charcoal, and the Modes of Preparing it. Discussion to be opened by Mr. ROBERT BAXTER, Forester, Dalkeith Park. 2. Cryptogamic Plants Injurious to Forest Trees, and their Remedies. Discussion to be opened by Mr. MALCOLM DUNN, The Palace Gardens, Dalkeith. The anniversary dinner of the Society will take place in Robertson's Albert Hotel, 25, Hanover Street, at 4 o'clock precisely. Dr. CLEGHORN will act as Chairman, and Bailie METHVEN and Mr. WILLIAM M'CORQUODALE as croupiers.

—— Rarely have we seen the MARKET GARDENS OF MIDDLESEX better cropped with winter produce, or that produce looking more favourably, than at present. Breadths of Broccoli, Coleworts, Brussel Sprouts, and Savoys, alternate with winter Onions, Spinach, Turnips, and other vegetables, and Wallflowers and Violets are blooming early and freely. Already the welcome rains have brightened up the crops, and they have regained that rich green hue so characteristic of the winter greens during a growing autumn. The rains that fell so freely in the summer gave a capital opportunity for the getting out of all kinds of plants, and now the winter green crops are most abundant. Turnips have been and are unusually plentiful. The well-known beetle or fly has had a bad time this season, and in many places has hardly been seen. The excellence of the Turnip crop is also most marked, the roots having grown quickly and yet not with too much luxuriance. Collards are seen in large breadths of tens of thousands, looking as even as if mown with a scythe, a fact that speaks well for the admirable quality of the seed stock from which they are raised. The taste for spring Onions would seem to be growing, as large breadths of these are sown and look just now like broad patches of young grass; growers find it to be of the first moment to have these well hoed and thoroughly cleaned before the winter sets in, otherwise the weeds might soon overgrow the crop. The early flowering of the breadths of Wallflowers is giving some additional work to the labourers, both men and women, and are most welcome to the grower, who has none too much just now that is in active demand; the same might be said of the Violets, all of which are blooming very early and most freely. Lee's Victoria Regina, where grown as a market plant, is giving the greatest satisfaction because of the great size and rich perfume of its flowers. Owing to the unsettled state of trade, and the general] or comparative emptiness of the fashionable part of the Metropolis, no very large demand for winter green stuff has yet set in, but there will be a call presently, especially if hard weather should ensue. Market growers are not unfeeling, but they will not be sorry if the winter be rather more severe than usual!

—— A meeting of the committee of the NATIONAL ROSE SHOW took place recently in the rooms of the Horticultural Club, at which a statement of accounts was submitted, showing a deficiency of something like £57. The sum of £127 remained unpaid to five of the largest prize-takers, and these generously resolved to take only 50 per cent. of the prize money, so that the balance-sheet might be closed after the accounts had been submitted to an auditor. The subscriptions and donations from something like 300 members amounted to £67. It will thus be seen that a National Rose Exhibition, started under the most favourable auspices, and to all appearance supported by the strength of the rosarians, has failed to pay its way. The meeting, which may be said to have fairly represented the National Rose Society, as yet strongly in favour of holding an independent exhibition in London about the last week in June, instead of accepting offers from the Alexandra Palace, Royal Aquarium, or Crystal Palace, and the Agricultural Hall and the Floral Hall were named as offering the necessary accommodations. A sub-committee was appointed to make enquiries as to the fitness of these places, and the terms on which they could be had for the purpose. It was felt by the committee that encouragement should be held out to the Northern growers of Roses in the shape of a Northern show, and a suggestion that it should be held at Preston in connection with the provincial meeting of the Royal Horticultural Society was favourably received. Mr. H. K. MAYOR has ceased to be one of the hon. secretaries of the Society, and the

FIG. 112.—THE BOTANIC GARDEN, PISA, WITH THE LEANING TOWER.

hon. secretaries are now the Revs. H. H. DOMBRAIN, J. B. M. CAMM, and Mr. EDWARD MAWLEY, the latter gentleman being a most active and valuable member of the committee.

—— In Covent Garden Market a few days since might have been seen dense clusters of some small fruits which in the way exhibited might well puzzle a botanist; closer examination, however, showed that they were the fruits of the WILD SERVICE, PYRUS TORMINALIS, strung together so densely as to resemble the dense mass of fruit which some Palms bear. Mr. BERKELEY tells us that in some parts of Northamptonshire the tree is so abundant that the fruits are strung together as we have described, and borne in procession at the village feasts. The fruits should be bletted, like the Medlar. The wood of the tree is hard, and valuable for many ornamental purposes. It is not uncommon in Kent and other counties. It is necessary not to confound these wildings with the true Service tree, Pyrus or Sorbus domestica, of which a tree did exist some years since in Wyre Forest, and of which an account with illustrations was given in our columns, 1874, vol. i., p. 283. We learn from Toulon that the fruits of the true Service are at the present time largely sold in the markets of that city. The fruit is much larger than that of the common Service, and cannot be mistaken by any one who has ever seen the two. The character of the tree and the foliage are very different in the two cases.

—— At this dull time of year, when flowers even in greenhouses are scarce, we may recommend DIDISCUS CŒRULEUS to the notice of our readers. The plant has much the general aspect of our wild blue Scabious, but it is nevertheless an Umbellifer of some interest to botanists as well as to gardeners. Another plant less often seen than its merits warrant is Gesnera insignis, a noble-looking species, with bold ovate downy leaves and terminal panicles of large lilac flowers like those of a Foxglove in shape. IMPATIENS JERDONÆ is likewise a stove plant, not nearly so much grown as it ought to be; its quaint flowers, with their scarlet and gold livery, are sure to attract attention wherever seen. Astelia Banksii, a plant for a cool conservatory or winter garden, with its grassy leaves, elegant habit, and dense inflorescence covered with white down, has the advantage of being almost always in flower. The foregoing plants are at the present time noticeable at Kew.

—— Mr. WILLIAM BAILLIE, one of Mr. DUNN's foremen at Dalkeith, has just left there to succeed Mr. ISAAC MASLIN, as gardener to ROBERT FELLOWES, Esq., Shotesham Park, Norfolk. Mr. BAILLIE is a man of excellent ability, and no doubt will do credit to himself and the place he takes charge of.

—— Dr. GEORGE BENNETT, of Sydney, has favoured us with the following notes on the NATIVE POMEGRANATE OF AUSTRALIA (Capparis Mitchellii), and the larva of a butterfly (Pieris teutonia) which feeds upon it:—During the month of January the native Pomegranate tree (Capparis Mitchellii) is seen profusely in flower. It is a tree of moderate size, growing from 10 to 25 feet high, and when in full blossom is of great beauty, the white flowers contrasting with the bright green foliage. The wood is hard and close-grained. It is known in the colony of Queensland as the "Native Pomegranate," and is eaten by the aborigines, who name it "Moquile." It is also found about the Namoi, Liverpool Plains, Upper Darling River, &c., in the northern part of New South Wales, where it is named "Bombal" by the aborigines. A fine specimen of the fruit which I examined was extremely woody, of a dark green colour, and measured 2½ inches in diameter, with a thick and woody pedicle 3½ inches in length. The fruit when ripe has a powerful and agreeable odour, very much resembling the fragrance of the flowers of the Magnolia fuscata. In 1869 I for the first time observed that the foliage of this tree, as well as that of another species, Capparis lasiantha, both growing in the Botanic Garden at Sydney, New South Wales, were almost destroyed by the larva of a butterfly (Pieris teutonia). I observed them in every stage, from the larva to the butterfly. This insect confined its ravages to the Capparis only, leaving all other trees in the garden untouched. This continued every subsequent year until in November, 1875, the caterpillars were observed to have commenced to feed upon the foliage, when a man was deputed by the director of the gardens daily to collect and destroy them, the result of which was that their ravages were arrested, and the trees appeared that year in full foliage and blossom, and in the following year but very few were seen, and soon destroyed.

—— M. MARCHAND, writing in the *Bulletin d'Arboriculture*, mentions that the natives of Lower California make use of the ECHINOCACTI, which grow in such abundance in the mountains, as food. The plants are thrown into boiling water, by the aid of which the spines are removed, slices of the Cacti are then fried as Aubergines are cooked in Europe, and, thus treated, they constitute, according to M. MARCHAND, a very delicious vegetable.

—— One excellent quality of the old favourite VERBENA VENOSA is that rabbits will, in general, not touch it. Why do we not more often see this very desirable old plant?

—— The CHRYSANTHEMUMS IN THE INNER TEMPLE GARDENS are now fast coming to their best, and all who intend seeing them had better pay them a visit during the next fortnight. Mr. NEWTON evidently relies upon old favourites, as there are only three or four new varieties in the collection this year, of which Gloire de Toulouse, a bright rose-coloured flower with a white centre, and Cossack, a pretty maroon and yellow, are the most noticeable. Among the old ones special mention may be made of Elaine, large snow-white; also James Salter, a pretty mauve; Golden Beverley, fine large flower; Lord Derby, a dark purple incurved flower; Gloria Mundi, a large golden-yellow flower; Plenipo, a rose-purple, with a silvery shade, &c. The gardens will, by the kind permission of the Benchers, be open to the public during the continuance of the show.

—— A plant of DIPLADENIA BOLIVIENSIS, trained along the roof of the small span-roofed Orchid-house at Ealing Park, the residence of J. S. BUDGETT, Esq., is now in fine bloom, and flowers with great profusion. The plant is in a pot standing on one of the side beds, and the shoots are carried lengthwise along the roof trained to wires. Mr. EDWARDS, the gardener at Ealing Park, states that he can cut blossoms from it all the year round, but that it is especially valuable at this season of the year, when white flowers are scarce. The blooms show themselves oft to excellent advantage when placed on the dining-table in specimen glasses.

—— One of the best forms of the IMPROVED SOLANUMS can now be seen at Ealing Park. In one house there are about six dozen plants of a singularly compact short-branched habit of growth, and completely laden with large bright coral-red round berries. The peculiarity about the strain is that as the berries colour they appear to thrust themselves outside the leaves, and they are thus fully exposed to view. About a month ago the plants were lifted from the open ground and potted, and they have not lost a leaf by the process. As soon as the berries were set the leading shoots were pinched back. The variety is an invaluable one for decorative purposes at this season of the year, and Mr. EDWARDS is growing a great quantity of it for the purpose.

—— CHRYSANTHEMUMS generally are blooming very late this season, and it has been found expedient to advance the dates of some of the shows a week or ten days beyond the time originally fixed. The plants were late in getting into growth, and the absence of sun greatly retarded the plants. Some collections have yet a great deal of lee-way to make up, there being scarcely the appearance of a bud approaching the expanded state.

—— Of all the COLCHICUMS, the double-flowered form of C. officinale appears to be the most desirable, as the blossoms are large, fully double, and they remain a considerable time in flower. It is very free of bloom also. Strong bulbs throw up a large quantity of flowers.

—— It is interesting to notice how thickly set with berries the COMMON HOLLY appears to be generally. The yellow-berried variety is very fertile of fruit also, and now that the berries are rapidly taking on their colour they are daily becoming more attractive. There should be no lack of berried Holly at Christmas if what can be seen round London is general throughout the country.

—— Many beautiful species and varieties of AUTUMNAL CROCUS are now in flower at Kew. C. byzantinus has a nearly blue perianth and is without veins of colour; it is very ornamental, and from its comparatively small inner segments is at once distinct in effect and safe from confusion with others. It has been considered rare, and is often grown as C. iridiflorus. The well-known C. speciosus is decidedly the most showy of all; its flowers are large, deeply coloured and beautifully veined. Fortunately it grows freely, sometimes being almost a weed, and would certainly be of great value in pots for the conservatory. C. pulchellus is nearly allied to this but much smaller, its flowers are pale lilac with beautifully defined veins. C. longiflorus and the variety melitensis are in flower together, and of the two we much prefer the type which has the larger flowers and deeper colour. The perianth is rosy lilac, presenting with the deep orange-red stigmas a rich glow of colour. C. Boryi var. lævigatus is pretty and distinct from others in bloom, its flowers are cream coloured with a yellow throat and orange stigmas. Another variety, C. Orphanidis, is interesting from its feature of remaining open during the night and dull weather; it is of delicate mauve colour, with white anthers and yellow stigmas. This is extremely rare. The perianth of C. cancellatus is pure white with yellow throat, the anthers are yellow, and the stigmas orange-red. It again is somewhat rare, though common in a wild state under several forms. C. Clusii has pale lilac flowers with in this case narrow acute segments. There are nice clumps of C. medius, a species rare in a wild state, and confined to the north-west of Italy and the adjacent corner of France. The perianth is lilac, with darker lines about the throat. It is ornamented with stigmas much divided, even to the condition almost of a little tassel. C. serotinus is a rare and pretty species, with pale lilac flowers, described as having much the appearance of Colchicum autumnale. A variety of this, C. Salzmanni, also rare, and a native of Tangiers, brought hither in a living state by Sir JOSEPH HOOKER a few years ago, concludes the list of those at the present moment in bloom. C. nudiflorus is now over. We are pleased here to note that true C. sativus, said by mistake in one of the journals lately to be absent and not known in another botanic garden. It is also grown at Chelsea, and in at least one nursery as C. saffranus. These autumnal Croci are worth much more attention than they usually command, and some at least should have glass protection from the inclement weather of the season.

—— CRASSULA RUBICUNDA, in bloom at Kew, is deserving of mention for its highly ornamental and uncommon character. Several stems proceed from a common base, bearing above a large mass of red flowers similar in effect to Rochea. The width across the top is about 1 foot, and the height is a little more. The leaves are narrow, 5 inches long below, passing upwards into the bracts. It makes a good specimen, and has the advantage of flowering with certainty at a season when flowers are scarce. A native of the Cape of Good Hope.

—— AT AMERICAN WEDDINGS the bride and bridegroom during the ceremony often stand beneath a bell formed of exquisite flowers. The idea is so pretty, says *The Queen*, that a contemporary recommends it to those who may be busy decorating a church or a house on the occasion of a marriage. No expense or trouble is spared, the choicest blooms being used; and these bells cost sometimes as much as £20. In the matter of floral decorations English people are wont to keep much in the same track, and might, if they were so minded, learn many novelties from abroad. In Denmark, for instance, charming oval wreaths are formed of the long fronds of the Filix-mas Fern, the points meeting at the top, while the stalks are hidden at the base by flowers of vivid colour, contrasting well with the green leaves which seem to spring from them. The oval wreaths are generally about 10 inches high.

—— At a recent meeting of the Paris Academy of Sciences, MM. SERRÈS and RÉRAT read a paper on the employment of Colza and Rape, sown in vineyards to preserve the Vine from frost. The seeds are sown in October or November, and by May, when the frosts are most to be feared, the plants have

grown to more than a metre in height, giving good protection. When the frost is fairly gone, the Rape or Colza is cut, and the Vines then grow with more vigour.

—— Those who cultivate Auriculas are often found asserting that it is one of the most satisfying plants to grow, because it always centres about itself so much of continuous interest. A fine old florist once remarked, "If I could grow but one flower it would be Auricula," and Auricula cultivators generally would endorse this remark. The plants are delightfully active just now, putting on their autumnal growth, and the delicious mild weather brings out the charming leaf dress in its pleasantest form. The varieties with mealed foliage appear at their best when they have put on their autumn garb, and especially is this true of Taylor's Glory, Smiling Beauty, Catharina, Earl Grosvenor, Lord of Lorne, White Rival, Vulcan, Pizzaro, C. J. Perry, Martius, Mrs. Sturrock, &c., and it is also remarkable how varied in character the mealed leaves are. In a collection of fifty Auriculas there will be found great diversity of leaf form, for the plants appear to be as far removed as possible from anything like monotony or sameness of appearance in the leaf garb, for let the thick dark green leathery leaves of Colonel Taylor, Lancashire Hero, and George Lightbody be compared with the narrow pale coloured pointed leaves of Richard Headly; the long bold-toothed leaves of Colonel Champneys, and the rounded jagged leaves of Dr. Horner; and these contrasts may be pursued with unceasing interest, and to a considerable extent. It may be remarked that Mr. Read's new grey edge, Dr. Horner, appears to be what the Auricula fanciers term a "good doer," a small plant received a short time since is putting on a vigorous growth. So far there appears a prospect of a good and early bloom—a good bloom because the autumn growth is generous, and the plants are forming those stout filbert centres cultivators like to see at this season of the year; and an early bloom because the plants have been making a good growth almost uninterruptedly since the time of potting. But much will depend on the character of the early spring.

—— The committee of the Newcastle-on-Tyne Botanical and Horticultural Society have with commendable alacrity issued the schedule of prizes for their spring show, which is to take place on April 3 and 4 next. Many societies might take a leaf out of the Newcastle book, for it often happens that schedules of prizes are not issued till two months or so before the show takes place —a haphazard state of things for exhibitors. In looking over the Newcastle schedule we cannot but regret that in the leading class for thirty-six Hyacinths, three bulbs in a 7-inch pot, it is set forth the Hyacinths need not necessarily be grown in the pots in which they are exhibited. It would have been much better to have had a class for thirty-six Hyacinths, grown singly in pots, and the handsome prizes in this class would be certain to bring a good competition. As now expressed the terms are unusual, and favourable to making-up, which is a reprehensible practice in relation to horticultural exhibitions. We are glad to see that all special prizes are swept away from the schedule, for last year many of these were of a most objectionable character.

—— Some fine New Picotees, raised by Mr. Robert Lord, Todmoden, and highly recommended by Mr. E. S. Dodwell in the *Florist and Pomologist*, are now being distributed by Mr. J. Booth, Failsworth. Miss Horner, heavy rose edge; and Fanny, medium purple edge, were much admired when shown at the exhibitions of the National Carnation and Picotee Society. Mr. Dodwell, a fine rose flake Carnation, is also included in the distribution. Mr. Dodwell reports that this variety "exhibits qualities of the highest excellence."

—— Mr. G. Summers, lately of Mentmore, is appointed to succeed Mr. Hall as gardener to the Earl of Scarborough, at Sandbeck Park.

—— Mr. Thomas Todd, late gardener at Roby Hall, near Liverpool, has been appointed as gardener to J. Sloane Stanley, Esq., The Paultons, Romsey, Hampshire.

GROWTH OF BEET.

In the course of the summer of 1875 I had occasion to take a few observations of the root-growths of some of our garden vegetables, and possibly a note of the rate of growth, that is of the upward or downward progress made weekly at selected points marked along the greater portion of one Beetroot, may be of some interest.

The observations were taken by driving a stick (A A

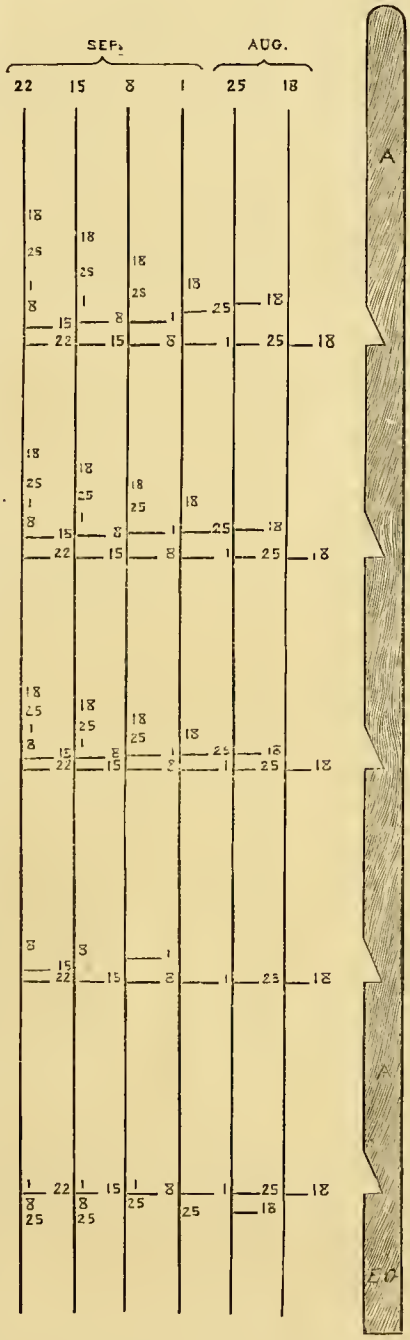


Fig. 113.—Diagram illustrating the growth of beet.

in the diagram, reversed in the engraving, fig. 113), with notches cut in it at distances, firmly into the ground, close to the root, inserting a good sized pin horizontally (weekly) into the root opposite each of these notches, the pin newly placed each week thus giving an easy method of measuring the exact rise or fall which its precursor had made in the previous week from its position exactly opposite the notch. The five vertical lines, with the dates marked above, give the days of examination in August and September, and the short horizontal lines on each vertical one give the exact measure of growth between the date noted opposite the lowest part of each notch and the one immediately above or below, as circumstances of growth during the week may have placed it.

The figures without horizontal lines show approximate measurement, but not perfectly exactly given like those opposite the notches, the difference in measurement in these small spaces being difficult to note from week to week with certainty.

By glancing at the diagram the growth will be seen to have been very regular at the three upper points, the collective measurements showing a rise of the marking-pin of about three quarters of an inch in five weeks, at the topmost point of measurement, rather less at the second, and less still (rather under half an inch) at the next (the third from the top); but in all these places the growth was upwards, while in the two lower markings the growth was variable, the fourth marking from the top showing no vertical movement, except in an upward direction in the third and fifth weeks of observation; and the fifth mark (placed as near the extremity of the root as it could conveniently be fixed) will be seen to have first progressed downwards and subsequently to have been stationary, then again carried upwards, then downwards, and in the fifth week again stationary.

The Beetroot was of moderate size, and in ordinary circumstances, except in having the earth removed from one side during a few minutes once a week for examination, and the measures give a natural sequence, or extension of growth, except from September 1 to 8, when there was an upward growth at the fourth mark, which, combined with that below and the lesser one above, must have been accompanied with a considerable horizontal enlargement to allow of it taking place. This horizontal extension, however, I had no means of measuring, without disturbing the ground round the root to a degree probably interfering with its steady growth. In a few Carrot and Parsnip roots under observation from about the beginning of August to the end of September the downward progress of the top of the root, sometimes accompanied by the marked point immediately below, being stationary, was traceable week by week. It would be interesting, if possible, to find in these roots differing from the Beet in the great spread of the upper part what is the simultaneous amount of vertical and horizontal growth. This, however, I was not able to manage. I should add that in the diagram of the Beet the five groups of measures are put near together for convenience of space, the root itself was of ordinary size. *O.*

VEGETABLE REMAINS IN THE EGYPTIAN MUSEUM AT BERLIN.

A few years ago the late Alexander Braun delivered a lecture before the Anthropological Society of Berlin on the "Remains of Plants in the Egyptian Museum at Berlin." The notes for this lecture having been found amongst the deceased's papers, Doctors Ascherson and Magnus thought it was due to the memory of their revered preceptor that they should be made public, and they have accordingly published them in the *Zeitschrift für Ethnologie.* We have been favoured with a reprint, from which we have made the following extracts and abstracts. There are numerous interpolations by the Editors, which it is not necessary to distinguish here. The remarkable discoveries of Professor Oswald Heer in connection with the pile dwellings of the Swiss lakes was the inducement to begin the study of the remains of plants from ancient Egyptian sepulchres, &c., and the fact that Heer determined the Flax he found to be Linum angustifolium, and not the now universally cultivated L. usitatissimum, first led to an examination of the Egyptian remains. L. angustifolium is a perennial species, differing from the annual L. usitatissimum in its numerous stems from the same root, and in its seeds and seed-vessels being only half the size. [L. angustifolium is sometimes annual, and no wild original of L. usitatissimum is known.] As Heer was of opinion that the inhabitants of the pile dwellings were of African origin, it would be particularly interesting to know what kind of Flax was cultivated by the ancient Egyptians. The material at hand was, however, very meagre, only three seeds being found, and it was open to doubt whether they had been intentionally or unintentionally introduced in the collections. One of these seeds belongs to augustifolium, whilst the other two are those of L. humile, Mill. (L. usitatissimum, var. crepitans, Schübl. and Martens). The capsules of L. humile burst open when ripe, whilst those of the form com-

monly cultivated in Central Europe remain closed. Moreover, the Flax seeds found were mixed with those of two cultivated plants, namely, Lactuca sativa and Nigella sativa; but the occurrence of Linum humile is interesting, because this is the only species cultivated in Abyssinia, where the seeds are largely consumed by the poorer classes as food. It is not impossible that this was the form cultivated by the Egyptians.

Professor Unger conceived the idea of dissolving the unburnt bricks of loam and straw largely used in construction, even in some of the pyramids, for the purpose of detecting vegetable remains accidentally or purposely present; and he found a portion of a capsule of a Linum, which he determined to be L. usitatissimum. It is probable, however, his determination merely excluded L. angustifolium, and that he had not taken L. humile into consideration; be this as it may, it ought not to be difficult to ascertain in some of the collections of antiquities what species really was cultivated by the Egyptians. That they grew Flax on a large scale is proved by the fact that their mummies are swathed in linen cloth, and Unger calculated that they cultivated it upwards of 5000 years ago. Although nothing positive resulted from the examination of the Flax seeds, some of the other vegetable remains are highly interesting. Amongst the organic remains detected by Unger in unburnt bricks of undoubted antiquity was Eragrostis abyssinica, or Teff, a grain cultivated up to the present day in Abyssinia. This discovery favours the assumption that Teff was cultivated by the ancient Egyptians. In the Berlin collection there is some Wheat (Triticum vulgare), mixed with which are a few scattered grains of Barley; and Unger found grains of T. turgidum (the prevailing kind now in cultivation in Egypt), and Spelt (T. Spelta), and perhaps also T. monococcum, neither of which are employed at the present time. Unger also ascertained the fact that from the abundance of Wheat and Barley straw in the bricks of the pyramids of Dahschûr, these cereals must have been extensively cultivated. Numerous grains of Triticum vulgare antiquorum likewise occur in the bricks, and this same variety was found by Heer in the remains of the lake dwellings. The Barley was recognised by portions of the ear to be that of Hordeum hexastichum. The statement respecting the germination of Wheat from ancient Egyptian sarcophagi was long ago shown to have been based on a deception, and needs no further refutation any more than the fable of a bulb taken from the hand of a mummy afterwards growing.

With regard to the Papyrus, Cyperus Papyrus, it includes, without doubt, the inconstant forms with upright and deflected branches of the inflorescence. Different parts of this plant were used for a variety of purposes, as paper, for plaiting, and the starchy rhizome as an article of food. It is worthy of note that a plant once so abundant in Egypt is no longer to be found in that country, whereas in Syria and Sicily, whither it was probably carried from Egypt, it is perfectly naturalised. It is indigenous on the river banks of Tropical Africa, probably extending southward to Natal. The tuberous roots of Cyperus esculentus, a plant still cultivated in Egypt, &c., are among the remains.

Apparently the Date Palm had about the same range of old as it now has, being very abundant in the tombs. The real home of the Date is doubtful. Whether the small form found on Mount Sinai is really indigenous or only a colonist is uncertain; but it has an edible fruit. The fruit of the Doom Palm (Hyphæne thebaica) is less common. This fruit, which is of a large size, has the peculiarity that often two and sometimes three of the original ovules develope into seeds, whereas in the Date, Cocoa-nut, &c., never more than one reaches maturity. This is quite new to us; we have seen large numbers of the fruit of Hyphæne thebaica, but never saw one with three or even two of the cells and seeds developed, and Martius says the fruit is usually simple rarely with two or three cells developed. Dr. Ascherson should know, however, as he has travelled in Egypt and the Libyan desert. A third Palm fruit, found in Egyptian tombs, puzzled botanists for a long time. Kunth named it Areca Passalacquæ, after an explorer; and it has in its ruminated albumen some affinity to the genus, but the fibrous layer in the pericarp is wanting. Unger was the first to identify it with the fruit of Hyphæne Argun, Mart., a Palm which inhabits some of the valleys of the Nubian desert in the bend of the Nile between Korosko and Abon Hammed. The unripe fruit, which bears the names of Argun and Dallock, according to the Belgian traveller, Pruyssenaere, is buried by the natives for a time, whereby the albumen obtains an agreeable flavour resembling the Cocoa-nut. It is recorded by early writers that the Olive was cultivated by the Egyptians, but hitherto the fruit has not been found in any of the graves or coffins. In the Berlin Museum there is an object, similar to the old instrument of punishment, consisting of a number of Olive twigs firmly bound together with strips of Palm leaf; and in the Museum at Leyden there are ancient Egyptian funeral wreaths of the same material. Fruits of a species of Balsamodendron in the collection were probably not Egyptian produce, but imported from some parts of the coast of the Red Sea, and remind one of the representation of the booty of Queen Misaphri's fleet on the walls of the Temple of El-Dêr-el-bachri. The transport of living trees in tubs is defined in a most characteristic manner, and is designated by the inscription—"Growing incense trees, thirty-one specimens." Fruit of the Ficus Sycomorus are in the Museum, and most of the objects made from wood are from the wood of this tree, which formerly, as now, was one of the most widely dispersed and most venerated of trees in the country. The fruit, doubtfully regarded as a kind of Orange by Kunth, turns out to be this, as we have been able to determine from a section. It is not smooth, like the common Fig, but covered with a soft wool, and it grows in clusters. The common Fig is also represented in the collection, and seeds of the Castor-oil have frequently been found in the tombs. According to Unger there are fruits of Cordia Myxa in the Vienna and Florence collections, but the fruit he designated as such in the Berlin Museum is certainly a very different thing. It is cultivated at the present day in Egypt, and is so distinct a fruit as to be easily recognised by the persistent cup-shaped calyx in which it is seated. A fruit formerly referred to Mimusops Elengi, Linn., was proved by a more exact comparison to be M. Kummel, a native of tropical Africa. And the seeds supposed by Kunth to belong to a species of Diospyros, turn out to be those of the same species of Mimusops. It is a remarkable coincidence, too, that leaves of this tree exist in the Leyden Museum, which it appears were taken from the wreaths found with several mummies. These wreaths are often embellished with flowers, amongst which have been recognised those of Acacia nilotica, Chrysanthemum coronarium, a species of Centaurea, and Nymphæa cœrulea. The seeds of a Cucurbitaceous plant left undetermined by Kunth, are certainly those of the Water Melon, Citrullus vulgaris. The identification of these seeds is all the more important, because Water Melons have been found growing wild in various parts of Africa, and there can be little doubt that they were first cultivated in Egypt, whence they have spread to other countries. This is most likely the fruit mentioned as a Melon in the complaint of the Children of Israel, Numbers, chap. ii., v. 5. It is well-known what an important part the Water Lilies, the celebrated Lotus flowers, Nymphæa Lotus and N. cœrulea, played in the religious ceremonies of the ancient Egyptians. [In this country Nelumbium speciosum is sometimes named Sacred Lotus, but Sacred Bean is a more suitable appellation, as it is almost beyond doubt that Nymphæa Lotus was the Lotus of the ancient Egyptians. Nelumbium is regarded with veneration in India and China.] Professor Caspary recognised two well preserved buds of N. cœrulea in the British Museum collections. Nelumbium speciosum is represented on the early monuments, and was in cultivation, but it has now quite disappeared from the country, and was most likely originally introduced from Asia. The stones of the fruits of Balanites ægyptiaca, a shrub with a fleshy stone fruit, now exceedingly rare in Egypt, is not uncommonly met with in collections from the tombs. Grape growing was extensively practised, as remains and numerous monumental pictures testify. The berries examined were of an oblong shape and probably of a dark blue colour.

Another fruit cultivated was the Pomegranate, the variety differing somewhat from any of those of the present day, in having only four to six cells, instead of six to eight. Seeds of Sapindus emarginatus, an Indian tree, have been identified. In India these seeds are used as soap both in cleaning the person and the washing of fine linen, and it is probable that the Egyptians imported them for the same purposes, as it is known that they had commercial relations with India. Acacia nilotica was the only tree of any size producing a durable wood suitable for ship-building, and this only in lengths of at the most 9 to 10 feet. Evidence of the partiality of the Egyptians for the Onion tribe is found on every side. The Garlic, Leek, and Onion, judging from their names, were cultivated, but the remains of bulbs in the collection it has been impossible to identify. We may conclude with a reference to the discovery, by Ascherson, of the wood of Calotropis procera in a tomb in the Oasis of Dakhel. *W. B. H.*

Home Correspondence.

The Late Potato Show at the Aquarium.—In reply to your correspondents I have to say that if I have said anything to hurt any person's feelings I withdraw it with an expression of regret. At the same time I am quite sure that the principle I advocated in my note is a sound one, and I have a strong impression that my friend, Mr. Shirley Hibberd, agrees with me in this matter. The reference made in his communication to the temporary provision for refreshments at South Kensington has nothing whatever to do with the subject. I can hardly undertake the duties Mr. Hibberd proposes to thrust upon me, besides which I know that the "arrangements for 1878" will be in abler hands, but I will promise this much, that should the Potato show be held in connection with either the Royal Botanic or Royal Horticultural Societies of London I will do what little I can to help it. Your correspondent, "A Committeeman," seems to me a little hazy when he accuses me of "slandering respectable people, and saying that they go to the shows to drink gin." I never said anything of the kind. I said that no doubt the main object of these joint-stock companies in giving a few pounds to the Potato and other societies was to bring people together to consume the viands on sale at the refreshment bars. If "A Committeeman" thinks their object is the promotion of horticulture, all that I can say is that I disagree with him. The highly respectable names that your correspondent quotes have nothing whatever to do with the subject. Many of them are personal friends of mine, and I esteem them very highly. At the same time I don't agree with the course they adopt in reference to their special exhibitions, but they may be right—I am only expressing my opinion. Your correspondent tells us that the Council of the Royal Horticultural Society offered the Potato Committee £10, and the Aquarium Company, £30; and so it seems there was no resisting the "thirty pieces." Now we all know that the executive of the Horticultural Society is surrounded with financial difficulties, and no doubt £10 was all the Council could offer; and if, as your correspondent says, "the improved cultivation of the Potato" be the object in view—and of this I have no doubt—why was not this donation accepted? I think Mr. Dodwell must have misunderstood my meaning—I neither "denounced special shows or specialists." Mr. Wilson asks me if I include the Crystal Palace in the "gin and beer" places? My reply is, I do; and Mr. Wilson must know that the holding of horticultural shows at Sydenham, and the other places I have named, has very much weakened the legitimate societies. For many years past discussions have been going on in the newspapers respecting the embarrassed condition of the Royal Horticultural Society. Mr. Wilson, Mr. Hibberd, and many other gentlemen have taken a prominent part in these discussions, and all I feel sure are anxious to see a strong national society, but we must remember that "union is strength." Now we all know that during the last twenty years elements have come into play which have tended very much to weaken the Royal Horticultural Society—I allude to the holding of exhibitions at the Crystal Palace, Alexandra Palace, the Aquarium, and other places; and if I am rightly informed, the shows held at these places have all been financial failures, so that the state of affairs is something in this wise—the joint-stock companies have lost money in attempting to do work which was previously done by the societies alone, and of course the societies are in a languid state in consequence of the unwholesome competition of the places to which I refer. What is it one hears from horticulturists nearly every day? Why, this—"There are too many shows; one half the number would be

much better." I suppose that the main cause of the present depression in trade is owing to over-production, and this too I think is a cause of the depressed state of the Horticultural Society. What, then, it may be asked, is the cure? To which I reply "fewer shows," and these held at legitimate places. I know full well that you cannot prevent the Aquarium Company or any other from holding a floral show on their premises, but I think horticulturists should be consistent, and if they want a strong national society should withhold their support and countenance from places that tend to weaken and undermine the institution about which they profess such anxiety to build up. I think that our "specialists" should not be unreasonable, and if they cannot get all they want, they ought not to rush into the enemy's camp, for I hold that the Alexandra Palace, Crystal Palace, the Aquarium, and other places which might be named, are enemies to the Horticultural and Botanical Societies of London, and I cannot help thinking but that the managers of the Potato Show would have evinced what I may call a better horticultural spirit if they had accepted the £10, which was all the poor Society could offer, rather than hold the exhibition in a place which, to my mind, seems altogether out of character; and I very much fear that unless more unanimity is displayed amongst the horticultural body, it will be a long time before we shall see a strong national horticultural society. *A. B.*

"A. B." and Special Shows and their Promoters.—Unexpectedly, as far as I am concerned, you have given my remarks publicity, in company with those of gentlemen of weight and authority, and I ask you to permit me to put "A. B." to the question. 1st, What should be the action of florists and horticulturists in the present unhappy paralysis of the central body other than that which has been taken by some amongst them in the past season? And, secondly, Can he supply us with even the hope of a prospect of the cessation of that paralysis? I go on to suggest, as a necessary means for the dispassionate discussion of these questions, that it is most desirable "A. B." shall drop the incognito, for I cannot suppose that either "A. B." or the Editors of the *Gardeners' Chronicle* will maintain that harmony of feeling or unity of action can be promoted by a burlesque of facts or by imputation of petty paltry vanities. Speaking for myself (and I am sure I may say the same for a large number of florists, both of the North and of the South), I declare I shall be delighted to hear of, and combine in, any action whereby I may be relegated to the insignificance of the nobodies—the Browns, and Joneses, and Robinsons—in the presence of the great societies. But "A. B." must not expect either florist or horticulturist to be content with the state of affairs, as indicated by the exhibitions of the Royal Horticultural Society in the season now past. Shows without prizes, or prizes wholly indefinite, and exhibits without competition—all reduced to the dead level of a lukewarm universal commendation—may pass in an emergency, but cannot be sustained. At some future time I may ask your permission to speak of the position of the florist in the republic of horticulture. For the present I content myself with saying that whilst the individual may suffer himself, and willingly, to be relegated to the insignificance of his lot, he will tolerate no slight cast upon the objects of his care—"things" to him, and to a wide world around him, "of beauty—joys for ever." And I have perfect faith that, whilst the perception of beauty is left to us, this feeling will remain. *E. S. Dodwell.* [Our correspondent, "A. B.," and we ourselves deprecate most strongly the introduction of any personal element into this discussion, and if any individual feels aggrieved we can only regret that he should think he has cause to feel hurt. Eds.]

Calceolaria Kayii.—A short time ago, when paying my friend and neighbour, Mr. Chard, a visit at Clarendon Park Gardens, I was much struck with the grand display of this once favourite but now uncertain summer bedder. The beds were well filled with plants, having scarcely a death amongst them, whilst the beds so planted were perfect masses of that fine yellow peculiar to the Calceolaria. Judging from what I have seen the past summer seemed to have suited the requirements of the Calceolarias Kayii, aurea floribunda, and amplexicaulis, but nevertheless I think some time must elapse before our shaken confidence shall be sufficiently restored to give them that place in the flower garden which, when they "behave well," they are justly entitled to. *H. W. Ward.*

Potato Magnum Bonum.—This is proving to be a really splendid Potato in a district where fully two-thirds of the usual varieties are lost through disease. Here Magnum Bonum is sound, and is really a grand crop where even Paterson's Victoria is very middling, and many of our ordinary Potatos, such as Walker's Improved Regent, &c., are little bigger than marbles. This has been a year of disaster with Snowflake. We dug up a quantity of splendid tubers the third week in August, and there was scarcely a trace of disease to be seen, but in three weeks nine-tenths were as black as tobacco. Those undug were fully worse; those in the fields are scarcely so bad. Porter's Excelsior is equally bad, and so is Rector of Woodstock. Scotch Blue is gone altogether; Sutton's Redskin Flourball is a fair crop, and is only slightly diseased; Hundredfold Fluke ditto, but the quality is extremely poor. These remarks may be interesting to those who have heard favourably of Magnum Bonum, and who may be not quite sure whether it is suitable for cold late localities or not, as this is written from a late, cold, exposed district of Scotland, where the soil has been waterlogged all summer through the heavy rainfall and the impervious nature of the subsoil. *A. H.*

Menziesia polifolia alba.—The extreme beauty and usefulness of the white Irish Heath (Menziesia polifolia alba) must be my excuse for offering a few remarks on its treatment and suitableness for conservatory decoration in the late autumn months, when good flowering plants are getting scarce. Having a stock of nice healthy plants, about a foot to 15 inches high and as much through, growing in the home nursery at a height of nearly 700 feet above sea level, I lifted some of them in the first week of August and carefully potted them, without disturbing the balls too much so as not to injure the roots, gave a good watering, and placed them in a cool greenhouse, where they soon commenced to flower most profusely. Finding how useful and attractive they were I lifted some of them on September 20, treating them in exactly the same way, and they are now a perfect mass of bloom. The pure white bell-shaped flowers, on spikes from 5 to 8 inches in length, produce a most charming effect and beautiful contrast with the neat dark green foliage of the plant, and harmonise well with other plants for conservatory or house decoration. To those who require a really good and lovely white-flowering plant at this dull season of the year I would strongly recommend a trial of it, especially in late localities, as it will well repay its accommodation, even although room under glass is a scarce commodity with many at this season. *C. B., P.*

The Best Cucumber.—There is doubtless much good advice in Mr. Rust's assertion regarding the one kind of Cucumber and Melon, and bearing in mind the old saying, "Speak well of the bridge that carries us safely over," I can truthfully say of the Telegraph Cucumber that it has carried large numbers of our "craft" over safe (myself included): there remains no doubt. We have most of us our favourites—Telegraph is mine for all purposes; and to those who are yet undecided as to which they will grow, I shall not hesitate to say, Take to that variety, and if you have the means to use him well he will prove a true friend. I have had it for these ten or eleven years past, during which time I have grown good fruit from it, and in the following ways:—Outdoor in summer, also in a pit, and trained to a trellis in a house. The latter I find the best for all the year round. I have never yet been troubled with the Cucumber disease, which I firmly believe in most cases to arise from the water applied to roots, quantity or quality of soil, and the state of the atmosphere. I have grown other varieties, and seen them growing in different structures, and would not wish to prejudice others against their favourite kinds. I raise my plants from cuttings, preferring those to seedlings, and as to duration of existence, have upon one occasion cut good fruit from one and the same plant in three successive years. I could give you the details if you wish, as some may think the period of existence of a Cucumber plant would not extend so far, but this latter was an experiment to ascertain how long we could keep it going. As for keeping up a succession, I should plant first week in March and first week in September; but if plenty of light and heat, the March planting would carry round, not cropping too heavy, and giving good attention. *T. Batters, Chilworth Manor, Romsey.*

Peculiar Condition of Cucumber, Tomato, and Vine Leaves.—Herewith I beg to enclose foliage of Cucumbers, Tomatos, and Vines that, as you will observe, are affected with some peculiar disease or rust, being, as they are, so crisp and altogether unnatural. We have been more or less troubled with it all the past season, and at first when it showed itself we attributed it to the dull, sunless weather we had in the early part of the summer. This cannot be the cause though, as our winter Cucumbers are now affected, and the weather has been favourable since they were planted. We first noticed it on some Tomatos and Fig leaves in the spring; it then spread to some young Vines from eyes in an adjoining house, completely spoiling them. We thought at first they had got scorched, so did not then probe into the matter, and only came to the conclusion they were not scorched when we had some more similarly affected later in the season that could not possibly have been scorched. It affected our Melons (all in the same range) more or less, but not sufficiently so to prevent their carrying fair crops of fruit. The Cucumbers from which enclosed foliage was cut grew away capitally at first for some few weeks, now all the growing shoots are same as enclosed, and consequently fruitless. If you can throw any light on the cause or cure of the disease I shall be glad. I may mention that sulphur has been tried with no good results, and also that all the plants, &c., sent have been and are growing under similar conditions that have hitherto given us fairly successful results. *H. J. C.* [We can see no trace either of insect or of fungus agency, the effect is that which anything causing a check to the growth would produce. Eds.]

Coloured Vine Leaves.—Do you not think the enclosed Vine leaves, with their autumnal tints, might be very serviceable to a number of your readers, if they had the hint, for decorative purposes, such as harvest festivals in churches, &c.? *J. Peed, Effra Road and Roupell Park Nurseries, Brixton, Oct. 30.* [Yes, certainly. Eds.]

Arundo Donax.—In the gardens at Apley House, Ryde, are growing twelve large clumps of this majestically-growing grass, and Mr. David Smith, the skilful gardener at Apley, has informed me this week that some of this year's canes have measured 16 feet high, but it has never flowered with Mr. Smith, neither is he aware of its having done so in any other part of the Isle of Wight, and a more likely place for it to do so is perhaps not in England. The Arundo Donax as planted at Apley has a very good effect. It is planted in the centre of a portion of the lawn, and surrounded by its compeer, Pampas-grass, which are planted equidistantly but not too closely together. Bamboo—another suitable companion for the above grasses—is cultivated at Apley, where it flowered last year, but at the expense of its life I am afraid, for it has shown no sign of life this year; but, however, Mr. Smith is fortunately in possession of some seedlings which he raised from last year's seed. *H. W. Ward.*

Cinchona in Australia.—Since April last Cinchona Calisaya has been continually flowering at Berwick (38° S.), near Port Philip—plants raised by me and given to a local intelligent settler, Mr. Robinson. It has thrice braved mild frosts. We have much warmer regions in East Gippsland. *F. v. Mueller.*

Lapagerias.—It may interest some of your readers to know that plants of Lapageria rosea and L. alba were planted here (out-of-doors) on April 22 of this year against a wall of the old ruins. The aspect is southern and partly shaded. Both plants have done well and flowered, and that of L. alba still retains its flowers. Whether they will stand uninjured during the winter months or not remains to be seen. *G. G., The Abbey Gardens, Battle, Sussex.*

Tomato Culture.—Glancing over a recent number of the *Gardeners' Chronicle* I saw some notes on Tomato growing, as practised by the market gardeners at Fulham, in which the writer remarks that this is what is called a great year for Tomatos. In this favourable county, Cornwall, I have not yet been able to gather one, which, of course, is owing to the unpropitious weather we have experienced this season. I also find that Solanums and Aucubas have a very meagre lot of berries on them. I would like to know how others fare in this respect. *T. P.*

Fruit Trees Productive just as the Soil is Suitable.—While on a visit to Dundee in September last I noticed in the kitchen garden of Mr. Spence, Coventry Bank, Perth Road, a fine lot of pyramidal Apple trees planted alongside the walks, which were perfectly laden with fruit, not one, nor a few, but every one literally bowed down, and I was told that a gale which occurred two days before had blown down bushels, which I could well believe. The trees, too, were in splendid health; indeed, I cannot recall having seen finer ones, and the individual fruits were very fine, the great crop notwithstanding. Let it be borne in mind that 1877 was a year when uniform failure in fruit crops was the general complaint. The soil, I noticed, was on the trap formation, at least so far as I could make out on a very cursory examination, and the hills in the immediate neighbourhood are all trap—the Balgay and the Saw are so, at least so I was informed, as I had not the opportunity to find out for myself. Who has not heard of Newburgh Apples and Pears and Plums?—I allude especially to the residents in the counties of Fife, Kinross and Perthshire. The Newburgh orchards are on the remains of trap, the cliffs at the back being of that formation. I have seen these trees heavily laden year after year with individual fruits much finer than were produced in the Vale of Eden (Howe-o'-Fife), when the trees there were growing stronger and bearing biennially. The soil in

Stratheden is sandy and gravelly. The garden produce of Markinch is famed far and wide, and Markinch lies on the southern slope of a trappean hill. The Lothians are famed for their productivenes, and any one who has seen the Castle Rock, the Calton Hill, Arthur's Seat, and the Salisbury Crags, knows that they are trap, and so are the Pentlands, and most of the stone fences are of whinstone, and whinstone is to be seen in almost every railway cutting in Midlothian. I might cite examples *ad infinitum* were it to serve any useful purpose; but these are facts, and I only want to draw attention to them. When one has a choice of soils, for Vine borders say, or any other purpose, texture alone is not an infallible guide to be carrying about in one's mind. I have seen soils chosen for their texture alone when a choice was to be had, and sometimes the best left behind. What a difference there is in clays! We sometimes hear soils spoken of as aluminous because they are clayey. Aluminous clays are about the poorest soils that were ever seen. Our Scotch carse clays have very little alumina in them, and are often the degraded trap rocks of a former age, and such clays are proverbially fruitful. *A. H.*

The Deciduous Cypress.—This tree is, where it flourishes, as "P. P. C." truly remarks at p. 533, an object of much beauty. And for the information of "P. P. C.," and others interested in such trees, I beg to say that there are two—and those the largest I ever saw of that variety—growing in the grounds here. The larger of the two stands about 100 feet high, and at 4 feet from the ground measures 7 feet 6 inches in circumference. The trunk is comparatively straight and clean for about 40 feet, at which point it assumes two leaders, one of which was broken off some years ago with the wind, and from the same cause it is minus some of its branches, otherwise it is a fine tree of its kind. It is growing in a light gravelly but wet soil within 50 yards of the River Avon, and on a level with its banks. The second and smaller tree is, I think, a good specimen of the deciduous Cypress, and is growing almost in the centre of an angle formed by the confluence of the rivers Avon and Chalk, and within 32 yards of the latter and 35 yards of the former. It is about 45 feet high, with branches touching the ground and 36 feet through. The trunk at 4 feet from the ground measures 4 feet 6 inches in circumference. *H. W. Ward, Longford Castle.*

Shade-loving Plants.—I am anxious to cultivate as many good herbaceous plants as possible in a border a good deal shaded by trees. I find that Dielytra spectabilis seems to enjoy the shade as well as the old-fashioned and delicately beautiful Corydalis lutea, also Geranium striatum, which is extremely pretty and interesting, though it makes little show. We have besides Solomon's Seal and Campanula persicifolia, and, of course, Polyanthuses, Primroses, and Foxgloves. Will some one kindly tell me of any other good things which will grow in the shade? What other good Geraniums are there? Do the new Aquilegia chrysantha and Skinneri require sunshine? I shall be very much obliged to any one who will mention some good shade-loving plants. *Trowel.* [Hypericum calycinum is one of the best shade-loving plants. Eds.].

Tuberoses.—I am glad to notice the article on double Tuberoses, p. 530; a little more information, however, might do much to extend the successful culture of this plant in private establishments. The late Mr. Standish maintained that a minimum temperature was indispensable for the dry root, and if the temperature was allowed to fall below a certain point when the plants were in growth they would all go blind. At the Ascot Nurseries this year I saw a batch of Tuberoses without, I believe, a single failure, and Mr. Ashby attributed this to maintaining a uniformly moist temperature till the flower-buds had appeared. No doubt success or failure is very much dependent upon how the bulbs have been harvested, and the race is between French, Italian, and American roots. Mr. Ashby contends for American; one batch of French bulbs failed with him this last summer to give a flower, although the roots to look at were good, and what were cut showed the flower in embryo. With reference to growing Tuberoses out-of-doors I intend to try the experiment next year; the idea was suggested by seeing a quantity of Tuberoses flowering in the open ground in Holland in the latter end of September. The great demand now is for double Tuberoses; to my liking the single is a more graceful flower, and I should like to see our market growers cultivate the single variety; it would be a better substitute than the double for the September flower. I believe it is not generally known that there is a variety with beautifully variegated foliage. *P. Barr.*

White Blackberries.—Referring to the "white Blackberries," mentioned on pp. 439 and 468, it may be of interest to your readers to note that Ray mentions such a variety of his *Synopsis*, ed. ii. (1696), as "Rubus vulgaris major fructu albo—*the common greater Bramble bush, with white berries.* Hujus non fructus tantum colore albo à vulgaris fructu differt, seu et cortex et folia hilarè viridia sunt, cum illius plerumque fusca seu obscurè rubentia observentur. *Found accidentally in a hedge not far from* Oxford. D. Bobart." Ray, *Syn.* ii., 309. It is quite evident from the description that it belonged to the "fruticosus" group of Rubi, rather than to the "cæsius" section. A very highly developed bloom on the latter sometimes gives the appearance of a white fruit, but I suppose that in Ray's plant, as well as those of Mr. Bowman and Rev. H. N. Ellacombe, a true albino variety was meant, as unmistakable as in the case of the white Raspberry. *B. Daydon Jackson*, 30, *Stockwell Road, S.W.*

Potato Disease.—It is a well known fact that after all means that science could devise have been tried to stamp out the disease all have failed up to the present, though in my short experience in the cultivation of Potatos I have found that the deadly effects may to a certain extent be lessened by change of seed and better tillage. Many useful works are brought out with instruction as to deep digging and manipulating the soil for the growth of the Potato, which is well understood by practical men as essential, and where time permits is no doubt followed up. One of the main points I believe is the manure, which as used in many cases is not suitable, being committed to the soil direct from the stable or pigstye, and that too very often at planting time, in lumps at random, dug in, which in its half-rotted state is ready to catch up and foster fungus or poison the land. Again, I have seen, even in large gardens, a practice which consists of leaving on the land whatever tubers are diseased at lifting time, there to lie and rot down. I have had ample experience that this practice is bad, not only as regards the tubers but also the haulms. In one case this was done on ground which came in for Potatos the following year. The crop was struck with the blight several days before even a speck could be seen on the other portion of the Potato tops, and at lifting time self evidence was given as to the tubers being very much diseased on the former, while the latter were not even touched, though the whole was treated with a liberal dressing of lime, which I always find beneficial to Potatos whether mixed with the manure or applied direct to the land. A writer, in his remarks a short time since in the *Gardeners' Chronicle*, said most likely each cultivator, more particularly of prize tubers, had his own pet system; that I will admit. As for myself I cannot claim, nor do I intend to claim, anything original in my treatment of the Potato, but while I can grow crops free from the disease my neighbours lose half theirs. I am therefore quite satisfied as to the result of what I would term a sweet system of culture and manuring of the land. I would advise that no rank manure be in any case used, more particularly at planting time; it is much better when well mixed and worked over in the heap twice or three times during the winter with lime, loam, or sand. Some rich soils, having had a liberal manuring the previous year, would be better without being again manured. In that case I would say add any mixture in opposition to the soil, whether it be lime, sand, clay, loam, peat, marl, or burnt earth; even a little of the bottom spit if the spade is thrust down in digging and brought up will materially change the soil sometimes. Potatos, I am convinced, want more change. I have seen good samples grown in stuff which has been thrown out of ditch bottoms during the winter and cropped the following year. I will not say that all sorts of Potatos can be grown alike; it is as well to study which are the best to resist the disease. *R. C. E.*

Vines and Sewage.—I see a notice in the *Gardeners' Chronicle* for October 27, p. 528, of an extraordinary crop of Grapes in a vinery at Woodside, Ipswich, the success of which is attributed to the use of house sewage. It would be interesting to know if the water from the laundry is conducted into the tank mentioned, as the percentage of potash and soda would be by this means materially increased, and would, doubtless, have something to do with the vigour of the Vines in question. *A. H.*

The Parsnip Chervil.—In the issue of the *Gardeners' Chronicle*, October 27, you speak of Parsnip Chervil. The seed of this I have sown year after year for a long time, and never yet succeeded in raising a plant. The foreman at my sample grounds has even been offered a bonus if he could get plants up of Parsnip Chervil, but he has not yet earned either the commendation or the coin. I have often wondered if others in England had been more fortunate. I have consulted our French friends, and they have recommended autumn sowing; still the results have been unsatisfactory. I see in the article referred to that the seed should be kept in sand, to preserve its vitality. I should be glad to know if the seed requires to be placed in the sand immediately after harvesting; if so, this is an insuperable difficulty in distributing seed. How long does the seed retain its vitality? I have sown it in December in pots, and have failed to get it up. Information on this subject is important to an extension of its culture. Roots of Parsnip Chervil have been exhibited at the Horticultural Gardens, but I have understood the roots have always been imported. It is said to be an excellent vegetable, and it is to be regretted that plants cannot be readily raised. Some of your contributors may, perhaps, have been more successful than I have been. I hope, therefore, to see in your pages the names of some of our leading gardeners stating how they succeed, and what they think of the vegetable, and if they kept the seed in sand, was the sand moist, and how moist? *P. Barr.*

Is it Unusual for Smilax aspera to Flower?—Perfectly hardy out-of-doors, we only have it in the greenhouse (for seven years) in hopes of its seeding as it does in the South of Europe; but until this autumn it has never flowered, and I fear there is no chance of berries at this late season. To encourage the creepers that grow up the back wall and rafters, and the border being very narrow and full of roots, our under-gardener bethought him of laying on a top-dressing of good rotten manure. The result I believe of this plan is the flowering of Smilax aspera, many more flowers on the Tea Roses, and vigorous growths on Stauntonia latifolia. *T. J. Hope, Wardie Lodge, October* 22.

Fossil Lichens.—The extremely interesting paper published in the *Gardeners' Chronicle* of the 20th inst. on the fossil fungus (Peronosporites) leads me to suggest to those who are engaged in the microscopic study of vegetable fossils to give a portion of their attention to the subject of fossil lichens. That lichens are to be found in the fossil state, and will be found when carefully looked for, I do not doubt. I have been looking out for twenty years for published notices of their occurrence; but among my voluminous lichenological notes, accumulated during that period, I find very few references to fossil lichens. There is one, for instance, to the effect that they are mentioned by Brongniart as occurring in the carboniferous flora, just as fossil algæ and fungi do. They are also mentioned by Professor Heer of Zurich, in a letter of date July, 1868, and in Krempelhüber's *Geschichte der Lichenologie* (vol. i, p. 431), who refers to species of Ramalinites, Venucaritos, and Opegraphites.* Principal Dawson, of Montreal, suggests that the plants of the Eozoic "may have consisted of gigantic mosses and lichens." With the exception of a number of duplicates, collected mostly in New Zealand, I have long since given to public museums the various vegetable fossils I had collected during the last thirty years, nor am I myself likely to have any other opportunity of hunting for fossil lichens. *W. Lauder Lindsay.*

The Scotch Fir, or Pine.—I read with interest in the *Gardeners' Chronicle* for October 20 your extract from an Aberdeen paper relating to the Braemar Woods, and the excellent quality of the timber produced there, which brought to my mind the old stanza—

> "A mile of Don is worth two of Dee,
> Except for salmon, stone, and tree."

The banks of the Dee from time immemorial have been famed for their Pine woods. The Scotch Pine, no doubt, grew in the valleys and glens of the Highlands before there were any inhabitants, or at least very few, and before whole forests were burned to expel the wolves; many mountains now covered only with Heather have carried a noble crop of the native Pine, and trunks of trees found in the peat bogs show that the major part of the country must at one time have been clothed with timber. Sir T. D. Lauder was quite enchanted with the Pine forests, and gives the most glowing descriptions of their magnitude and grandeur. The seed of the Pine tree, like that of many others, is so formed that by some means it shall distribute itself; the hurricane which sweeps across the country bears with it the seeds which ever and anon find some sheltered place to rest, take root, and grow into a goodly tree. The rook also, by instinct, spends days and weeks in planting the Fir cones. I have seen them so employed myself. Strange though it may appear, a forest thus planted will take care of itself and grow into magnificent timber, whereas a wood planted with trees of an uniform height and distance apart will completely choke and destroy one another. That the Pine tree was growing at a much greater altitude in the Highlands than now is quite evident, and I can only account for this by the large flocks of sheep and herds of red deer which crop the heads of the young saplings as soon as they start into growth. The Dee is a very rapid running river, so that its banks are naturally dry, and I think the subsoil from its source to the sea is gravel, hence the excellence of

* A fossil Ramalina, and a fossil Lichen dichotomus are described as occurring in the brown coal of Saxony, by Engelhardt.

its timber. It is really surprising what a difference this makes, for I have in my possession specimens of timber of this tree grown on dry land, and also from wet, boggy ground, and the difference of the quality is incredible; that from the first is heavy and full of turps, while the latter is light, and comparatively worthless. The root of the Pine tree lives for a longer or shorter period after the trunk is cut, and often gets very full of rosin, when it is dug by the cottagers as fuel, and called "fir." The best is split into thin strips: this is held in the hand as a light. The ancient practice was still continued (thirty years ago) of blowing a horn at 8 o'clock P.M. in winter to let those not possessed of a time-piece know that it was supper-time. Sometimes this "fir" was used for another purpose by poachers: a bundle was tied to the end of a pole, and set a-light, the poachers then waded into the water waist-deep, and once the light was fairly over the salmon it remained motionless till the spear was driven into its gills. Then came the tug of war (for they are strong in the water), and if the fish was large the spearman had to take heed to his footing: many a fine fish has been killed in the Dee thus in the good old times. Nearly all the ancient forests of Dee-side have disappeared before the woodman's axe, but I was pleased to see two years ago the landed proprietors are very wisely planting considerable breadths of the native Pine annually. Let me caution planters to make sure that they get the true Pinus silvestris, for there is a spurious variety in the market which comes from Germany. The Arboricultural Society of Scotland is doing good service in this and other countries. *J. Rust, Eridge Castle, Tunbridge Wells.*

Cypella Herbertii.—I am glad to find that Mr. Parker succeeds in growng Cypella Herbertii. It is perfectly healthy in the south-west counties. I saw a luxuriant bed of it in a Cornish garden the other day. *H. Harpur-Crewe.*

Iron Supports for Plants.—Is the opinion given at p. 533 with respect to the evils that follow from the contact of plants with iron supports borne out by facts? If it is it will come as a surprise to many persons. Who is there associated with gardening who has not been familiar with Roses and climbers of all kinds trained over wirework, especially in the form of arches, and yet ever noticed any evil effects resulting? In how many gardens are not fruit trees trained to wired walls with the best results, and in many gardens also are not iron hurdles and stout wire used as supports for espaliers, and giving entire satisfaction? Stout wire stretched across the quarters also in many gardens afford excellent supports to Raspberry canes. In one good garden I know of a fine lot of young Pear trees that are trained over a broad path on stout curved iron supports, and these are doing as well as can be desired. Again, how common it is the case that the iron railings of balconies are found covered with creepers of tender growth, yet during the season quite as luxuriant as would be the case on wood. Iron has great conducting power we know, so also have slates, tiles, and stone, yet all kinds of hardy climbers will do well on these as well as on wood. Another common experience is to observe the growth of shrubs of all kinds adjoining and forcing itself against and between iron railings, and yet who ever found any of this the worse for the contact? Galvanised iron and wire is simply coated over with a metallic substance, that enables it better to resist climatic influences, especially moisture, and therefore rust; but it is greatly to be doubted whether it in any way affects the character of the metal as a plant support. Hops, perhaps, might have refused to attach themselves to the metal, but Hops are very sensitive, and the cultivated kinds are almost tender, so subject are they to the changes of the weather. Ironwork, and especially iron wirework, is now so much associated with garden work and culture that strong evidence is required before it can be rejected for such uses. *A. D.*

The New French Roses.—After the observations in your paper of the 13th inst., and the remarks which have since been made by several correspondents, it is surprising that so few of your readers seem to take an interest in this matter of new Roses. Does this apparent apathy and indifference arise from the English Rose growers having made up their minds upon the matter, and decided not to speculate in the purchase of the fifty novelties which are now announced for the first time by the Frenchmen? By-the-bye, upon reading through the descriptions, I find that one enterprising man has found out a new mode of recommending his prodigy. After giving the colour, &c., he goes on to say "nothing has been forgotten in this fine plant"; it would seem by this that perfection has been reached at last. I have no doubt this good man will reap the reward of his ingenuity and originality by having a large sale for this matchless beauty. Roses are like other florists' flowers, every year it becomes more difficult to get a good new variety. This is exemplified by Fuchsias, variegated and zonal Pelargoniums, Verbenas, &c., but the Frenchmen still find an astonishing number of Roses, to which they give glowing euphonious descriptions, and which invariably finish up with "twenty-five francs." I believe that by far the larger part of the Roses offered are absolutely worthless, but to get at the kernel you have to buy a very bulky husk, and have to pay very dearly for it. It would be far better to have a few really good, and pay three or four times the price per plant, than be bewildered with a large number of worthless varieties. *Ilex, Oct.*

Earwigs.—I can readily give "Hants," p 537, instructions for ridding himself of these pests. The best way I have found for Peach-houses is a very simple but effectual plan—that is, get some meadow hay, and tie it up in small bundles about 6 or 8 inches long, and put about a dozen on each of the trees every night, taking care to take them off every morning, and burn them. Keep it up for a week, and by that time you will be free from the pests. We have caught thousands in one night by this method. *W. Cook, Gr., Woburn House, Bucks.*

Paraffin-oil and Moles.—It often happens that moles put in an appearance where traps cannot well be placed to catch them, and then it is of some value to know how to shift them easily. This season we were pestered with them in a carpet-border shortly after the plants were put out, and the setting of traps would have made a mess of the arrangements. We, in our dilemma, made small holes over the mole tracks and poured in water tainted with paraffin at the rate of a wine-glassful of oil to a common watering-can, and had the satisfaction of causing the moles to leave the spot altogether. The plan is easy, cheap, inexpensive and effective. *A. H.*

Three-days' Shows and Saturday Terminations.—As one having considerable experience in horticultural exhibitions I would simply ask, Is a three-days' show, terminating on a Saturday, necessary? I for one cannot see that it is. If the arrangement is made to catch the so-called "working classes" why make the termination of a show Saturday? On every day of the week most workpeople give over working at 5 P.M., and from 5 P.M. to 9 or 10 P.M. is quite as much time as most ordinary persons would care to spend at any horticultural show in the country. But if Messrs. Coleman, Wildsmith, Pragnell, Goodacre, and others would just say, "We will not show on such conditions," there would be an end to them. We all know how such matters are arranged—generally by persons who know very little of the practical bearings of the case; and a few hints, such as the present discussion has evoked, may tend to some mutual benefit. *J. McC., Alexandria, N.B., October 23.*

Tuberous Begonias.—Very likely more, much more, is now known concerning the habits and requirements of tuberous Begonias than was known to the late Louis Van Houtte. My instructions were intended, not so much for those intelligent amateurs who always know precisely what to do, and how to do it, but for that much larger and more unfortunate class who would be likely, in consequence of information they had received, to place their Begonias in the autumn on a dry greenhouse shelf, and not reach them down again until the following spring. They would then find the pots and soil and the "mummies." Still it may be possible that a few of the minority class may gather useful hints from my note, for I happen to know some very intelligent amateurs, and also some very practical gardeners, whose Begonias somehow or other contrive during the winter to dwindle away. It must be very patent that there is a vast difference between the uniform condition I require for my tubers and the intermittent one, where they are alternately wet and dry, for they cannot become dry enough to require water without having become too dry; and it is I think quite impossible to water dormant plants of the kind without making them for a time too wet unless you steamed them. A better plan would be to bury them in the natural soil in some situation where they would be safe from the winter rains. To illustrate my uniform theory, I may mention that I had last autumn a large bed in a house of small late-sown seedlings, and these only had time to make the tiniest tubers before going to rest. The greater part were not larger than Mustard seed, and so small that it was quite impossible to pick them out, which, if they had been larger, I should most likely have done, and as the room occupied by them was wanted for other plants these were stood upon the bed, and regularly but carefully watered through the winter. I think it is quite safe to say that out of the thousands in the bed not one perished. They all started freely as soon as the sun began to shine in the spring, and those in a corner of the bed, for a special reason wetter than the rest, started first and strongest. Now for the other side. I had also several pans of the same seedling that were not planted out. These were kept on a dry shelf, and got a drink now and then. These did not begin to grow for a month after the others, and many not for two months, and then came away much less robustly. When examined during the winter the planted-out ones had full glossy brown skins seemingly bursting with jolly life, and those in the pans were literally "on the shelf," and had skins that resembled much that of a Nutmeg. I feel inclined to say a word upon the proper soil for them, as I never have been successful with old hotbed, but enough for the present. The seed-raising must also wait a while. *F. Smith.* [The present race of tuberous Begonias is scarcely yet familiar to cultivators, so that any information from experienced cultivators like our correspondent will be useful. For example, one would scarcely expect them to stand heavy rains when bedded out so well as they do. Eds.]

A Venerable Wild Cherry.—In the article under the above heading which appeared in last week's *Gardeners' Chronicle*, giving the dimensions of an aged tree of "Old Conna Hill, Ireland," the writer requests any readers to state if they know of a larger. Since reading that paragraph I have had the measurements of an old one in the park here taken, and, although not quite up to the size of the Irish one, it is not far behind, especially when taking into consideration that the latter was measured at 1 foot above-ground, where the swell of the roots would likely be above the girth of the stem at 2 feet or 3 feet above-ground. Again, the measurement at 5 feet up shows this to be the case, seeing the girth there to be 19 feet, which is 2 feet 4 inches more than at 1 foot above-ground. It is almost invariably the case that the stem of a tree diminishes in size upwards, from where the expansion of the large roots ceases. The following are the dimensions of the tree here, which I am sorry to say has been decaying for a number of years past:—At surface, 18 feet circumference; 3 feet up, 14 feet circumference; 5 feet up, 14 feet circumference; circumference of spread of branches, 189 feet; height, 33 feet. *J. Webster, Gordon Castle, N.B.*

Autumn Strawberries.—The exceptionally fine weather during the month of September has been very favourable to those who grow late Strawberries. I had several dishes during that month, and on October 16 I picked over 1 lb. of large well-ripened fruit, some of which weighed 1 oz. each. The kinds I grow are Premier and Vicomtesse Héricart de Thury. I sent them to table on the same day that they were gathered, and my employer and his friends pronounced them better in flavour than the same kinds gathered in June and July last. My mode of treatment is as follows:—As soon as the last fruit is gathered from the pots in spring, the plants are gradually hardened off, and not over-watered: in about a fortnight they are fit for planting out. The ground is well prepared by trenching and manuring. After planting, the ground about them is well trodden, unless it is of a binding nature, which is most suitable to their growth. Plants thus treated will produce more fruit the following season than those layered in thumb-pots will do at two years old. Autumn fruiting does not deteriorate them in the least. I would strongly advise those who have not tried this mode of treatment to do so, as I know they will be well satisfied with the result. *J. Weaving, Gr. to J. B. Evans, Esq., Byletts, Pembridge, Herefordshire.*

Florists' Flowers.

New French Rose Lists (*continued*).—M. E. Verdier's announcement of novelties for 1877-78 has come into the writer's possession since his last paper, and consists of nine varieties. The question naturally arises from their inspection, How is it possible for a single raiser, at one issue, to send forth so many kinds entirely distinct from and superior to any already in established cultivation? It is not as if these fresh introductions were the results of novel experiments in hybridising, but they are all hybrid perpetuals, from which nothing original can be expected, expect by rare accident from some untraceable operation of Nature, such as is exemplified by Gloire de Dijon and La France. M. E. Verdier is noted for the number of his annual issues, amongst which some few have been of admitted excellence, M. Niel for instance. Still it must be a repugnant task for importers, warned by perennial disappointments, to undertake selections from one grower only, for which no adequate guide exists, or, on the other hand, of expending money upon the whole set, with the certainty that most of them will turn out unprofitable investments. I often wonder, as the new Rose season comes round, that the leading horticultural journals are not inundated with the "groans of the long-suffering Rose nurserymen," victims to the annual inroads of hosts of mediocrities, pretenders, and importers from the Gallic shores, by which their

patience, their pockets, and sometimes repute, are so sorely tried. It is all very well for buyers to say that it must be a paying branch of trade, or it would not be carried on. This is a shallow view of the case. The Rose public is especially *avidus novitatis*, and dealers must meet their demands even at much trouble, and sometimes even loss. This question, however, is much too large for mere incidental discussion and remark, and will have to be taken up in earnest before very long. Already there have been from time to time murmurings and mutterings which, like distant thunder, betoken an approaching storm, which, when it comes, perhaps, may clear the horticultural atmosphere, which, in some respects, is not at present too cloudless and serene.

M. E. Verdier's nine are :—

H.P. Charles Baltet.—Vigorous, large, full, fine bright carmine-red; extra.

H.P. Charles Duval.—Vigorous, large or medium, glowing scarlet-red; very fine.

H.P. Comtesse de Flandres.—Vigorous, large, full, globular, clear satin-rose; very delicate.

H.P. Docteur Krell.—Vigorous, large, full, large circular petals, deep currant-red shaded purple.

H.P. Mdlle. Maria Castel.—Vigorous, very large, well shaped, deep cherry-carmine; very fine.

H.P. Mdlle. Marie Verdier.—Vigorous, full, fine shape, bright satin-rose; very pretty.

H.P. President Schlater.—Very large, full, fine velvety rimson-red shaded purple, fiery, and violet. Ought not "feu" to be Englished "flame-colour"?

H.P. Princess Blanche d'Orleans.—Vigorous, large, full, fine form, Ranunculus-like, rose-carmine shaded purple-violet.

H.P. Souvenir d'Auguste Rivière.—Vigorous, very well formed, rich red-crimson, reflexed, purple and scarlet.

M. Granger makes a singular announcement "of the best of all white Tea Roses," Mathilde, which he describes as having been known by the names of Mouseline, Niphetos, &c. Whether this is put forward as something slightly different from, or an improvement upon our old favourite Niphetos (Greek, snow, a most poetical name) does not clearly appear. Certainly it is one of the best of Teas, and unsurpassed for winter and spring forcing. Boxes of it are sent from France to Covent Garden market twice or thrice a week during the above named seasons. A fine specimen, not too far opened, is equal to a white Camellia as a natural flower for a lady's hair.

The new Roses of English origin for the season, which in time it is to be hoped will work a revolution in that department of the Rose trade, may justly claim a notice to themselves. There is one satisfactory feature about them, that they can be seen before they are bought, not only in the shape of cut flowers, but at the nurseries in actual growth, the true test of what is the true character and value of any Rose.

NOTES ON DAHLIAS.—The past year was on the whole favourable to the production of good Dahlias, much more so than the dry summer of 1876. True it is that the plants were a long time in getting a good start into growth, but when they were ahead they were sustained by a continuance of cool growing weather, with plenty of moisture, that brought forth flowers of great size, and on the whole well finished. Snails and slugs were troublesome in some places, but the compensations stored up in Nature were illustrated by the fact that earwigs vexed less, for it is in hot, dry weather their lawless incursions into Flora's domain are most frequently made.

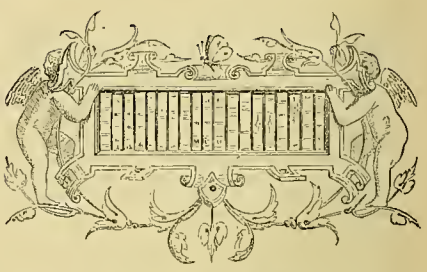
What is the estimate of the new flowers distributed in the spring of 1877? Some rare good ones were put into commerce, but the drought that prevailed during the blooming season in 1876 prevented the new flowers from being shown in such superb form as the new varieties of the past summer were in September last. When we see little of the seedlings the summer before sending out, we are led to think they are not up to the usual mark, but circumstances are often against the new flowers being shown in the best condition just when a Floral Committee meeting or a Dahlia show is being held.

Of the new flowers distributed by Mr. Turner Artiste (Fellowes) proved what it was represented to be—"a novel and most pleasing variety," the carmine edging to the yellow petals giving the flower a charming appearance; it is of fine build, and has proved very constant. Burgundy (Turner) has a fine purple glow about it, which is thrown over the rich dark puce ground; it has appeared on exhibition stands in fine condition, and it is a first-rate show flower; Black Knight (Fellowes) is remarkable for its rich dark maroon colour, and is probably the darkest Dahlia in cultivation; on the whole it has come very good this season. Canary (Fellowes) is a singularly fine canary-coloured self, and of great size and fine quality; it should be disbudded freely. Chris. Ridley (Turner) bright glowing crimson, is a flower of superb quality; a bloom of it at the Alexandra Palace show was perhaps the finest Dahlia in the spacious hall. When fully expanded the petals are reflexed, and the surface presents a disc of brilliant colouring. It is already a standard show flower. Drake Lewis (Turner) is very bright in colour, a pure rich scarlet; the quality good all round, and it must be written down as very fine. Elsa (Turner), French-white, is in the way of Herbert Turner, and makes a pretty show flower when caught in good condition. Figaro (Turner) is a constant and novel show flower, ground colour yellow, edged and suffused with bright red; fine form and striking appearance. Mrs. Urquhart (Fellowes) is a chaste-looking flower, white ground heavily tipped with purple; a very good variety, and one Mr. Turner intends to grow largely. The Rover (Fellowes) is a lovely buff self of very good quality, and likely to be useful to exhibitors; Vivian Grey (Fellowes) is of a new and pretty shade of colour—a kind of light brown, but it must be disbudded somewhat freely.

Turning now to the fancy flowers, the six varieties distributed by Mr. Turner have, on the whole, borne themselves well in the season's trial. Edith Turner (Fellowes) has a pure pale yellow ground, delicately tipped with pure white, and has proved a charming exhibition flower; Gamester (Turner), pale buff striped with maroon, has also proved a good, useful flower. Mr. Standish (Turner), yellowish amber ground, suffused with carmine and tipped with white, has not done well this season; probably a drier time would suit it better. Mr. Purves (Fellowes) is another of the yellow ground flowers, tipped with white, and is of very good quality. Oracle (Fellowes) is a full-sized and constant fancy flower, the ground colour bright gold, with dashes and stripes of brilliant crimson. Peacock (Turner) has proved a very fine fancy flower, the dark purple-maroon ground colour being in marked contrast to the distinct white tip; it is also a most effective variety for planting in borders, being very prodigal of bloom.

Of the older show flowers, a few of the very best at Slough this season :—The Acme of Perfection (Downie & Laird), primrose-yellow, a fine and constant variety; Cremorne (Eckford), yellow, tipped red, very fine form; Criterion (Edwards), delicate rose, a flower of great size and fine outline, but a little shallow in the centre; Earl Ravensworth, lively fawn, a sport from Vice-President, and having all its excellent qualities; George Goodhall (Keynes), orange-scarlet; Henry Walton (Keynes), yellow ground, heavily edged with vermilion; Herbert Turner (Turner), French-white, with soft tinge of lilac, a fine exhibition flower; James Cocker (Keynes), a purple self, large, and of fine form, a very constant exhibition flower; James Service (Keynes), dark crimson, large, and fine; John Neville Keynes (Keynes), a remarkably fine and very constant yellow self; John Standish (Turner), bright red, large, and very constant, fine for exhibition; King of Primroses (Rawlings), a large and excellent primrose self; Leah (Turner), golden-yellow self, first-rate quality, fine in colour; Ovid (Turner), a rich puce self, very fine and constant; Prince Arthur (Fellowes), beautiful clear yellow, a fine show flower; Royal Purple (Fellowes), a purple self brightened with lilac; Royal Queen (Eckford), pale yellow ground edged with purple, of good size and fine quality; Thomas White (Keynes), a fine maroon self of excellent quality; and Vice-President (Keynes), a rare old flower of first-class properties.

Of fancy varieties the following are thoroughly good exhibition flowers :—Carnation (Keynes), charmingly flaked with dark rosy purple on a white ground; Dick Turpin (Turner), maroon ground, tipped with white; Fanny Sturt (Pope), red tipped with white, very constant; Flora Wyatt (Keynes), orange striped and flaked with red, comes fine in a self form; Flossie Williams (Keynes), handsomely flaked with purplish crimson on a paler ground; Gem (Pope), dark maroon tipped with white; Henry Glasscock (Keynes), buff striped with crimson: can also be shown as a fine crimson self; Laura Haslam (Fellowes), pale yellow tipped with white; a beautiful fancy; Miss Bond (Keynes), deep lilac striped with dark maroon; Mrs. Saunders, yellow tipped with white, very fine indeed; Pauline (Turner), buff, distinctly tipped with white, fine form; Profuse (Goodwin), maroon tipped with white, a striking and very useful flower; Queen Mab (Turner), white edged with scarlet, very attractive; Rev. J. B. M. Camm (Keynes), yellow flaked with red; and Summertide (Turner), chocolate, tipped and striped with white. *R. D.*



Notices of Books.

Pollen. By M. Pakenham Edgeworth. With 446 figures. Hardwicke & Bogue.

It is impossible to comment on this work without the expression of a regret that its accomplished author should have allowed it to see the light in its present shape. The author is a botanist of great experience, and has justly earned the esteem of his colleagues. In the present work he has presented us with the results of his observations extending over several years, and with them he has intercalated the remarks that have been made by other observers. Unfortunately, he has in both cases apparently allowed his rough notes to pass into print without revision or collation. The consequence is that an unusual number of errors and misprints are to be found in the volume, many of which, moreover, are no mere typographical errors.

Take for instance the description of the pollen-grains of such Coniferæ as Pinus and Abies. When we come to examine the figures we find scarcely more ground for confidence. The system of measurement is all but incomprehensible, and the forms given to different surfaces of the same pollen-grain are sometimes such as to make us wonder whether they can possibly be intended for representations of the same grain. But we have no desire to enter more fully into particulars, as it is specially distasteful to have to comment on the work of so estimable a botanist, who in this instance has failed to do justice to himself. An experienced botanist or microscopist who would know how to check the descriptions and figures given may find this little book serviceable, as it is certainly convenient to have so many illustrations gathered together for reference. But as a guide to botanical students, and still more as a reference book to that very large class of dilettante microscopists, we are sorry to be obliged to say the book is far from trustworthy.

Physiological Tables for the Use of Students. Compiled by E. B. Aveling, D.Sc. Hamilton, Adams & Co.

Useful as a remembrancer to the student who has first used his powers of observation and memory, otherwise mischievous.

Bulbs and Bulb Culture. By D. T. Fish (*Bazaar* Office).

A useful little treatise for Villa gardeners and amateurs, who may be glad to have so convenient a *brochure* at the present planting season. As a matter for the consideration of the publishers may we suggest that the type is painfully small although clearly printed?

PUBLICATIONS RECEIVED. — The Australian Horticultural Magazine.—Dietetic Reformer.—Bulbs and Bulb Culture, by D. T. Fish (*Bazaar* Office).—Botanical Magazine.—The Florist.—Revue de l'Horticulture Belge.—Revue Horticole.—Moniteur Horticole.—American Agriculturist.—Report of the Brisbane Botanic Garden.—Journal des Roses.—Proceedings of the Linnean Society of New South Wales.—Die Pflanzen reste des Agyptischen Museums in Berlin.—Enumération Methodique des Plantes Nouvelles ou Intéressantes, par André de Vos.—Bulletin d'Arboriculture. — Sempervirens.—Illustra-

tion Horticole.—Gardeners' Monthly.—Water Supply of South Africa, by J. C. Brown, L.L.D. (Oliver & Boyd).—Journal de la Socié é Centrale d'Horticulture.

Foreign Correspondence.

Saharunpore, N.W.P. of India: *September* 10. *Banyan Fig-Tree.*—In connection with some remarks on Banyan Fig-trees published in your issue of July 28, I may mention that in this garden there is a Fig (Ficus retusa, L.) which sends down adventitious roots from its branches most freely; some of these develope into stout supporting pillars. It is a very handsome evergreen tree, with widely spreading branches, and affords excellent shade. Being a rapid growing tree, it is admirably suited for avenue and roadside plantation. Its leaves are much smaller than those of the true Banyan (F. bengalensis), and are quite smooth and shining. The growth of the aërial roots is much encouraged by inserting their extremities into columns of heaped-up earth kept continually moist. There are other species of Fig in this garden (F. elastica and F. cunia) which show a decided tendency to the Banyan-like growth, though in a lesser degree. *J. F. Duthie, Government Botanical Garden.*

Reports of Societies.

Fungus Meeting in Paris.—Meetings of fungologists have of late occupied so much space in this journal that the present record of the Paris meeting can only contain a brief outline of the week's proceedings. The second annual session of the Botanical Society, which is specially dedicated to mycology, commenced on Sunday, October 21, and closed on Friday, the 26th. Previously some of the members had made short excursions, in order to collect specimens for the opening exhibition, and when we arrived at Paris on the Saturday evening these specimens were under arrangement in the large room of the Horticultural Society, in the Rue de Grenelle. The method adopted at Paris is a novel one, and for many reasons not the best, to commence the session with an exhibition. All the results of the week's excursions do not meet the public gaze, and it appears to throw considerable labour and responsibility on the officers of the Society to make excursions beforehand and collect specimens for the exhibition. However, it must be supposed that they have good reasons for such a proceeding, inasmuch as we are in the habit of saying—"They manage these things much better in France."

On Sunday morning, October 21, the exhibition was opened to the public from ten o'clock until five, and during the whole time was well filled with visitors, who appeared to take considerable interest in the subject. About 180 feet of tables were filled with specimens of fungi displayed on white plates, after the manner adopted at Hereford this year. The walls were decorated with water-colour drawings, to the number of 350, by MM. Boudier, Dr. Bull (of Hereford), Cornu, Cuisin, Quelet, Richon, and Seynes. The drawings by M. Boudier were highly artistic, and the most exquisitely finished of any we ever remember to have seen. Unfortunately 700 of these excellent illustrations were burnt during the war. Many of the specimens exhibited on the tables were of considerable interest, but on account of the unfavourable season the fresh specimens were few in number. Several specimens of the rare Battarrea Gaudichaudii were sent from Florence. A collection of dried Hymenomycetes from M. Barla, of Nice, mounted for the herbarium, excited much attention from the excellent manner in which they were prepared. Each species was accompanied by a coloured drawing and sections, and one or two of the mounted specimens were also coloured up in body colour to a resemblance of life. One species only was mounted on each sheet, and this was sometimes represented by twenty specimens in different stages of growth. Several plates contained the dried fungi sold in the markets in different parts of France, strings of Morchella deliciosa from near Geneva, absolutely identical not only in the species, but also in the method of drying and stringing them with those we have received from Cashmere. Of course there were strings of the Chantarelle and other species dried in fragments which could not be satisfactorily identified. In the evening at 8 o'clock Dr. M. Cornu gave an admirable popular lecture on the study of Fungi in another room.

Monday, October 22.—The exhibition was again open from 10 to 5, after which it was closed, and the specimens and drawings returned to their owners. About twenty gentlemen met at the railway station after *déjeûner*, and proceeded on an excursion to the Forest of Saint Germain. Soon after leaving the station strangers were shown the house in which M. Thiers died, and after admiring for awhile the beautiful view of the valley of the Seine from the elevated terrace on which the pavilion is built, the excursionists dispersed into the forest until 4 o'clock. The large long green boxes of the French mycologists are certainly of an imposing appearance, especially when carried to the extent of one enthusiast on the present occasion, who carried a box at his back nearly 3 feet long, and as broad as his body. Some of the party suggested that it might be used as a sleeping apartment, or as a shelter from the rain. We should think it rather stiff work to beat our way through thick underwood with such an encumbrance at our back.

In the evening, at 8 o'clock, a meeting was held at the rooms of the Society, with M. Duchartre in the chair, when a paper describing some new species of fungi was read by M. Boudier; also one of a similar character by Dr. Quelet, one by Dr. M. C. Cooke on some allied species of Æcidiacei, and finally a general conversation on the relations between the larger fungi and cold weather. Dr. Quelet thought that cold was not so injurious as generally supposed, as he had noticed some species revive after frost, especially the Hygrophori, and he instanced Hygrophorus hypothejus as not appearing until frosty weather. M. Cornu then reported the names of the species encountered during the excursion of the day.

Tuesday, October 23.—Excursionists were stirring early to leave the station of the Northern Railway by 8 o'clock, for a ride of nearly two hours to the Forest of Villers-Cotterets. This is a large crescent-shaped forest, of 32 miles in length, still inhabited in some parts by wild boars. In the town we were shown the house in which Alexandre Dumas the elder was born, and then went on to the Hôtel Dauphin to breakfast. After a hurried scramble to the station, which is in a remote corner of Paris, and a ride of two hours, breakfast was highly appreciated, and indulged in so leisurely that it was noon before the party were on their way to the forest. Conversation during breakfast was animated on all topics save fungi and politics. It was dark when the party returned to the hotel at 6 o'clock to dine. During this meal some large dried Polypori from the Vosges were on the table, and the conversation was very mycological. Dr. Quelet declared that Hydnum gelatinosum was an excellent fungus to eat raw, with sugar, like jelly, and of this he spoke from experience. Some Truffles collected during the day were pronounced to be Tuber mesentericum, sold usually at five or six francs per kilogramme, or about half the price of Tuber brumale. Before the dinner party made their way to the railway station Dr. Cornu undertook the operation of slicing up a large specimen of Polyporus resinosus, which had been collected during the day, and was carried by one of the party mounted on the tip of his umbrella and borne on his shoulder. It is noteworthy that in these excursions the party keeps very much together, and whenever anything rare or interesting is found a whistle or a "*voilà*" brings them all together, the specimen is examined by all before it is consigned to the vasculum, and whenever it is divisible it is divided between those most interested in that particular group to which it belongs. The vivacious and energetic Dr. Cornu, always on the spot whenever required, gave such explanations as the less experienced might desire, or Fries' *Epicrisis* was brought out and consulted under a tree, doubtful points cleared up on the spot, and if new or rare fresh specimens sought after at once. Paris was not reached again until 10 P.M., and hence no evening meeting could be held.

Wednesday, October 24.—The proposed excursion for this day was abandoned, and, instead thereof, at one o'clock a party which had been organised for the purpose was conducted by M. Cornu through the National Museum and Herbarium at the Jardin des Plantes. In the evening at half-past eight, another meeting was held at the rooms of the Society, when some short communications were read. One of these described a species of Coprinus which was developed on a surgical bandage. Mr. T. Howse read a paper on the fungi of the neighbourhood of London, which was followed by a general conversation on the fungi of London as compared with those of Paris; on the fungi of the markets in both countries, and on parasitism of Agarics, such as Nyctalis and Agaricus Loveianus. Dr. Cornu reported the species found at the excursion of the previous day, which would hardly be of sufficient interest to repeat here.

Thursday, October 25.—The excursion was arranged for Montmorency, only a few miles distance, and consequently did not necessitate an arrival at the station before ten o'clock. Unfortunately, this was a thoroughly seasonable day, raining and pouring alternately, and all operations were conducted under umbrellas, including scratching for Truffles, for this was the "scratch day." Notwithstanding all these little inconveniences five species of Elaphomyces were found, some of them in considerable number, and this was no small achievement when it is remembered that they are subterranean and give no certain indication of their presence on the surface, but must be scratched for on "all fours." A most extraordinary crop of Peziza badia was found in one place where hundreds of specimens, some of them 3 or 4 inches in diameter, extended in a scattered manner over about half an acre. In another spot the bird's-nest fungus, Cyathus striatus, was in extraordinary profusion, in some cases growing in dense masses 6 to 9 inches in diameter, and prevailing over the whole "clearing" of some acres in extent. In the evening, at half-past 8, the results of the day were announced, and Dr. Cornu explained the structure and progress of the new Vine disease, of which specimens were exhibited. A report by M. de Seynes on the Hereford meeting was also read.

Friday, October 26.—The closing excursion to the Forest of Fontainebleau raised some of us from our beds at 5 o'clock, in order to catch the 7 o'clock train at the other extremity of Paris. After a ride of 37 miles breakfast was welcome, but before it could be partaken of an outlying portion of the forest had to be explored, so that the hotel was not reached until 12 o'clock. Justice to the viands being fully rendered, the exploration was again undertaken, chiefly under the coniferous trees, this being the only spot around Paris where Fir trees are grown to a sufficient extent to produce the characteristic fungi. The shades of evening closed around the excursionists before they again reached the hotel for dinner, and at 8 o'clock the train was due to start for Paris. Dinner having been disposed of, compliments became general, and amongst the toasts which were duly honoured were "The Strangers," "The President" (M. de Seynes), whose unavoidable absence was universally regretted; "The Veteran Fries," "The Woolhope Club and Dr. Bull," "The Author of the *Handbook of British Fungi*," "Messrs. Quelet, Boudier, and Cornu," and "The Mycologists of France," the last two being proposed by the English visitors. Thus closed the Session Mycologique of 1877.

Necessarily this is only a brief outline of the work of the week. Amongst the species found which were of most interest to us were those either not yet found in Britain or very rarely, such as an old dilapidated pileus of Strobilomyces, found near Paris for the first time by Dr. Quelet; numerous specimens of the very characteristic Russula Queletii, first identified in Britain this year during the Woolhope foray; Lactarius helvus, not at all uncommon around Paris; Cortinarius scutellatus, delibutus, isabellinus, and paleaceus; Irpex paradoxus, Coprinus lagopus and picaceus, Phlebia radiata, Hydnum argutum, fuscoatrum, and molle; Hygrophorus discoideus, Grandinia mucida, a curious Marasmius resembling M. rotula, with lateral branches bearing abortive pilei, found in some quantity at Montmorency; Elaphomyces Leveillei, muricatus, cyanosporus, echinatus, one asperulus, and many other of the larger fungi, which will be recorded in the *Bulletin* of the Society. At one of the evening meetings copies of the design for the Woolhope Club *menu* were distributed and explained by M. Cornu, to the great amusement of the Parisians, although sometimes it was very difficult to translate the point of the humour. The long-continued dry and cold weather which preceded the session was quite unusual, and rendered the season one of the most barren and unfavourable in the memory of the oldest mycologist. *M. C. Cooke.*

The Villa Garden.

Forethought.—This is a very necessary attitude of mind in all gardeners, and it is a theme on which many a soundly practical garden homily has been written. A Villa gardener whose love for flowers greatly outpaces the space (very often of an extremely limited character) which he has at disposal for growing them, must be constantly looking ahead, though in doing so he will never miss the enjoyment derivable from the present. While he anticipates the future his soul drinks in all the pleasure forethought in the past has provided for the present time. Faith is often sweetly lost in sight, but it is never wholly absorbed by it; some degree of it is always being projected into the future: he plans and provides—

"Man is the toy of Fate,
His present is at best a moment's space.
We all must face
The unknown to-morrow that in silence wait."

Hardy Plants in Pots.—On what centres the floral hopes of the Villa gardener in the future? Summer has indeed come to a close; the boughs of trees are well nigh naked against the horizon, and ere long the soft, smooth, silent snow will cover them; but all things do not rest in winter, some plants have their resting period when others are at the height of their robust activity, and they put on life and vigour when others are sinking to repose.

A little forethought in summer has given us in the open ground blossoms up to the present time. We have been gathering Roses, especially from a bush of

Gloire de Dijon in a sunny position, Marigolds, Cloves, Gladioli, Mignonette, Asters, Anemone japonica, blue Lobelia, Pansies and Violas, and a few others, up to yesterday. To-day's violent winds and sweeping rain will wreck the chances of further flowers out-of-doors. What is there within? We step into our cold greenhouse and find there the last flowers of Pelargoniums and Fuchsias; Colchicums in pots have been very gay, but are fading away; there is Abutilon Boule de Niege, a capital bushy French Marigold in a pot, laden with blossom, the golden ground of which is quite lustrous against the gloom without. Crocus speciosus—we have had a capital succession of this in pots brought in from the open ground as they threw up their purple buds. Triteleia lilacina, and various single and double Primroses, are all yielding pleasant flowers. Outside, still standing in a raised ash bed under an east wall, where there is a little shelter from the driving rain, there are fast coming on towards their blooming time more Primroses, potted early in summer to give them a good start, Lord Lyons and Derby Day forcing Pinks, Primulas nivalis, intermedia, marginata, purpurea, denticulata, and farinosa; Scilla bifolia and sibirica, Anemone fulgens, A. nemorosa flore-pleno, the double yellow and double black Auriculas, Violets, and a few other hardy early flowering plants. These, with a few Snowdrops and Crocuses in pots, will carry the floral service on towards the spring.

As a matter of course it is a great advantage to have a house in which to grow these, and such a house can be erected at a small cost, as no heating apparatus is required, and it can also be placed in a position not so suitable for a heated greenhouse. This kind of cold house is rapidly growing in favour among Villa gardeners; it makes them to a great extent independent of the vicissitudes of weather, and they can get into it and enjoy what is pleasant there undeterred by rain, or snow, or frost without. If the last be very severe a paraffin lamp left burning by night will neutralise its effects to a considerable extent.

The Villa gardener who trusts exclusively to bedding plants in summer has but very little to interest him during the winter; but he who would be always surrounded by pleasant flowers and cheerful-looking plants will gather about him some of the things mentioned above or others of a like character. To imagine they require exceptional care or attention is to do them an injustice; they simply require to be repotted once a year or so, stood out-of-doors till they are sufficiently advanced towards the blooming time to require housing. A number of plants that do not bloom till January, February, or March can be kept in the open air all through the winter if they are plunged in cinder-ashes up to the rims of the pots during the time of their exposure.

In an odd corner, where nothing planted out would grow with advantage, we a few years ago made up an ashbed. The foundation, to the depth of 6 inches, was made up of all the broken potsherds from the house, mingled with brick rubbish; then the contents of the ashhole were sifted, the coarser parts being placed on the layer of potsherds, and the fine ashes reserved for the top of the bed. In this manner a bed some 12 feet in length by 3 feet in width and 12 inches in depth was built up. It is a deliciously cool spot in summer, and, on the whole, cosy in winter; and there is very little in the way of drip from trees near it. The bottom being so cool in summer no plunging is required; in winter it is resorted to when frost threatens to keep the sides of the pots free from its action. Such a bed so formed drains off rain quickly, and cinder-ashes are the best plunging material during winter, as they retain moisture least, and worms do not infest them much.

And when the frost is unusually keen a basket of short hay should be kept at hand to scatter over the plants, burying them to the depth of 3 or 4 inches; and that the hay be not swept away by the wind an old piece or two of carpet or a Russian mat may be added, to be removed as soon as the severity of the visitation has ceased.

A cheap cold frame covered with glass lights might be thrown over the beds at a small cost, and then the plants can be protected from heavy rains as well as frost without the employment of the covering just referred to. Such a frame is never without its uses all the year round. It is such a convenience to the Villa gardener that if tempted to invest in such a frame he will find it an advantageous speculation; it will incite him to add to his collection of plants some choicer specimens which need a little protection such as the frame affords; and whether it be when spring spreads abroad her robe of green, or the summer's flame deepens to the crimson of autumn and the decaying brown of winter, he will be certain to have ready to his hand somethng that shall heighten his admiration and deepen his reverence for natural loveliness.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Oct. 31, 1877.

Month and Day.	Barometer. Mean Reading reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Oct.	In.	In.	°	°	°	°	°				In.
25	29.14	—0.58	53.0	46.7	6.3	49 6	+ 2.1	48 5	96	S.S.E.; E.S.E.	0 50
26	29 69	—0.03	55.3	45.0	10.3	49.0	+ 1.8	46 9	93	N.; WNW	0.00
27	29.72	0 00	56.3	42.2	14.1	49.5	+ 2.6	48 1	95	S.; S.W.	0.25
28	29.92	+ 0 20	56.1	45.0	11.1	50.3	+ 3 6	43 1	77	S.W.; WSW	0.00
29	29 53	—0.21	58 7	43.9	14.8	51.4	+ 4 8	49.8	94	S.	0.21
30	29 58	—0.16	61 6	43 1	18.5	51 6	+ 5 1	49.2	92	WSW; S.S.W.	0.02
31	30.04	+ 0.29	56.2	47.2	9 0	51.0	+ 4.6	41.0	69	WSW; WNW; W.	0.00
Mean	29.96	—0.07	56.7	44.7	12.0	50.3	+ 3,5	46.7	88	S.W.	sum 0.98

Oct. 25.—Overcast, dull, and wet throughout. A miserable day.
— 26.—Overcast and gloomy till 1 P.M. Fine and bright after. Cloudy at night.
— 27.—Overcast and dull till 5 P.M. Fine and cloudless after. Heavy rain fell between 3 and 4.30 P.M.
— 28.—A very fine day. Clear and mild. Cloudless at night.
— 29.—Overcast, dull and wet till 8 P.M. Fine after. Cloudless at night.
— 30.—Fine and bright till 3 P.M. Overcast, dull, with strong wind and frequent thin rain after. Mild.
— 31.—A fine day, partially clear. Mild. Cloudless at night.

London: *Barometer.*—During the week ending Saturday, October 27, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.13 inches at the beginning of the week to 29.38 inches by the afternoon of the 23d, increased to 29.57 inches by noon on the 24th, decreased to 29.23 inches by the afternoon of the 25th, increased to 29.98 inches by the evening of the 26th, decreased to 29.87 inches by the early morning hours of the 27th, and was 29 90 inches at the end of the week. The mean reading for the week at sea level was 29.68 inches, being 0.45 inch below that of the preceding week, and 0.22 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 62¼° on the 22d to 53° on the 25th; the mean value for the week was 56½°. The lowest temperatures of the air varied from 38° on the 24th to 49¾° on the 22d; the mean from all stations was 44¼°. The mean daily range of temperature in the week was 12¾°, the greatest range in the day being 18°, on the 24th, and the least 6¼°, on the 25th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—21st, 51¼°, + 2°.2; 22d, 55°.6, + 6°.9; 23d, 48°.3, 0°.0; 24th, 46°, — 1°.9; 25th, 49°.6, + 2°.1; 26th, 49°, + 1°.8; 27th, 49°.5, + 2°.6. The mean temperature of the air for the week was 49°.9, being 2° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 109¾° on the 24th, 94½° on the 22nd and 81° on the 27th; on the 25th the reading did not rise above 54°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 32¾° on the 24th, 36° on the 23d, and 37° on the 21st. The mean value for the seven low readings was 38½°.

Wind.—The direction of the wind was S.W., and its strength brisk. The weather during the week was dull and wet, but much milder. Fog prevailed on the 26th.

Rain fell on six days during the week, the amount measured was 1.34 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 64¼° at Cambridge, 62¼° at Blackheath, 61½° at Norwich, and 61¼° at Brighton; the highest temperature at Liverpool was 57½°, and at Sheffield and Hull 58°; the mean value from all stations was 60°. The lowest temperatures of the air observed by night were 31° at Wolverhampton, 36° at Leicester, 36½° at Cambridge, and 37° at Nottingham; the lowest temperature at Bradford and Sunderland was 42°, and at Liverpool 41½°; the general mean from all stations was 38¾°. The range of temperature in the week was the greatest at both Cambridge and Wolverhampton, 27¾°, and the least at Liverpool, 16°; the mean range of temperature from all stations was 21¼°.

The mean of the seven high day temperatures was the highest at Truro and Portsmouth, both 59°, and at Plymouth 58°, and the lowest at Hull, 52¾°; the mean value from all stations was 56°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 38¾°, and at Hull 42°; and the highest at Brighton, Portsmouth, and Truro, all 46¼°; the mean from all stations was 44°. The mean daily range of temperature in the week was the least at Liverpool, 8½°, and the greatest at Wolverhampton, 15¾°; the mean daily range from all stations was 12°.

The mean temperature of the air for the week from all stations was 49°, being 2¼° higher than the value for the corresponding week in 1876. The highest were 52° at Portsmouth, 51¾° at Truro, and 51° at Plymouth, and the lowest were 45¾° at Wolverhampton, and 46½° at Hull.

Rain fell on every day in the week at Truro and Liverpool, and on six days at most other stations. The amounts measured varied from 2¾ inches at Brighton, and 1½ inch at Bradford and Leeds, to four-tenths of an inch at both Leicester and Norwich. The average fall over the country was 1 inch.

The weather during the week was milder, dull, and showery. Lunar halos were seen at Bradford on the 21st, 22d, and 26th.

Scotland: *Temperature.*—The highest temperatures of the air varied from 62° at Perth to 53½° at Aberdeen; the mean value from all stations was 58¾°. The lowest temperatures of the air ranged from 31° at Aberdeen to 39½° at Glasgow; the mean value from all stations was 37¼°. The mean range of temperature from all stations was 21½°.

The mean temperature of the air for the week from all stations was 47°, being ½° lower than the value for the corresponding week in 1876. The highest was at Greenock, 49¾°, and the lowest at Aberdeen, 45°.

Rain fell heavily at some places, 4½ inches being measured at Greenock, and 2 inches at Perth; at Aberdeen only four-tenths of an inch fell. The average fall over the country was an inch and six-tenths.

Dublin.—The highest temperature of the air was 66°, the lowest 37°, the range 29°, the mean 51°, and the fall of rain 0.44 inch.

JAMES GLAISHER.

Variorum.

AN OCTOBER GARDEN.

In my autumn garden I was fain
To mourn among my scattered Roses:
Alas for that last Rosebud which uncloses
To autumn's languid sun and rain,
When all the world is on the wane!
Which has not felt the sweet constraint of June,
Nor heard the nightingale in tune.

Broad-faced Asters by my garden walk,
You are but coarse compared with Roses:
More choice, more dear that Rosebud which uncloses
Faint-scented, pinched, upon its stalk,
That least and last which cold winds balk;
A Rose it is though least and last of all,
A Rose to me though at the fall.

Christina G. Rossetti, in the "Athenæum."

Farming in Worms.—Men who are great at catching fish are generally bad hands at that necessary preliminary, fishing for worms; and they will doubtless be very glad to hear of an entirely new industry, that of collecting, breeding, and rearing worms. A worm farm has been carried on in Nottingham with great success, and this is the way it is worked:—Every favourable night—that is, when the ground is wet—several men are sent out into the pastures and meadows of the neighbourhood, and in a single night between 3000 and 6000 worms of various kinds, such as the cockspur, the lob or dew-worm, and ring-tailed brandling, are caught. The worms are sly animals, we are told, and the men have to be very cautious, for on hearing the slightest footstep they are apt to pop back into their holes. The worms are brought home and placed in properly selected field Moss. A newly caught worm is very tender and delicate, and easily breaks up when attached to a hook, but when

the farmer has properly educated him he is as tough as a piece of india-rubber. Worms cannot be kept longer than a week, as a rule, so before that time the farmer packs them up in light canvas bags and sends them to market, where they are sold by the thousand or the quart. *Cassell's "Family Magazine" for November.*

Obituary.

Mr. Robert Heward, F.L.S., died on October 24, at the advanced age of eighty-five. Though not of late years very closely associated with horticulturists, he was always passionately fond of gardening and botany, and was on terms of intimate friendship with many persons holding prominent positions in the scientific world. In early life, when the Royal Horticultural Society, then the Horticultural Society of London, had its first garden at Kensington, Mr. Heward filled the office of garden clerk, and he continued to do so until after the Society's removal to Chiswick. We have often heard him tell of his having in that capacity assisted M. Sabine in arranging and planting the collection of Crocuses for which the Society was at that time famous, and which form the subjects of several coloured plates issued in its *Transactions*. He also assisted Mr. Lindley in numbering and removing the set of Roses which formed the basis of his *Rosarum Monographia*.

Later on he accepted an appointment to manage a Coffee plantation in Jamaica, in which island he resided for five years, making a considerable collection of dried plants, and especially of Ferns, which were his favourite objects of study, as well as collecting other subjects of natural history at that time little known, some of which found their way to the collection at the British Museum. After his return to England he wrote a valuable and interesting paper on the Jamaica Ferns, which was published in the *Magazine of Natural History* for 1838, and of which separate copies were circulated amongst his friends.

Mr. Heward was on terms of close friendship with the leading Kew *employés* under the old *régime*, and to him in a great degree the public is indebted for the reforms which have within the last quarter of a century been so ably worked out in the administration of that establishment, since it was a letter of Mr. Heward's, published in the *Times* that, we believe, led up to the enquiry into the management of these gardens, which resulted in the reforms above alluded to. With the two Cunninghams, Richard and Allan, Mr. Heward was very intimate, especially with the latter, from whom he acquired, by will, the collections of Australian plants collected by him and his brother in New Holland. The distribution of the duplicate specimens of this collection brought Mr. Heward into immediate correspondence with many of the leading foreign botanists of the day, and introduced him to the friendship of such English botanists as Brown, Hooker, Lindley, Webb, Ward, Bennett, Wight, and others of a generation which he has survived. The typical, *i.e.*, Cunningham's own, set of these Australian plants, was a few years since presented by Mr. Heward to the Kew herbarium. Mr. Heward also prepared from the letters and journals of Allan Cunningham, a biographical sketch of his life and labours as botanist to the Australian colonies, which was published in Hooker's *Journal of Botany*. His collection of dried Ferns, which was considerably enriched through the correspondence with foreign botanists above referred to, is now in possession of the writer of these notes, who in late years has shared his friendship, and with other survivors now mourns his loss.

After his return from the West Indies and his re-establishment in London Mr. Heward was for many years intimately connected with the London Press. He was sub-editor of the *Westminster Review* under Colonel Thomson and Sir John Bowring; and as long as strength permitted was Mr. Hansard's principal assistant in preparing for press the far-famed *Parliamentary Debates*. During this time, and till within a few years since, he carried on business as a newspaper agent in Kensington, where he was born and brought up, and where he resided for the greater portion of his life. For a considerable period he held an appointment in the Colonial Office, from which about twelve months since, on account of failing strength, he retired with a pension, and has since resided with relatives in the pleasant town of Wokingham, in Berkshire.

Mr. Heward, who was a great lover of Ferns, made these elegant plants the objects of his special study; and one genus, closely related to the Adiantums—consisting, in fact, of net-veined Adiantums—has been named *Hewardia* in his honour, by his old and attached friend, John Smith, formerly Curator of the Kew Gardens.

For some months past his strength, both of body and mind, has been gradually dwindling away, and at length he has passed calmly and peaceably to his long rest, having nearly completed his eighty-sixth year. He was a sincere and true friend, of a most placid temper, full of anecdote of the incidents of early life, a great reader, and with a mind well stored with information on various topics, irrespective of his scientific knowledge, which was comprehensive. He died on October 24, and was buried on Monday last, in Brompton Cemetery, beside his wife, who had by about ten years preceded him on this last journey, and amid the sorrowing regrets of many warmly attached friends. *M.*

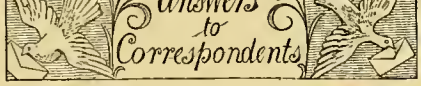
—— The death of Mr. Joseph Durham, the eminent sculptor, is also announced. His most important work is the statue of the late Prince Consort in the gardens of the Royal Horticultural Society at South Kensington. We also regret to have to mention the death of Mr. Swinhoe, late Her Majesty's Consul at Ningpo, a gentleman well known in zoological circles, and an occasional contributor to these columns.

—— We also hear of the death, on October 28, of Mr. W. J. Nutting, of Barbican, aged 71.

Enquiries.

He that questioneth much shall learn much.—Bacon.

215. Pines Shrivelling.—Will some of your correspondents kindly tell me the reason why Pines shrivel in the stem before they are quite ripe? We have two or three fruits of Smooth Cayenne shrivelling in this way, while others are as plump and sound as in a young state. The Pines in question have had a night temperature of 75° to 80°, rising as high as 95° with sun, and a bottom-heat of 90°. *F. P.*



Box Embroidery: *R. P.* We do not know where you can obtain coloured sheets of designs.

Chrysanthemums: *A. B.* The plants may be grown up to a certain stage out-of-doors, but they require the assistance of glass to properly develope the flowers.

Grape Within Grape.—An instance of prolification. We have met with several cases. In place of a seed a young fruit is formed. We never saw one early enough to trace the course of growth.

Grapes: *J. Peed.* The Grape has a decided Strawberry flavour. We do not quite understand if you regard it as a novelty. There is a Strawberry Grape in cultivation, and if you will send a leaf and bunch we may be able to say if it differs in any material point.

Insects: *Conner & Reid.* The larvæ are those of an Otiorhynchus (weevil) or some other small beetle, the eggs of which have been deposited in the soil. There is no remedy, but searching out and destroying them so as to prevent the intrusion of another generation. Saxifrages, Blechnums, and other close tufted-growing plants, are often injured in a similar way by these troublesome creatures.

Mealy-Bug: *G. G.* Methylated spirits diluted with water will answer your purpose, but you must ascertain by experiments as to how much it requires to be diluted, so that it will not prove injurious to the plants.

Mentha pulegium gibraltarica: *K. E.* We do not know whether this plant seeds sufficiently to make it worth while saving. We have not seen any raised from seeds, the usual and a very quick method of propagation being by division.

Names of Fruits: *North Riding.* Apple: Frumpington.—*R. G.* 1, May be Cellini, but not certain; 4, King of the Pippins; 5, Striped Beaufin; 6, Old Nonpareil.—*J. M.* We still think the Pear sent is Beurré Clairgeau. The difference may be attributable to the stocks on which they are grafted or some similar cause—Triomphe de Jodoigne is very different.—*H. P.* We do not know the Pear you send.

Names of Plants: *H. C.* Saponaria officinalis florepleno.—*G. G.* sends us seventeen sorts of plants to name. Surely he cannot be aware of the time and trouble this involves. We are very pleased to help gardeners and others who have no means of ascertaining names of plants for themselves, but we must beg them to conform to the rule, and not send more than six at a time. *G. G.* is thoughtful enough to send good specimens. Most that we receive are wretched scraps, quite unrecognisable by the time they reach us. 1, we do not recognise; 2, Pomegranate; 3, Escallonia rubra; 4, Jasminum nudicaule; 5, Spiræa callosa; 6, Chimonanthus fragrans; 7, Kerria japonica; 8, Forsythia viridissima; 9, bad specimen—Spiræa Lindleyana, if the leaves are pinnate, if not, then probably S. ariæfolia; 10, Alonsoa incisifolia; 11, Melianthus major; 12, Colletia cruciata; 13, Berberis Bealei; 14, Euonymus radicans variegatus; 15, Saxifrage; 16, Dactylis glomerata variegata; 17, Elæagnus japonica.—*Viator.* Physalis Alkekengi.—*J. W.* We cannot pretend to name such scraps: send better specimens.—*L. B.* 1, Lastrea Filix-mas; 2, Lastrea dilatata, probably; 3, Polypodium vulgare; 4, Lomaria Spicant; 5, Asplenium Ruta-muraria; 6, Asplenium Trichomanes.—*M. S.* One of the varieties bred between B. boliviensis and Pearcei; they are now far too numerous to be recognised by a flower and leaf merely. This may possibly be an unnamed seedling.—*G. S. S.* 1, Lastrea decomposita; 2, Asplenium bulbiferum var.; 3, Athyrium Filix-fœmina plumosum; 4, Adiantum, specimen insufficient.

Peaches: *D. W. F.* The following may suit you:—Peaches: Early Beatrice, Hale's Early, Grosse Mignonne. Nectarines: Elruge, Lord Napier.

Pears on Midsummer Shoots: *J. D. & Co.* Many thanks. Such cases are not uncommon, but the true fruit—that is, the core—is not formed; the edible portion of a Pear is merely, as in this case, a swelling of a branch.

Primula: *S. Brooks.* Fine, well-fimbriated, and nicely varied in colour—rosy, carmine, blush, and white. It is, as we said before, a very fine strain.

Seedling Pear: *W. Mitten.* The fruits sent were large and handsome in appearance, but on cutting them were found much decayed at the core, and with little or no flavour.

Stephanotis: *G. F.* Thanks for the fruit sent, which is a rarity, though we have heard of specimens being perfected at some few other places this season. If the plant gets a tolerably dry rest the ripening of the other fruit is not likely to affect it in any material degree. The fruit, however, is not edible, and can scarcely be of any use for increasing the plant, which strikes freely enough from cuttings.

Vine Mildew and Sulphur: *J. Merrick.* Your practice is nothing new. Every gardener worthy of the name would have done the same thing.

Vines: *W. G.* The following would be a good selection:—White: 1 Buckland Sweetwater, 1 Muscat of Alexandria, 1 Foster's Seedling. Black: 2 Frankenthal, or Black Hamburgh, 1 Madresfield Court, 2 Lady Downe's Seedling, or Alicante. The others you name are uncertain.

Winter Heath: *Trowel.* If by Winter Heath you mean Erica carnea, the best mode of propagation is to plant it deeply in the soil, when the stems will root, and the old plant can be broken up into patches. It likes a sandy peat and an open situation.

Catalogues Received.—Messrs. Low, Somner & Co. (Octagon, Dunedin, Otago, New Zealand), General Catalogue of Garden, Agricultural, and Flower Seeds.—Messrs. Frœbel & Co. (Neumunster, Zurich), General Catalogue of Plants, &c.—Messrs. Eug. Verdier & Sons (37, Rue Clisson, Gare d'Ivry, Paris), List of New Roses.—Messrs. Howcroft & Watkins (14, Tavistock Row, London, W.C.), Descriptive Catalogue of Flowering Bulbs, &c.—Messrs. Hogg & Robertson (22, Mary Street, Dublin), Catalogue of Forest and Ornamental Trees and Shrubs, Rhododendrons, Conifers, &c.—Martin Grashoff (Quedlingburg, Germany), Special List of Vegetable and Garden Seeds.—Messrs. Bull & Co. (4, Mercer's Row, Northampton), Catalogue of Shrubs, Climbing Plants, &c.

Communications Received.—R. G.—A. Z.—J. S.—J. D.—Perrystone.—J. T. P.—C. C.—Van V.—A. H. P.—F. C.—W. T.—G. T. (many thanks).—H. R. I.—Cumbrian.—F. D.—M. D. (many thanks).—A. P.—E. J.—R. P.—H. P. and Scotland (next week).—A Planter (you are quite right. It was an error. We will give such a list as you suggest shortly).—Greenhouse (we have no information on the subject).—A Cockney Gardener (yes, if you work it up amongst garden refuse).—W. W. G.—T. T.—A. H. C.—W. D. P.—E. L.—A. H.—W. M.

Markets.

COVENT GARDEN, November 1.

There is scarcely any alteration to quote. Trade is still quiet, with a good supply of home-grown Apples and foreign Pears. Kent Cobs are heavy. *James Webber, Wholesale Apple Market.*

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	.. 2 0– 4 0	Garlic, per lb.	.. 0 6– ..
Asparagus, Sprue, per bundle..	.. 1 6– ..	Herbs, per bunch	.. 0 2– 0 4
Beans, French, per packet	.. 1 0– ..	Horse Radish, p. bun.	4 0– ..
— Scarlet Runners, per bushel..	.. 10 0– ..	Leeks, per bunch	.. 0 2– 0 4
Beet, per doz.	.. 1 0– 2 0	Lettuces, per score..	2 0– ..
Brussels Sprouts, p. bush.	.. 6 0– ..	Mint, green, bunch	0 6– ..
Cabbages, per doz.	.. 1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Carrots, per bunch..	0 4– 0 6	Onions, 12 bunches	3 6– ..
Cauliflowers, per doz.	1 6– 4 0	— young, per bun.	0 6– ..
Celery, per bundle..	1 6– 2 0	Parsley, per bunch..	0 9– ..
Chilis, per 100	.. 3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each	.. 0 3– 1 0	— Spanish, doz.	.. 1 0– ..
Endive, per doz.	.. 1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	1 6– ..	Salsafy, per bundle	1 0– ..
		Shallots, per lb.	.. 0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	.. 1 0– 2 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 0– 5 0	Peaches, per doz.	20 0– ..
Grapes, per lb.	0 9– 6 0	Pears, per doz.	1 0– 3 0
Lemons, per 100	8 0–12 0	Pine-apples, per lb.	4 0– 8 0
Melons, each	2 0– 5 0	Figs, green, doz.	1 0– 3 0
Nuts, Cobs, per lb.	0 4– 0 6	Walnuts, per bushel	5 0– 8 0
Oranges, per 100	12 0–20 0		

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Asters, 12 bun.	6 0–12 0	Mignonette, 12 bun.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, (Paper White), per doz.	3 0– 6 0
Calceolaria, p bun.	0 6– 1 0	Pelargoniums, 12 spr.	1 0– 3 0
Camellia blms., doz.	5 0–12 0	— zonal, 12 sprays	0 6– 1 6
Carnations, 12 blooms	1 0– 3 0	Primula, double, per bunch	1 0– 2 0
Chrysanth, 12 blms.	4 0–12 0	Pyrethrum	0 6– 1 0
Cornflower, 12 bun.	6 0– 9 0	Roses (indoor), doz.	1 6–12 0
Dahlias, 12 bun.	6 0–12 0	Stephanotis, 12 spr.	6 0–12 0
Epiphyllum, 12 blms.	1 0– 3 0	Stocks, 12 bunches	4 0– 8 0
Eucharis, per doz.	4 0–12 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz.	5 0–12 0	Tuberoses, 12 blms.	1 6– 4 0
Heartsease, 12 bun.	1 6– 6 0	Violets, 12 bunches	1 0– 3 0
Heliotropes, 12 spr.	0 6– 1 0		
Hyacinths, Rom. doz.	2 0– 6 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	6 0–12 0	Ferns, in var., p. doz.	4 0–18 0
Bouvardias, do.	12 0–24 0	Ficus elastica, each	2 6–15 0
Chrysanth., per doz.	5 0–12 0	Foliage Plants, various, each	2 0–10 6
Clematis	6 0–24 0	Fuchsias, per dozen	6 0–12 0
Coleus, per dozen	6 0– 9 0	Liliums in var., each	1 6– 6 0
Cyclamen, per doz.	12 0–24 0	Mignonette, per doz.	6 0– 9 0
Cyperus, do.	4 0–12 0	Myrtles, do.	3 0– 9 0
Dracæna terminalis	30 0–60 0	Palms in variety, each	3 6–21 0
— viridis, per doz.	18 0–24 0	Pelargon., scarlet, p. dozen	6 0– 9 0
Erica Hyemalis, doz.	18 0–42 0	Solanums	9 0–24 0
— gracilis, per doz.	6 0–18 0	Valotta purpur., doz.	9 0–18 0
Euonymus, in var., per doz.	6 0–24 0		

CORN.

Trade at Mark Lane on Monday was dull, the unsettled state of the weather operating as a check to business. English Wheat was about 1s. lower, while a like reduction was apparent in American Wheat; fine dry samples, however, were generally well held. Barley was firm, with an upward tendency. Malt was quiet, and much the same in price. Oats were about 6d. per quarter dearer than on Monday week, while as regards Maize, flat sorts were worth 6d., and round from 1s. to 2s. per quarter more money than the week previously. Beans and Peas were not very strong in tone. Flour was heavy at a reduction of 1s. for sacks.—On Thursday trade was very quiet, and quotations were nominally the same as on Monday, and where there was any pressure to sell lower prices, of course, prevailed. The arrivals of foreign Wheat and Barley were pretty liberal; but as regards Oats, Maize, and other classes of grain supplies were not very good.—Averages prices of corn for the week ending October 27:—Wheat, 53s. 7d.; Barley, 42s. 4d.; Oats, 23s. 8d. For the corresponding period last year:—Wheat, 47s. 1d.; Barley, 38s. 9d.; Oats, 25s. 2d.

CATTLE.

In the Metropolitan Market on Monday trade was very heavy, and prices were not quite so good as on the previous Monday. The weather was very unfavourable, and the dead markets were over-supplied. The demand for sheep was smaller than on Monday se'nnight, and prices on the average lower. Calves were in demand at fully late rates. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 4s. 6d. to 6s.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 6s. 10d.; pigs, 4s. to 5s.—Thursday's trade continued very quiet. Supplies were extremely short, but amply sufficient for the demand. Both beasts and sheep experienced a limited sale. Fine breeds ruled tolerably firm, but other sorts irregular. Calves were quiet, and without much change.

HAY.

The Whitechapel report for Tuesday states that fodder was only in moderate supply, but the trade was dull, and prices continued flat. Prime old clover, 100s. to 134s.; inferior, 85s. to 95s.; good new clover, 100s. to 130s.; prime meadow hay, 90s. to 107s.; inferior, 75s. to 85s.; and straw, 44s. to 53s. per load.—Thursday's market was moderately supplied with fodder. The trade was better than on Tuesday, and prices were unaltered.—Cumberland Market quotations:—Superior meadow hay, 105s. to 115s.; inferior, 80s. to 95s.; superior Clover, 128s. to 135s.; inferior, 90s. to 110s.; and straw, 52s. to 57s. per load.

POTATOS.

From the Borough and Spitalfields markets we learn that a moderate supply of Potatos has been on sale, and the demand ruled steady, at about late rates. The arrivals of German reds, Belgian kidneys, and French round Potatos, have of late been considerable. Kent Regents, 140s. to 160s.; Essex ditto, 120s. to 150s.; Rocks, 100s. to 120s.; Victorias, 140s. to 170s.; flukes, 170s. to 190s.; and kidneys, 120s. to 170s. per ton.—The Potatos imported into London last week comprised 38,629 bags Hamburg, 5386 Stettin, 1678 bags 400 sacks and 170 tons Dunkirk, 3018 bags Antwerp, 1680 Harlingen, 1602 Ghent, 1318 bags 30 barrels Bremen, 451 bags 837 sacks Boulogne, 200 barrels New York, 197 bags Brussels, 178 Rotterdam, and 72 Dieppe.

COALS.

There was a fair demand for house coals at market on Monday, at previous prices. Wednesday's business showed no alteration. The quotations for the two days were:—West Hartley, 17s. 3d.; Walls End—Original Hartlepool, 21s. 6d.; Hetton, 21s.; Hetton Lyons, 18s. 9d.; Hawthorns, 18s. 9d.; Lambton, 20s. 6d.; South Hetton, 21s.; Vanes, 19s.; South Hartlepool, 19s.; South Kelloe, 19s. 6d.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens, sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Broseley.

JOHN MATTHEWS, The Royal Pottery, Weston-super-Mere, Manufacturer of TERRA COTTA VASES, FOUNTAINS, ITALIAN BASKETS, BORDER TILES, GARDEN POTS, of superior quality, from 1 to 30 inches diameter, stand the frost, and seldom turn green. ORCHID, FERN, SEED, and STRIKING PANS, RHUBARB and SEAKALE POTS, &c. Price Lists post-free.
Sheets of Designs, 6d. Books of Designs, 1s.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12s. 6d.; 21-oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36s.; 3ds, 46s. per 300 feet;—21-oz. 4ths, 36s.; 3ds., 46s. per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities, of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.
GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
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WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
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See addresses above.

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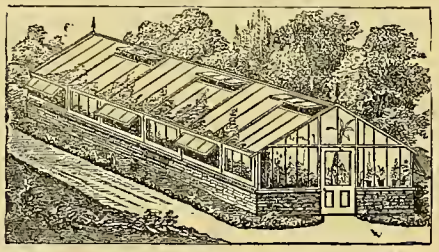

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Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	35 0
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LIGHTS ONLY.	
3 feet by 4 feet Light, not painted nor glazed	3 6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10 0
6 feet by 4 feet, not painted nor glazed	6 0
Ditto glazed and painted four coats	16 6

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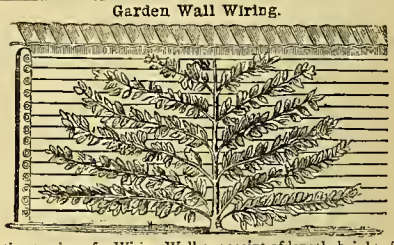

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Useful and Ornamental for Gardens and Conservatories.
Iron and Wire Work—Arches,
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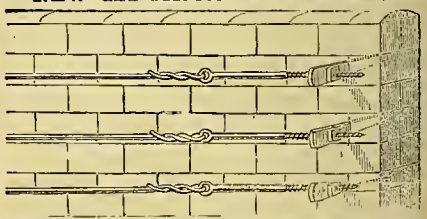
FITTINGS for WIRING WALLS.
NEW and IMPROVED SYSTEM.



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No. 14 Gauge Wire	1 0	1 7	2 1	2 7	3 1
No. 13 ,, ,,	1 3	1 10	2 5	3 0	3 7

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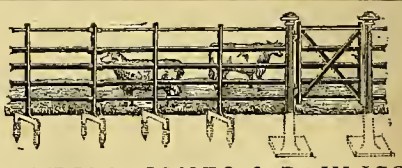

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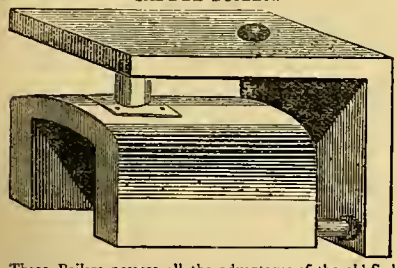
JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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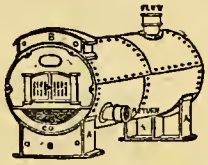

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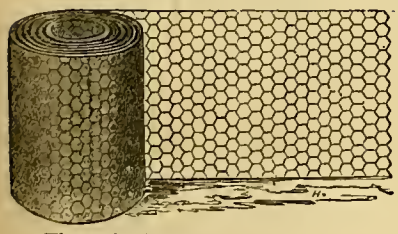

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THE

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TO SECRETARIES of HORTICULTURAL SOCIETIES.—The Editors will be greatly obliged for early information respecting the Dates Selected for Holding Horticultural Exhibitions in 1878.

NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 *are* 1s. *each.*

STOKE NEWINGTON CHRYSANTHEMUM SOCIETY.—An EXHIBITION of CHRYSANTHEMUMS will be held in the Assembly Rooms, Defoe Road, Church Street, Stoke Newington, N., on FRIDAY and SATURDAY, November 16 and 17. For Schedules and particulars apply to the Secretary, JNO. HICKS, Grove Road, Stamford Hill, N.

KINGSTON and SURBITON CHRYSANTHEMUM SOCIETY.—The FIRST ANNUAL EXHIBITION of the above Society will be held in the Drill Hall, Kingston-on-Thames, on WEDNESDAY and THURSDAY, November 21 and 22. Schedule of Prizes can be had on application to T. JACKSON, Hon. Sec.
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The Stock may be viewed any day prior to the Sale. Catalogues may be had on the Premises, of Mr. KNOWLES, and of the Auctioneers and Estate Agents, 38, Gracechurch Street, E.C.

Edgware, N.W.
IMPORTANT CLEARANCE SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, on FRIDAY, November 16, at 12 for 1 o'Clock precisely, a portion of the valuable and remarkably well-grown NURSERY STOCK, comprising a great variety of handsome Lawn Trees, a splendid assortment of other Coniferæ and Evergreen shrubs, which have all been recently transplanted, together with a fine collection of Orchids, and a number of Camellias and other Greenhouse Plants.

May be viewed the day prior to the Sale. Catalogues may be had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Norwood Road, S.E.
(Near Tulse Hill Station.)
SALE of NURSERY STOCK, choice established ORCHIDS, STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. G. Peed to SELL by AUCTION on the Premises, the Roupell Park Nursery, Norwood Road, Brixton, S.E., on TUESDAY, November 20, at 11 for 12 o'Clock precisely, a quantity of well grown Nursery Stock, consisting of TREES and EVERGREENS in variety, a selected assortment of FRUIT TREES, a collection of choice STOVE and GREENHOUSE PLANTS, new and valuable PALMS, several fine established ORCHIDS, together with a large TUBULAR BOILER by Rhodes, and two smaller ones.

May be viewed the day prior to the Sale, Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Thames Ditton, Surrey.
CLEARANCE SALE of a large quantity of very useful and well rooted NURSERY STOCK. By order of the Executors of the late Mr. J. Lewis.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Ember Nurseries, Thames Ditton, on TUESDAY, Nov. 20, and following days, at 11 for 12 o'Clock precisely each day, the whole of the valuable NURSERY STOCK, consisting of a large and varied assortment of choice Evergreen and Coniferæ shrubs, ranging all sizes, and adapted for immediate effect. Also 8000 Common Laurels, 3 to 7 feet; 1500 Cupressus Lawsoniana, 2 to 10 feet; 500 Thujopsis borealis, 2000 Thuja Lobbii, 2 to 10 feet; 1000 Gold and Silver variegated Hollies, 1 to 3 feet; 1000 Standard Ornamental Trees, and a great variety of Fruit Trees.

May be viewed prior to the Sale. Catalogues may be had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. The LEASE of the NURSERY, which comprises Dwelling-house, Seed-shop, 9 Acres of productive Land, several modern Glass Erections, containing about 11,500 feet of glass, together with the Indoor Stock, Seeds, Shop Fixtures, &c., are to be SOLD by PRIVATE TREATY on easy terms.—Apply to the Auctioneers for further particulars and price.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during November, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Consignment of Tree Ferns.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 13, a consignment, just arrived, of TODEA SUPERBA, TODEA PELLUCIDA, and CYATHEA DEALBATA. Also will be included in the same Sale eleven large plants of LAPAGERIA ALBA.

On view the morning of Sale and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 13, at half-past 12 o'Clock precisely, 30 Plants of PHALÆNOPSIS SCHILLERIANA and AMABILIS; several small collections of Established ORCHIDS, comprising many choice sorts; several importations, including Cattleya Aclandiæ, Galeandra Devoniana, Cattleya maxima; a small collection of STOVE and GREENHOUSE PLANTS, 20 small Plants of BARKERIA ELEGANS, 1000 fine Bulbs of LILIUM AURATUM, just arrived from Japan.

On view morning of Sale, and Catalogues had.

Azaleas, Roses, &c.

MR. J. C. STEVENS will include in his SALE on WEDNESDAY, November 14, at his Great Rooms, 38, King Street, Covent Garden, W.C., 100 plants of AZALEA INDICA, Standard and Climbing ROSES, SHRUBS, FRUIT TREES, &c.

On view the morning of Sale and Catalogues had.

Odontoglossum pardinum, Reich.

MR. J. C. STEVENS has been instructed by Mr. Sander to SELL by AUCTION, for account of Mr. B. Roezl, on THURSDAY, November 15, at half-past 12 o'Clock precisely, at his Great Rooms, 38, King Street, Covent Garden, W.C., an importation just to hand, per steamer *Nile*, of this magnificent NEW GOLDEN ODONTOGLOSSUM. It is described in the *Gardeners' Chronicle*, March 10, and Dr. Reichenbach received a spike of its beautiful flowers, many golden-yellow and brown-spotted, from Mr. F. Mill, with over forty flowers expanded. Mr. Klaboch, who sends home the plants, says that it grows in a very cold region; the flower-spikes are from 3 to 4 feet long, and from 2 to 3 feet in diameter, closely branched, and covered with from 100 to 200 large flowers; these measure individually 2½ inches across: its colour is dazzling, and it remains in flower for a period of from three to four months. He considers it the finest yellow Odontoglossum extant. At the same time will be offered ODONTOGLOSSUM MACULATUM DOWIANUM, Reich., fully described in *Gardeners' Chronicle*; the magnificent MAXILLARIA GRANDIFLORA, ODONTOGLOSSUM CIRRHOSUM, BARKERIA LINDLEYANA, TRICHOPILIA TORTILIS, ONCIDIUM UNGUICULATUM, an importation of ODONTOGLOSSUM KARWINSKI, large masses of CATTLEYAS, ODONTOGLOSSUM MADRENSE, LYCASTE SKINNERI, and other Cool ORCHIDS.

On view the morning of Sale, and Catalogues had.

The Nurseries, Easingwold, near Alne Station.
To Landed Proprietors, Land Agents, Nurserymen and Others.
EXTENSIVE SALE of FOREST TREES, CONIFERÆ, SHRUBS, and FRUIT TREES.

MR. GEORGE FREEMAN has received instructions from Brown & Co., Nurserymen, to offer for SALE by AUCTION, at the Nurseries, Easingwold, on FRIDAY, November 9, a large and choice Collection of FOREST TREES, CONIFERÆ, SHRUBS, FRUIT TREES, &c., in lots to suit purchasers.

Descriptive Catalogues can be had on application to Mr. GEORGE BROWN, The Nurseries, Easingwold, Yorkshire; Mr. R. E. BROWN, Land Agent, Farnley, Otley, Yorkshire; or to the Auctioneer, Market Place, Thirsk, Yorkshire. Easingwold is near the Alne Station on the North-Eastern Railway.

To Gentlemen Engaged in Planting.
Magnificent Specimen EVERGREENS, comprising Wellingtonias, Cupressus Lawsoniana, Thujopsis boreale, Golden Yews, Cedrus Deodara, &c., from 6 to 12 feet high, all grown singly, and will lift with large balls of earth; also ROSES, RHODODENDRONS, THUJAS, and other choice Trees and Shrubs.

MESSRS. OLIVER, NEWBOLD, AND OLIVER have received instructions from Mr. E. Cooling to SELL by AUCTION, as above, at the Mile Ash Nurseries, Derby, on TUESDAY and WEDNESDAY, November 13 and 14, at 11 o'Clock.

Catalogues may be had at the Offices of the Auctioneers, Wardwick; or from Mr. E. COOLING, 18, Irongate, Derby.

Swiss Nursery, Loughborough Road, Brixton, S.W.
(Close to the Loughborough Junction Station.)

MR. W. ABRAHAM is instructed to SELL by AUCTION, on the Premises, as above, on SATURDAY, November 17, at 1 o'Clock punctually, a choice and varied assortment of NURSERY STOCK, including some fine Cryptomeria elegans, Junipers, Yew, Pampas Grass, Cupressus, Gold and Silver Holly, Standard and Dwarf Roses, Coniferæ and Evergreens in pots, large Myrtles, Palms, Agave, Oleander, trained, pyramidal and bush Fruit Trees, and many others.

Catalogues one week before the Sale, on the Premises; or of the Auctioneer, Goldworth Nursery, Woking, Surrey.

London, North-West District (4320).

FOR DISPOSAL, in an excellent neighbourhood, a particularly genuine SEED and CUT FLOWER BUSINESS; comprises a desirable Ten-Roomed Residence with commanding Shop. The present Trade, which has not changed hands for 30 years, is a most lucrative one, and is being relinquished solely on account of ill-health. Lease, 18 years unexpired. Rent £85 per annum. Price for Goodwill, Fixtures, and Stock, £625. Premium for Lease £200, or a Lease would would be granted for the remainder of the term at £120 per annum.

Apply to PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, London, E.C.

London (4316),
Ten miles therefrom, close to an important station on the South-Eastern Line.

A SMALL FLORIST'S and MARKET GROWER'S BUSINESS, in good going order; comprises a Cottage, 13 Greenhouses and Pits heated by hot-water. Held at a low aggregate rental of £37 per annum. Price required for tenant's fixtures, including nearly the whole of the glass, together with the interest in the Lease, Stock, and Utensils in Trade, £550.

Apply to Messrs. PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

London, West End (4322).

TO BE DISPOSED OF, with Immediate Possession, a thoroughly genuine Decorative FLORIST'S BUSINESS, occupying an excellent position, and doing a first-class and greatly improving trade. Incoming about £900. For full particulars see

Messrs. PROTHEROE AND MORRIS' "Horticultural Register," to be obtained at 98, Gracechurch Street, E.C.

TO BE DISPOSED OF at once, on Easy Terms, a good NURSERY, SEEDSMAN, and FLORIST BUSINESS (with or without small Nursery and Jobbing connection); comprises a desirable ten-roomed Residence, with commanding Shop. Nineteen years' lease unexpired. Apply on the premises to
W. A. C., 2, Swiss Terrace, Belsize Road, N.W.

80,000 Ponticum Rhododendrons.

JOHN STANDISH AND CO. have an immense stock of PONTICUMS to offer, suitable for Cover Planting. Prices on application.
Royal Nurseries, Ascot, Berks.

Choice named Rhododendrons of all Colours.

W. H. ROGERS, Red Lodge Nursery, Southampton, offers the above, very fine, in any quantities, at £5 and £7 10s. per 100.

THE ROYAL METROPOLITAN ROOT and VEGETABLE SHOW, under the exclusive management of JAMES CARTER & CO., will be held at the Agricultural Hall, London, N, on WEDNESDAY and THURSDAY, November 14 and 15, when TWO HUNDRED and FIFTY POUNDS will be awarded, including the following Prizes for Vegetables:—

CLASS 28.—For the best 12 dishes of Vegetables, 1st, £3 3s.; 2d, £2 2s.; 3d, £1 1s.; 4th, 10s. 6d.

CLASS 29.—20 tubers of Porter's Excelsior Potato, 1st, £1; 2d, 10s.

CLASS 30.—20 tubers of Snowflake Potato, 1st, £1; 2d, 10s.

CLASS 31.—20 tubers of Carter's Improved Red-skinned Flourball Potato, 1st, £1; 2d, 10s.

CLASS 32.—20 tubers of Carter's Improved Magnum Bonum Potato, 1st, £1; 2d, 10s.

CLASS 33.—20 tubers of Carter's American Breadfruit Potato, 1st, £1; 2d, 10s.

CLASS 34.—12 roots of Onions, spring sown, 1st, £1; 2d, 10s.

Full particulars on application to CARTER'S, The Queen's Seedsmen, High Holborn, London, W.C.

STUART AND MEIN have much pleasure in intimating that they have assumed as PARTNER, Mr. JOHN P. ALLAN, who for the last 15 years has acted as their Manager. The name of the new Firm will be STUART, MEIN AND ALLAN, and will carry on the Business of Nurserymen, Seedsmen and Florists, as formerly.
Kelso, N.B.—Nov. 5, 1877. STUART AND MEIN.

MAIDENHAIR FERNS, SELAGINELLA, DRACÆNA VIRIDIS, in 48's, all first-class plants; also a large quantity of AZALEAS, well set with buds, varying in size up to 5 feet, to be sold cheap.
M. CHAPMAN, Sydenham Park Nursery, S.E.

FOR SALE, Five large PALMS, good varieties; also One large PANDANUS UTILIS, all in good health.—Apply to
E. B. JONES, Gardener, Norton Priory, Runcorn.

EVERGREEN SHRUBS, TREES, &c.—Large variety for disposal cheap. LIST sent free.—G. F. NEWEY, Goldworth, Woking Station, Surrey.

Lily of the Valley.

F. AND A. SMITH are now sending out strong blooming Clumps and single Crowns of the above, at moderate prices.
West Dulwich, S.E.

BOX EDGING. — 10,000 yards of good Dutch, splendid stuff. The lot will be sold cheap. Sample and price from
J. B. YOUNG, Landscape Gardener, Bridge of Allan.

New Early and Show Pelargoniums.

F. AND A. SMITH beg to announce that they are now sending out strong plants of the above, highly valuable and distinct varieties, at moderate prices, as per List on application. West Dulwich, S.E.

PINES.—Good: 50 Fruiting, 50 Succession. 40 Suckers. Price low, as the glass is coming down in a week.
GARDENER, Springwell Cottage, Clapham Common, S.E.

To Potato Growers and the Trade.

EARLY ROSE and SNOWFLAKE.—A few Tons each of the above for sale cheap, true, sound, and a capital sample. Address
D. BRINKWORTH AND SONS, Potato Growers, Reading, Berks.

Roses on their own Roots.

J. J. MARRIOTT has a limited quantity of good plants of the above to offer. Also a choice Collection of HARDY EVERGREEN TREES and SHRUBS suitable for Winter Bedding.
The Limes, Mellish Road, Walsall.

ASPARAGUS ROOTS.—Very superior lot of Connover's Colossal, 1, 2, and 3-yr. Also very fine CLUMPS for forcing.
C. R. FREEMAN, Seed Grower, Norwich.

LARCH.—Transplanted, clean, and well-rooted, grown at a high elevation, 1½ to 2 feet, and 2 to 3 feet. Sample and price on application to
J. J. MARRIOTT, Mellish Road, Walsall.

SEAKALE for FORCING.—Largest roots in the Trade, 90s. per 1000; any number under 500, 10s. per 100; many acres for sale. Remittances to accompany all orders.
ALFRED ATWOOD, Market Gardener, 3, Althorpe Road, Upper Tooting, Surrey (late of 5, Simpson Street, Battersea).

GIANT LILY OF THE VALLEY.—Strong blooming Roots, 2s. per dozen, 12s. 6d. per 100, package free.

ROSES, Dwarf, the "Mile Ash dozen," twelve best varieties, extra strong plants, for 10s. 6d., package free.
EDWIN COOLING, Mile Ash Nurseries, Derby.

To the Trade Only.

HYACINTHS, TULIPS, CROCUS, NARCISSUS, ANEMONES, RANUNCULUS, GLADIOLUS, DIELYTRAS, SPIRÆAS, BEGONIAS. Stock very large, prices low, quality extra.
F. SANDER AND CO., Seed Growers, St. Albans.

FOR SALE, Seven PEACHES and NECTARINES, in pots, prepared for immediate Forcing; sorts selected by Mr. Rivers last year. For particulars, apply to
J. M., Wethersfield, near Braintree, Essex.

TO THE TRADE, &c.—We have to offer large quantities of the following:—FASTOLF RASPBERRIES, true, strong canes; ASPARAGUS, strong 3-yr. old; PRIMULAS and CINERARIAS, good stuff, in 48-pots; also a few quarters of TAYLOR'S BROAD WINDSOR BEANS, a good sample. Prices on application.
ISAAC BRUNNING AND CO., Great Yarmouth Nurseries.

Hollies and Rhododendrons.

HOLLY, Common, 1½ to 2 feet, 30s. per 100; RHODODENDRONS, hybrids, 12 to 15 inches, 20s. per 100; PRIVET, oval-leaved, 1½ to 2 feet, 6s. per 100; also other Nursery Stock, well-grown, with good roots.
CATALOGUES free on application.
HENRY DERBYSHIRE, Darley Hillside Nursery, near Matlock, Derbyshire.

NOVELTIES FOR 1878.

JAMES VEITCH & SONS

DESIRE TO DIRECT ATTENTION TO THE FOLLOWING NEW AND CHOICE SEEDS:—

NEW PEA, "CRITERION" (Standish).

This exceedingly fine New Main Crop Pea is one of several seedlings raised by the late Mr. John Standish, who for some years devoted much attention to hybridising and improving the quality of this vegetable, and from whose executors J. V. & Sons have purchased the whole stock of his Seedling Peas.

Criterion is supposed to be a cross between Advancer and Ne Plus Ultra, and was considered by the raiser to be one of the finest of his seedlings. In general appearance it partakes much of the character of the Ne Plus Ultra, while, as a second early, coming into use somewhat in advance of Champion of England, it is valuable on account of its fine quality and free cropping properties.

The plant is of a strong robust branching habit, and grows from 5 to 6 feet in height. The pods, which are produced in pairs, are of a deep olive-green shade and exceedingly well filled, generally containing from seven to nine Peas. These are of a fine deep green colour, and remain a long time fit for use. When boiled they are of a fine rich flavour, and, retaining their beautiful deep green shade of colour, have a very attractive appearance on the table.

Mr. DRAPER, *The Gardens, Seaham Hall*, says:—"Your New Pea has proved to be a first-class sort, suitable for general crop. It has six to eight Peas in a pod, of large size, and it is also a good cropper, and the pods are well filled. I exhibited it at the Seaham Horticultural Show, and got First Prize, against seven others."

Mr. JONES, *The Gardens, Bentley Priory*, says:—"I have formed a very decided and favourable opinion of your New Pea, Criterion. With me it grew about 4½ feet high, with a mass of beautiful greeo pods, averaging eight peas in each, with the look and flavour of Ne Plus Ultra, and being so early I think it just the Pea wanted."

From *The Florist*:—"Messrs. Standish & Co., of Ascot, who have raised a very promising batch of New Peas, have just adopted the name of 'The Criterion' for that which has been set apart as the best of the series. It is in every way an excellent Pea. Being one ot the Wrinkled Marrows it has a fine sweet flavour. It is in use a fortnight earlier than Ne Plus Ultra, and is a good bearer, with well filled pods, resembling those of Laxton's Supreme, and having thick fleshy husks. When cooked it is of grass-green colour, and, being of a delicate texture, it will, it is said, keep longer io use than any other Pea, partaking, io this and in other respects, of the character of Ne Plus Ultra, which was one of its parents. We look upon the Criterion as one of the most valuable of the New Peas."

Mr. BREESE, *The Gardens, Petworth Park*, says:—"Criterion was sown under the same conditions and on the same day as British Queen and Ne Plus Ultra. I think it is a finer looking Pea than either of these, a heavier cropper and finer looking pod, and quite a week earlier. It is undoubtedly a good Pea."

Mr. MCINDOE, *The Gardens, Hutton Hall*, says:—"Criterion, when boiled, has a beautiful dark green colour and a most delicious flavour. I think it cannot fail to become a great favourite where high-class deep green Marrow Peas are esteemed."

Mr. GILBERT, *The Gardens, Burghley*, says:—"Through your kindness I am enabled to give an opinion of Standish's New Pea, Criterion. My small packet was all sown in pots in one of the cool houses, planted out in April, withstood such a succession of cold, stormy, and frosty weather that I despaired of ever getting any Peas at all, nevertheless they braved it all and were ready for picking June 18. Criterion Pea grows from 5½ to 6 feet high; a Green Marrow of the most delicious flavour, bearing in pairs from sixteen to eighteen pods, with an average of eight Peas in each. It is the hardiest and best Pea of the British Queen type."

Mr. SPEED, *The Gardens, Chatsworth*, remarks:—"It is the finest of all late Peas that I know, and is an excellent flavour and good colour when cooked."

Price, 5s. per Quart.

NEW PEA, "HARBINGER" (Laxton).

The following description is taken from the Royal Horticultural Society's report of the great trial of Peas at Chiswick, in 1872:—

"A cross between Dillistone's Early and Alpha. The plant has the habit of Dillistone's Early. Stem 2½ to 3 feet, simple, producing from seven to eight pods singly. The pods are small, rounded in form, slightly curved, very tightly filled, of a light green colour, and contain about six fair-sized Peas of a fine colour and good flavour. Ripe seed small, round, blue. Sown February 23, first flower opened May 9, was in full flower May 15, slats appeared May 21, fit for use June 26. The earliest Pea in the collection, being three days earlier than Dillistone's Early, and six days earlier than Sangster's No. 1. Received a First-class Certificate."

It is also somewhat similarly described in Hogg's *Year Book* for 1873, page 87.

Price, 3s. 6d. per Half-pint Packet.

CAULIFLOWER, "VEITCH'S AUTUMN GIANT."

This extremely valuable variety is perfectly distinct from any other sort. The heads are magnificent, beautifully white, large, firm, and compact, and being thoroughly protected by the foliage, remain longer fit for use than any other kind.

Price, 1s. 6d. per Packet.

VEITCH'S SELF-PROTECTING AUTUMN BROCCOLI.

A very valuable Broccoli for autumn and early winter use. The plant is of robust but upright growth, and the heads, which are beautifully white, firm and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

Price, 1s. 6d. per Packet.

LETTUCE, "EARLY PARIS MARKET."

This distinct and very handsome variety of Lettuce is much used in the Paris Market Gardens. It hearts very quickly, and we believe it will prove invaluable for forcing purposes.

Price, 1s. per Packet.

AQUILEGIA CALIFORNICA HYBRIDA.

This beautiful and distinct variety was raised by Mr. Douglas, Loxford Hall Gardens, and is a hybrid between A. californica and A. chrysantha. The flowers are of a large size, the centre petals being of a clear yellow colour, and forming a very effective contrast to the deep orange-red of the sepals and spurs. In habit of growth it is intermediate between the parents, and produces its lovely flowers in great profusion. It was awarded First-class Certificates by the Royal Horticultural and Royal Botanic Societies, and is a decided acquisition to this class of hardy spring-flowering plants. The *Floral Magazine* of October gives a very faithful coloured illustration of this charming variety.

Price, 1s. 6d. per Packet.

AQUILEGIA CŒRULEA HYBRIDA.

This is another very fine hybrid raised by Mr. Douglas, and is the result of a cross between A. cœrulea and A. chrysantha. It is exactly intermediate between the parents, the centre petals being clear sulphur-yellow, and the spurs and sepals a charming shade of pale blue. The flowers are large and well opened, partaking most of the character of A. cœrulea. The plant is perfectly hardy, and of good habit, and is an important addition to the old but pretty genus of Columbines.

It was awarded First-class Certificates by the Royal Horticultural and Royal Botanic Societies, and is figured in the *Floral Magazine* of August, 1877.

Price, 1s. 6d. per Packet.

PRICES TO THE TRADE ON APPLICATION.

JAMES VEITCH & SONS, ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

BEAUTIFUL FLOWERS FOR WINTER & SPRING

WEBBS'

CHOICE COLLECTIONS

OF

HYACINTHS,
CROCUS,
TULIPS,
NARCISSUS,
&c.,

CONTAIN A

Superb assortment of the best varieties.

For Growing in Glasses, Pots, Vases, &c.
10s. 6d., 21s., and 42s. each.

For Outdoor Cultivation.
10s. 6d., 21s., and 42s. each.

For Greenhouse or Window Boxes.
10s. 6d., 21s., 2nd 42s. each.

All Goods 20s. value Carriage Free.

Five per cent. discount for Cash.

Webb's Autumn Catalogue of Dutch Flower Roots, &c.,

Contains Original and Complete Cultural Instructions.
GRATIS AND POST-FREE ON APPLICATION.

E. & W. Webb & Sons.

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

SPECIAL OFFER TO THE TRADE.

FRUIT TREES.
EXTRA STRONG—BEAUTIFULLY TRAINED.
2-yr. Cordons, Palmettes and Pyramids.

	Per 100.
APPLES, on Crab and on Doucin	42s
PEARS, on Crab and on Quince	50s.
PLUMS, on Prunus St. Julien	50s.

A List of the Names of the Fruit Trees gratis on application.

STOCKS for BUDDING and GRAFTING.

	Per 1000.
PYRUS MALUS, Crab-Apples	20s.
ROSE, Manetti	25s.
,, multiflora de la Grifferaie	25s.

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 15s. per 1000.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skim. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each. For Detailed List see BULB CATALOGUE.

NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10s. 6d. each. Extra sized fruiting plants, 21s. each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

FINE STANDARD ORNAMENTAL TREES, &c., for Immediate Effect.

ASH, Mountain, 8 to 10 feet, fine, 10s. to 12s. per dozen.
BEECH, Green, 10 to 12 feet, fine, 18s. to 24s. per dozen.
BIRCH, Silver Weeping, 12 to 15 feet, fine, 18s. to 24s. p. doz.
CHESTNUT, Horse, 8 to 10 feet, fine, 10s. to 12s. per dozen.
,, Scarlet, 8 to 10 feet, fine, 12s. to 15s. per dozen.
ELMS, Giant Canadian, 15 to 20 feet, fine, 25s. to 30s. per doz.
,, English grafted, 10 to 12 feet, fine, 18s. to 24s. per dozen.
LAURELS, well furnished, 4 to 6 feet, fine, 20s. per 100.
LIMES, 8 to 9 inches in circumference, 12 to 14 feet, fine, 28s. to 30s. per dozen; 10 to 12 feet, 10s. per dozen.
LABURNUMS, 10 to 12 feet, fine, 9s. to 12s. per dozen.
OAK, English, 10 to 12 feet, fine, 18s. to 24s. per dozen.
POPLAR, Silver, 12 to 15 feet, fine, 18s. to 24s. per dozen.
,, Black Italian, 12 to 15 feet, fine, 9s. to 12s. per dozen.
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PRIVET, Evergreen, 3 to 3½ feet, fine, 14s. per 1000.
SYCAMORE, 15 to 20 feet, fine, 18s. to 25s. per dozen.

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50,000 QUICKS, strong, transplanted, 15s. per 1000.
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Stout healthy Plants, grown on high and exposed land.
Sample Hundreds at same rate.
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New Roses for this Year.

3000 strong dwarf MARÉCHAL NIEL ROSES, from the open ground.

LÉVÊQUE ET FILS, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have just now, per 1000, MARÉCHAL NIEL, GLOIRE DE DIJON, and other strong Tea and Perpetual sorts, Dwarfs, Standards, and on their own roots. Their fine NEW SORTS of ROSES this year are "Edouard Dufour," "Grand Duc Nicholas," Princesse Lise Troubetskoi," and "Princesse Charlotte de la Tremoille." Also forty-six sorts of other Raisers.
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H. F. SMITH AND SONS, SEED MERCHANTS, Selby, being about to give up their Nurseries, will offer the whole of their splendid stock of FRUIT TREES, &c., at about half the usual price. It comprises about 10,000 Apples, Pears, and Plums; 10,000 Gooseberries, of best sorts; 5000 Black Naples Currants; 6000 Northumberland Fillbasket Rasps (extra strong canes), &c., as well as fine stocks of FOREST and ORNAMENTAL TREES, SHRUBS, CONIFERS, &c., all clean and healthy. A dozen or 100 sent as sample if required.

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CLEMATIS JACKMANNI.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
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Estd. 1844.

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25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

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ALL SEEDSMEN'S SUNDRIES and HORTICULTURAL REQUISITES, DRIED FLOWERS, CAPE FLOWERS, GNAPHALIUMS, ALL CHRISTMAS GOODS, THE NEW HYACINTH GLASS, FLOWER STICKS & LABELS, BOUQUET PAPERS, FERN CASES, AQUARIUMS, &c.

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S. BIDE can supply, for Cash, good strong plants of Enfield Market, Imperial, Improved Nonpareil, and Drumhead or Cattle CABBAGE, at 3s. per 1000, free on rail and package free; Red or Pickling CABBAGE, 5s. per 1000. All the above are grown on light land, and are beautifully rooted. Send orders early to

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A large and excellent stock to select from.

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HYBRID SEEDLING RHODODENDRONS, raised from the best named kinds, and may be relied on to produce a variety of colour, many equal to named varieties. Good stuff, 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 50s. per 100; 2 to 3 feet, 75s. per 100; well set with bloom-buds, 50s. to 100s. per 100.

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500 POPLARS, 10 to 15 feet.
Laurustinus, Lilacs, Privets, &c.

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ROBERT F. DARBY begs to offer the following TREES for immediate effect, all straight, handsome, well-rooted, and cheap; price, according to quantity, on application:—

ELM, Chichester, 16 to 20 feet.
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Also dwarf Bush APPLES, of best sorts, in good bearing, an excellent lot for Market Gardeners.

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DAISIES, best red and white varieties in cultivation, and POLYANTHUS, 1s. per dozen, 5s. per 100.

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Choice named exhibition varieties of PANSIES, PINKS, PHLOXES, and PENTSTEMONS, 4s. per dozen, or 12 of each for 14s.

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Tree Ferns, Tree Ferns, Tree Ferns.

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CAMELLIAS, AZALEAS, PALMS, FERNS, &c.

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CAMELLIAS, alba plena, without buds, very bushy, 90 marks per 100.
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AZALEAS, bushy, well set with buds, 60 to 75 marks per 100.
ROSES, Tea, dwarf and bushy, extra strong and fine plants, worked on Rosa canina, 60 marks per 100.

Packing will be done very carefully. Shipped *viâ* Hamburg.

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CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers.

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The above CONIFERS are singularly beautiful; the Cupressus having a rich dark glaucous green foliage, and the Retinospora a perpetual bright golden-yellow. They are of very compact growth, perfectly hardy, and admirably adapted for lawns, winter bedding, and small window balconies. Nice specimens are offered singly or in any quantity.

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TUBEROUS BEGONIA SEED.—Saved from our unrivalled collection, fresh harvested, and only a very small quantity to offer. In sealed packets at 2s. 6d. and 5s. each.

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50,000 ENGLISH YEWS, extra fine, many times transplanted, 1 to 2 feet, 20s. per 100 ; 2 to 3 feet, 40s. per 100 ; 3 to 4 feet, 60s. per 100. Great reduction to purchasers of 1000 and upwards.
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New varieties of ROSES obtained in this Establishment, and to be offered for sale for the first time in November :—
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New varieties already on sale, magnificent, very recommendable, and much recommended :—Madame Krelage, Lord Hawke, Madame de Cazes, Roi des Jaunes, &c.
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Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.
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PINKS, in twenty-five named varieties, in 60-pots, 25s. per 100.
PRIMROSES, double Yellow, 20s. per 100.
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ROCKETS, double Purple, 2s. 6d. per dozen, 18s. per 100.
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SILENE PENDULA COMPACTA, 2s. 6d. per dozen.
STOCKS, Scarlet Queen, 2s. per 100.
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WALLFLOWERS, finest dark, 2s. 6d. per 100.
All the above cheaper by the 1000. Orders amounting to 20s. boxes and packing free.
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VIOLETS, SWEET VIOLETS.
MARIE LOUISE, double, light blue, white centre, flowers very free and continuous from September to May.
VICTORIA REGINA, large single Violet, very fine.
WHITE CZAR, the best white.
BLANDYANUM, double Violet.
KING of VIOLETS, large double Violet.
REINE DES VIOLETS, large double white.
NEAPOLITAN, double lavender.
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Strong clumps of the above 6s. per dozen, 40s. per 100, suitable for potting in 48-inch pots, or forming beds and masses in flower gardens. Now is the time to plant to ensure flowers all winter and spring.
BELLE DE CHATENAY, new double white, 1s. 6d. each.
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One small plant of the ten varieties free by post 5s. 6d.
Trade price on application.
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THE QUEEN'S SEEDSMEN, READING

SATURDAY, NOVEMBER 10, 1877.

BONES.

THE tilling and manuring of land is pretty nearly all the assistance we can render it on the score of fertility. Drainage, shelter, fencing, and road-making, may often be dispensed with, and yet the land may yield good returns; but the effect of manuring is not to be mistaken, for it shows at a glance that land unaided by manure is deficient of one of the ingredients of fertility, although some water meadows have been fertile in the highest degree for generations without any manure beyond what the water from the limestone rock holds in solution. When bone manure was introduced into the grazing county of Chester, it produced the most marvellous effects, and we were told that this was owing to the bone manure restoring to the pasture fields what they had lost by the cheese they had been the means of making; and as this reason, or rather this nonsense, passed current, no one dared to fling down the gauntlet against it. Now the field did not produce the cheese, but only the grass on which the cheesemaking cows were fed, and as there was one link awanting to complete the evidence of the field doing what the cows did, the argument fell to the ground, for it was the grass that suffered or the grass that profited, and the bone-dust on the one hand and the cheese on the other had a missing link in the form of grass that had to be made good. Turnips were grown with bone manure, and there is nothing cheesey about them, but without that the Turnip crop too would have been deficient of one of the ingredients of fertility. The whole argument was in a nutshell, for, say they, the mother cow wanted bone-forming materials, and so did the calf before its birth as well as after, ergo, bone manure must be the right thing and in the right place, to restore the loss of ages, for the fields must have boned both cows and calves time out of mind. Who could gainsay such plausible theories?

Long grass grown under trees has little value as a fattening or even a feeding ingredient, and, on the other hand, short grass over a limestone subsoil will support stock and maintain them in good condition even when the bite is short and dry. When land has been limed for Barley we see the grain enlarged, and the sample brighter than on land not so manured. All this was well known and duly acted upon before the advent of bones, for in my time common sense—that very uncommon article—had not found out that to return animal substances to the earth was only completing the circle; and so the common adjoining my native village was occasionally made horrid by dead horses, and the bones that had whitened there for years and grown clean were used as playthings for urchins having little else movable to fall back on. But where were our newspapers in those days, and what of chemistry to aid the cause? I and eleven others subscribed for a weekly newspaper at 1*d.* each. The first man had only one hour allotted to the reading of the paper, and he might be seen—blacksmith that he was—"giving his bellows breath" and reading aloud to ardent listeners of what the First Napoleon was doing, or the notorious Hyder and Tippoo, telling, alas! of bones of horse and rider, of black and white men, "in one red burial blent." During the long reign (sixty years) of George III. war was the leading theme, and grave-digging to bury bones out of sight must have been the way that this material was disposed of, so that in my time if a cow died she, too, was buried in a deep pit—what had been denied to thousands of well-deserving men, for I saw at Ripon a bone-house said to contain the skulls of 30,000 human beings, all bleached and dry, but how they came there did not transpire. Our guide was unable to say, but such an assemblage told too clearly that there had been a fearful reckoning one day in that quarter, and that some pious persons had gathered up the relics of the slain. I understand that these bones have been buried since. Our guide showed his proclivities for phrenology by comparing the intellectual skulls one with another, and surely never was such illustration of the science given before.

Whilst on the subject of bones, I may state that I saw the skulls of two dogs side by side—the one was highly intelligent during life, the other was a sorry cur; but what was remarkable in the skulls, the quality of the bone of the clever dog was thin, but hard and white, whilst the skull of the cur was grey, like unbleached calico, and coarse. One of those the poet must have had in view when he penned the lines:—

> "In Islington there lived a dog, as many dogs there be,
> Both mastiff, puppet, hound, and cur, and dogs of low degree."

It is, therefore, clear that bones vary in value for manure. Any one wishing to get information on bones should visit Sheffield, and when we see that a bone in the form of a knife-handle may be kept in good condition for fifty years without showing decay, we may conclude that for permanent manure (such as for Vine borders) nothing can equal ½-inch bones. I was shown a Vine border outside the vinery, where the crop was kept late, hanging on the Vines till Christmass, and this border, made of turfy loam, was fattened with bone, and the crop justified the mixture. There was nothing of the midden character about this border: all was clean and sweet, and once well made it might last half a lifetime.

I have nothing to say about the various uses that bones may be turned to—I only take a gardener's view of the subject; and let me state that there is always ample evidence of how bones behave in the earth by watching the gravedigger disinterring human bones that have lain some twenty or thirty years in the cold clay. The leg and thigh bones and the skull resist decay longer than the others, and if kept from the air there is no saying how long the solid parts of bone might last. In trenching a piece of old pasture we turned up a neat's bone, and as it was grey, but sound, I chopped it up for my Newfoundland dog, and he ate it up as soon as it was broken into pieces that he could swallow, and licked the block clean of marrow. Now I would ask what other kind of manure could at all compare with this eatable article, old enough for aught we knew to have been included in more than one nineteen-year lease.

I purposely abstain from saying anything for or against dissolved bones. They are not altogether suited to permanent manuring, where the dose, however good, cannot be repeated, as in the case of a Vine border. When one of the North Kent railways was being made I saw the navvies cutting through a bed of oysters some 6 or 7 feet thick, high and dry, and far enough away from the water where they had grown. Here was a fortune ready for the making, for every shell could be resolved into good manure, for this mollusc fortunately has its bones all outside, not to mention the kindred mussel, with the chance of pearls for the lucky finder.

Let no one be deceived with the various manures that are good enough for surface crops, as the cereals and the Turnip crop; for although

the ash-pit manure of Manchester, the sweepings of the streets, and the horsedung, oyster-shells, and lime rubbish may be excellent dressing for the crops on Chatmoss, the case is altogether different from supplying a Vine heavily laden with fruit, year by year, for a generation, such as we see on the Vine at Hampton Court, fresh and fruitful after the lapse of a long lifetime. In the warehouses in Manchester, where corduroys and the like are kept, there is a very unpleasant smell from the bone-size used in their manufacture, and this tells too clearly of the decay of the bone, for in the charnel-house at Ripon there was no offensive smell, notwithstanding the tons of bones that were stowed in it; but it must be borne in mind that the bones there were all large bones and skulls—the ribs, &c., may have been decayed long before I saw this melancholy spot.

It is a very nice point to settle the size of the bones to be used for a Vine border. If they are used too large there will be a great waste of an expensive article, and if they do not decay in some measure they will be no better than so many cracked stones; but, on the other hand, if ground to powder, or dissolved entirely, who could guarantee the permanent benefit, as well as the present, for the larger bones are always safe, but not so the smaller; and woe to him that does not calculate by weight or measure what ingredients he employs. A gentleman at Wilmslow showed me Oats, some 6 feet high and well corned, and he asked me what I reckoned a fair dose of common salt to the acre of his old grass park which he had broken up. I said 2½ cwt. to 3 cwt. per acre would no doubt improve the crop. He replied, Yea, it would, for he had sowed 15 cwt. per acre with the best results on the fallow six weeks before sowing the Oats. Nothing was more common when guano first came on the stage than for people to kill the plants by using it too strong. I remember taking warning of this danger by seeing some French Beans watered with manure-water made with guano, and they were killed by the first dose. It used to be said that the Hampton Court Vine was fed by an old sewer in the vicinity, and the plant was thereby reckoned a gross feeder; but when the plant is left to forage for itself it may go near a gutter and benefit by the moisture, just as Melon roots have run into the water-cistern and taken no harm; yet who would treat Melons as they would a water meadow?

After all, there is perhaps no item of practical horticulture on which there is so much difference of opinion as in the case of water for Vine borders. One of our most successful growers floods the border with tepid water in the early stages of the Grape growing. Such treatment was never heard of until a few years ago, and we know right well that heat and moisture will act upon bones buried; for, if you let a cart stand only one night laden with bones of the ½-inch size, they will heat violently, and the odour will be unbearable, thereby giving due warning that their proper place is underground, I might show the lasting character of bones embedded in the earth by the teeth and bones of extinct animals found in dens and caverns, and by bone instruments made by men of whose works no record is left.

In summing up the virtues of bones for Vine borders it is clear that there is no other article of manure so compact and so concentrated as half-inch bones certainly are, and as they occupy so small a space, the limited room inside a vinery may often suffice for the border, whereas the bulky manures from the stables, &c., soon decay, and it is no small matter to remake a Vine border, or even to patch an old one. It is something, therefore, to know that amateurs may gratify their taste for Grape growing by a moderate amount of turfy loam, and plenty of half-inch bones. In the early stages of the growth of the Grape, before the fruit begins to ripen, tepid water, with occasionally a taste of manure in it, has been fully proved to be of good service to the roots, and the supply of manure and water are always in our own hands. *Alex. Forsyth.*

New Garden Plants.

ADIANTUM ÆMULUM, *sp. nov.**

This pretty Maidenhair was introduced by the Messrs. Veitch & Sons, of Chelsea, from Brazil, and will be welcomed by cultivators as a companion to A. cuneatum and A. decorum, two of the most generally useful of all the decorative species of this extensive and remarkably ornamental genus. Yet while it has a certain degree of resemblance to these it proves to be remarkably distinct from either. It is less rigid in habit than A. decorum, less drooping than A. cuneatum, of about equal stature, but of a bluer green colour, and with a visible tendency in the pinnules to assume an oblong rather than a wedge-shaped form, which latter, however, is fully developed in those which terminate the frond, as well as the pinnæ and primary pinnules. Our subjoined illustration (fig. 114) represents only the top of a frond, but the

FIG. 114.—ADIANTUM ÆMULUM.

elongated oblong though oblique form of the pinnules is clearly seen even in this not very characteristic part.

The stipes is slender, about 6 inches long, and of a glossy black colour. The rachis is also slender and glossy and black, and so are the secondary and tertiary rachides, the latter being exceedingly slender and hair-like in appearance. The lamina of the frond is scarcely ovate, the lower pinnæ being distinctly longest, giving the frond with its tapered apex quite a pyramidate outline; it is about 1 foot long and 7 inches broad, the pinnæ set on rather widely (about 2 inches apart), spreading, with the first anterior pinnule of some six or seven pinnulets lying near or crossing the main rachis, while the first posterior pinnule of about five pinnulets is set on at some considerable distance from the other and directed outwards, so that the outline of the more perfectly developed pinnæ comes to be obliquely-pyramidate, the anterior side being most developed. The lateral oblong pinnules are mostly entire on the lower and lobed on the upper or anterior side, the cuneate terminal ones have usually one lobe on each side; these lobes are notched or split about the centre, and in the sinus of this notch the circular or nearly circular sorus is developed, the two sides being brought round so as to meet at the top.

The extremely graceful curving habit of this new evergreen greenhouse Fern renders it quite an acquisition as an ornamental garden plant, and it is no small recommendation to it that we are enabled to add that it is equally with A. cuneatum adapted for drawing-room and conservatory decoration. When exhibited at the Royal Botanic Society at one of the exhibitions of the past summer it was awarded a First-class Certificate. *T. Moore.*

HYPOXIS BAURII, *Baker*, in Trimen's Journ. Bot. 1876, p. 181.*

This is a very decided novelty, being the first known instance of a Hypoxis with a bright red flower. It is a tiny plant, resembling H. alba in habit, of the section with small annual tubers, but differing from most of that group by its densely pilose leaves. It was discovered by the Rev. R. Baur on the Baziya Mountains in Transkeian Kaffraria, at an elevation above sea-level of from 3500 to 4000 feet. Dried specimens were sent to Kew by Mr. MacOwan last year, from which I described it, and now the same gentleman, who has worked so diligently in the department of Cape bulbs, has sent the plant living to Herr Leichtlin, who flowered it this present summer.

Tuber small, globose, annual, about ¼ inch in diameter, crowned with copious wiry fibres adpressed to the outside of the rosette of leaves. Leaves 5 or 6 in a tuft, linear, about 2 inches long at the flowering time, $\frac{1}{8}$—$\frac{1}{6}$ inch broad, moderately firm in texture, erect, densely clothed on both sides with ascending white hairs about half a line long. Scapes usually two to a tuft, always one-headed and bractless, densely pilose, just overtopping the leaves. Ovary clavate, ⅓ inch long, densely clothed with ascending whitish bristly hairs. Limb of perianth ½ inch long, bright red, naked inside and out, the oblong obtuse segments, all six nearly alike. Stamens very minute, the broad, oblong, bright yellow anthers with a cusp to each cell. Style very short. *J. G. Baker.*

CATTLEYA PICTURATA, *n. hybr.*†

This interesting hybrid is one Mr. Dominy's *vielle garde* in the establishment of Messrs. Veitch. Its acknowledged parents are Cattleya guttata and intermedia, yet do not ask about nearer details—they are not on record. I guess the first-named species was the pollen parent. "The plant has a thinner growth than C. guttata, always two-leaved. Its largest bulb is 22 inches high, but never so thin as that of C. bicolor." The inflorescence makes one immediately think of that of Cattleya guttata. Its flowers are of some size, standing in a rich cylindrical raceme. The colour of the blooms is pallid yellow. The petals are white at the base. The lip has the middle lacinia and the angles of the side lacinia brownish purplish. Column whitish yellow, dark in front, in some purplish behind. Pollen of a truest Cattleya. Impossible not to think of the beautiful Cattleya guttata Lowii at its sight, but this is quite distinct by its even disk of lip, quite different small tubercles standing in very conspicuous rows, also by its colour. *H. G. Rchb. f.*

TANACETUM FRUTICULOSUM, *Ledeb.*, VAR. BRACTEATUM, *C. B. Clarke.*

Differs from the type in having the inflorescence more loosely corymbose, the one-headed peduncles often 2 inches long carrying linear bracts, several of these bracts close under the involucre, longer than the phyllaries, and appearing as an outer imperfect difform series of phyllaries.

Gurwhal and Kamaon, alt. 13,000 feet, collected by Falconer, Strachey and Winterbottom, Colonel Davison. Seeds sent to England by Dr. King from Mr. Gammie in Sikkim, and raised by Mr. J. T. Riches, at Messrs. Rollisson's, of Tooting.

Peduncles often 2 inches long, but passing by every gradation to the short peduncles of T. fruticulosum. Bracts on the peduncles scattered and linear, ⅓ inch long, sub-acute not mucronate, densely white-hairy on both sides. Several similar bracts close round the outer phyllaries, which are (as in T. fruticulosum) narrow oblong obovate, scarious brown yellow on the edges, on the back sub-glabrous or sometimes with much white hair. Outer female florets of the ray few, tubular, the limb 3-lobed sub-regular. Achene cylindric curved, the testa thin slightly inflated striate, very little produced above the seed, and not (or most obscurely only) angular. *C. B. Clarke.*

* *Adiantum æmulum*, Moore, sp. n.—Fronds slender, pyramidate, tri-subquadri-pinnate, papyraceous; pionæ distinct, obliquely pyramidate, the anterior side most developed; pinnules rhomboid or oblong, tapered to the base, the terminal ones distinctly cuneate, all sparingly lobate; sori 2—4 on each pionule, circular or roundish-reniform, occupying a notch at the apex of the lobes; indusium smooth entire; stipes and rachides slender, ebeneous, glabrous; rhizome decumbent, slowly creeping.

* *Hypoxis Baurii*, Baker, in Trimen's Journ. Bot. 1876, p. 181.—Tubere parvo annuo fibris copiosis coronato; foliis 5—6 productis linearibus bipollicaribus ubique dense pilosis; scapo gracili monocephalo piloso foliis longioribus; ovario clavato dense piloso; perianthii limbi splendide rubri segmentis oblongis obtusis utrinque glabris; staminibus minutis, antheris luteis oblongo-globosis apiculatis.

† *Cattleya picturata*, n. hybr.—C. guttata × intermedia. Pseudobulbo teretiusculo teoui diphyllo; racemo elongato cylindraceo multifloro; sepalis ligulatis acutis, lateralibus curvatis; tepalis cuneato-oblongis obtusiusculis, incurvis; labello trifido; laciniis lateralibus acutangulis antrorsis; lacinia media cuneato-dilatata, biloba, denticulata; carinis 5 ad 7 per discum, externis serratis, gibberibus parvis multis in disco laciniæ anticæ. *H. G. Rchb. f.*

REV. CANON GEE ON FAMOUS TREES OF HERTFORDSHIRE.*

The Beech is expressly said by Cæsar not to have been found in Britain, and its Welsh name, "Fawydd," is taken to be an adaptation of the Latin Fagus. Indeed these, our old Roman masters, are thought to have naturalised here the Chestnut, Lime, Sycamore, Box, and Laurel. But they do not lay claim to have introduced the Oak, and we may safely declare the Oak to have been English in pre-historic times. No one can doubt that it thrives well with us and takes a giant's grip of our soil. It is said that even Americans, accustomed to the giant trees of their forests, yet find an unmatched stateliness and grace in the English Oak. Our climate suits it. No one ever heard of an Oak as being affected by the severity of a winter, whatever that severity may be. We may say of the Oak that its gnarled and knotty trunk is engendered by the rigours of our Northern skies. So Kingsley says of ourselves—

> "'Tis the hard grey weather
> Breeds hard Englishmen."

So very long has the Oak been among us that we are scarcely aware that he seems to have had an elder half-brother; at least, that much of the oldest Oak timber in this country is not of the same kind as that now in use. What we call Oak timber now is the wood of the Quercus pedunculata. This has its fruit stalked and its leaves sessile. The other Oak, the Quercus sessiliflora, has its fruit sessile and its leaves stalked. This latter is the Oak which furnished timber to some of our oldest buildings—notably to St. Alban's Abbey and to Westminster Hall. The old wood is so far unlike our modern notion of Oak timber, particularly in the absence or indistinctiveness of the silver grain, that it was long considered to have been Chestnut. Now, the distinction which I have just laid down seems to be recognised and to entitle this old timber to be called Oak. I may mention here that at the hospital of S. Cross, near Winchester, I myself saw Oak of a very singular, dark grain. The brother who "showed me round," told me that it was considered a speciality, and that a visitor had offered much money to be allowed to replace it. He added that the peculiar grain was commonly attributed to the way in which the wood was cut. The extreme length of each plank was only 5 feet, and it might all have been cut crossways. A natural question arises at once with regard to the Oak—viz., as to its extreme age. I mean as to the age which it would attain if left to itself, or as to the age of some patriarch of our acquaintance. I do not see how this can be ascertained except by documents, and documents will not go back as far as we desire. Granted that an Oak marks its growth by natural indications, yet when growth ceases these indications stop. Not to be irreverent, an old Oak is like an old horse with the teeth marks "gone out of his mouth," as the ostler would express it. I cannot tell upon what grounds the Salcy Forest Oak in Northamptonshire is so confidently pronounced to be 1500 years old. We can make no experiments, you know, for ourselves in this direction, unless you would repeat the failure of the good old lady, who, having heard that a tortoise would live 100 years, bought a young specimen, that she might judge for herself. I conclude that the only approach to investigation would be to notice carefully the growth of an Oak still growing, and to calculate in what time, proportionally, an old Oak would have attained its girth, and then to allow a proportionate time for decay. Of course this growth would vary much from the influence of soil and aspect; still something may be done in this way. Our Lord-Lieutenant, a lover of trees and an observer long before I took up the subject, has given me his experience with regard to trees at Gorhambury. He summarises his conclusions as being, that an Oak increases in girth half-an-inch per annum, and a Cedar 2 inches in the same time. But in the memoranda which he kindly furnished there is a difference between the Oaks of which he gave me the measurements. I do not know what experience the poet Dryden had of trees. He most likely gives us the general opinion of his own day in laying down poetically that an Oak's duration is 900 years:—

> "Three centuries he grows, and three he stays,
> Supreme in state, and in three more decays."

Elms.

I string together a few remarks on other trees generally. I have spoken of Elms as foreigners, but I admit that they were naturalised in the times of the Heptarchy. Like the old family of Coplestane—

> "They where at hame
> When the Conqueror came."

They have given Saxon names to many English villages, as Elmham, Elmwood, Elmsthorpe, Elmstone, Elmstead, and Elmsley. The Elm's failing is to become hollow at eighty years of age, and at that time its arms and roots both become brittle. It has a special beetle to itself called the Elm-beetle (Scolytus destructor), and its great value is for such position as alternate wet and dry conditions, *e.g.*, for pumps, troughs, conduits, water-wheels, and water-gates. If the Elm be originally an immigrant, he has since become an emigrant also. Perhaps it was from his own personal connection with this country, but Philip II. of Spain planted the avenues of Madrid with English Elms. Learned men differ as to the origin of the name Wych Elm. There are three derivations proposed. 1. From the Saxon word wich, a village or town, as Sandwich, Middlewich, &c. This would make the Wych Elm to be "the village Elm." There is this much to be said in support of the idea, that the Wych Elm does ripen a seed; so that it may be thought to have been the earlier or more recognised Elm. 2. From the word wych, meaning a box or press, such having been made originally of such wood. Our modern word hutch would be a corruption of this, and wych is applied in old writings to the ark of the testimony, as also to provision boxes in daily use. We have in old writings "wyches for cheeses." 3. From a superstitious notion that witches frequented this tree, dancing around it or dwelling under it. So far as I can distinguish the original orthography, it seems in favour of the second meaning, which would derive the word from wych, a chest or box.

Fig. 115.—The Lion Oak at Hatfield.

Beech.

The Beech tree peculiarly claims the neighbouring county of Bucks as its own. It gives its name to the county, as well as to the indispensable thing, book. In this county of Herts it has more variety in its way of growth than any other tree which I have observed. We see the difference not far from here. The Beech close to the Langleybury Parsonage, which seemingly has always stood out by itself, is a model of what a fully-developed tree may become. It scarcely seems to have lost a twig from the first. It was carefully protected in Mr. Whittingstall's time. The hardest thing you can say of it is, that it is too perfect to be picturesque. An artist would choose a tree more twisted and reflected. At Ashridge you may see the contrary form of elegance which a Beech will take, when crowded in its nursery, and, as the expression is, "etiolated" by too close proximity of its neighbours. Then it will run up straight as an arrow, and upright as a dart. He who does not go to see the King and Queen Beeches at Ashridge, does not deserve to sit under trees or biographers of trees. These royal trees, girthing only 11 feet or 11 feet 6 inches—the lady is the stouter—run up, I am assured, 85 feet before throwing a branch. If you journey thither, mind that you go straight to the trunk and, stand close up to the very stem. Then look at all the glory of the olive-grey, smooth, clean shaft.

Limes.

Limes are known by their employment by all carvers, and notably by that prince of carvers, Grinling Gibbons, in the production of his choice works. It is said that the wood is not only smooth-grained and beautiful in its enduring colour of pale yellow or almost straw or creamy white, but that it is also insect-proof. I would inform any one who may lately have had a Lime blown down in the recent gale, or who, as myself, have been compelled to cut down a Lime, that it should not be sold cheap. It is worth at least 2*s.* a foot, as it lies, and is employed to make the sounding-boards and linings of pianos, for which its little tendency to warp makes it valuable.

Ash.

Of Ash, I will only say that Gilpin, having pronounced the Oak to be the Hercules of woods, calls the Ash the Venus. I myself always reserve the title of Lady of the Woods for the Birch. Gardeners, it seems, in some places time the planting out of their bedding stuff by the appearance of the Ash leaf, and remove this tender material when the leaves fall. It is a peculiarly tough wood, and the stoutest oar, tool-shaft, or lance-handle is always made of Ash. But it is considered a dull tree, coming out late and going off soon, and without any bright colour on its rather thin foliage.

Chestnut.

Chestnut, whether Horse or Spanish, should always be spelt with a "t" in the middle, in honour of its derivation from Chataigne (French) and Castanea (Latin), both of which words come from the city Castana in Pontus, whence Chestnuts first came into Europe; as Cherries came from a neighbouring town, Cerasus, now Kerasaun. I particularly admire in large Spanish Chestnut trees, as at Ashridge, the twist, as of a rifle barrel, which the bark takes, giving the effect of a spiral column, and making the tree look larger than it really is. I was surprised to find one tree that I measured to be only 14 feet in circumference. And there is at Abbott's Langley a singular instance that the Horse Chestnut will take root with its branches and spring out again, as does the Banyan, thicker than where it touched the ground. The road having been raised formerly under the large Chestnut on the lawn of Langley House, this process may clearly be traced where the earth has been lifted up until the branches touched the soil. They have taken root and sprung up in renewed vigour. The interest of this tree is so great that it throws literally into the shade the Cedars on the lawn.

Larch, etc.

I might leave out the Larch as a member of the excluded Fir tribe, but I would like to say a

* Extracts from a paper read before the Watford Natural History Society.

few words of this tree as being a tender nursing mother or nursing father to the Oak. In the only forest of which I know anything—in the Forest of Dean—they prepare for planting, or I fear I may say sowing, Oaks by planting Larches. These spring up soon and form a screen and shelter for the more valuable seedlings. By the time that the Oak can stand alone the Larch is valuable as a pole, and is then removed, to the planter's immediate profit. So is fulfilled the saying that "Larch will buy you a horse when Oak will not buy you a saddle." Still, as Sir W. Scott says, "Plant trees, good trees," as he puts into the mouth of one of his characters, I think Dumbiedikes. "They'll aye be creeping while ye are sleeping."

Now I am at liberty to notice individual trees in Herts, famous for their own grandeur, or for their story. Even in the first division of natural grandeur I desire to make a sub-division. There are trees famous for their girth, implying age, and generally involving decay. Some of our most venerable friends are mere shells. There are others which stand erect in stalwart strength, and are solid and massive trees. Comparisons are odious; but I think we ought to do justice to the really vigorous and more natural trees, for the greater girth will always be found in those which have been polled or pollarded. I do not want you to look at a tree as do some of my simpler neighbours, in whose minds at once rises the consideration of what it would fetch when down. "I'd be bound to say, sir, that there are four load of timber in that tree. Why, I recollect when a water-wheel at such a mill wanted a new axle-pin, master got £50 for just such a hoak." No; I would deprecate so commercial a view of the glories of our county. I would rather ask you to look at a grand old Oak as Smeaton, the engineer of the existing Eddystone Lighthouse, studied an Oak when the third edifice had to be placed on that storm-beaten rock. Then it is said it struck him that if he could imitate the proportions of a tree which weathers every blast he might hope that his work would stand. He figured to himself a model tree with a real waist, which would encourage the waves to curl over and discharge themselves innocuously. On those lines he built, and the continuance of his erection to this day shows that his labour was not in vain. Well, we will distinguish the old knotted and gnarled patriarchs from these their worthy congeners as best we may. But applying ourselves to take only the girth of a tree we are in some indistinctness, how to measure, or how to compare measurements. At what height shall we take the girth? Shall we be bound to take it at a certain arbitrary height, though not the most favourable to the particular tree? I think not. I understand that we are to get the greatest girth that can fairly be measured, after clearing the root knobs or earth knots. This, for our own comparison, should be taken as nearly as possible at the same height in all trees. I approve of Lord Verulam's rule of thumb. He always measures a tree at the height of his own waistcoat pocket, he standing on the best side of the tree for a ground level. Do what you will trees will not oblige you by coming into a competition upon terms of exact quality. I have found two trees of which the girth of one was the greater, but it was a hollow sinuous girth, while the less tree met the tape evenly and closely on all its sides, and on that account seemed really the finer tree.

Then, what shall we lay down as our unit of fame? What size shall make a tree famous? I distrust some of the extreme measurements that are given. I have sceptical doubts as to that tree in Hatfield Park, which, according to the *Quarterly Review*, measures 48 feet in circumference. If it be the Oak called the Lion Oak (see fig. 115), that tree has been measured for me, and its measurement reported as 32 feet. [With reference to the measurement of the trees at Hatfield, see our Hatfield Supplement, published on May 9, 1874. EDS.] I myself have never been able to measure more than one tree all the way round that measured more than 30 feet in circumference. That tree was the Yew in Crowhurst churchyard, in Sussex, not in Herts. It has a door in the side, and eight persons go in, and, squeezing tight, declare that they are able to sit round it inside. I would suggest that we take 20 feet circumference as our starting-point, and that we make it our business to be on bowing terms with all trees in West Herts of that girth. You need not be afraid of an inconveniently large acquaintance, while you will not be overwhelmed with everybody else's favourite tree.

(*To be continued.*)

VARIEGATED LEAVES.

THE question of "albication," "albinism," or the white variegation of leaves, does not appear to have been yet approached from the chemical side. In studying the composition, modes of occurrence, and physiological position of the common colouring matters of plants, I have been working at albication, in the hope of acquiring information concerning chlorophyll. My results so far seem to open up a new path of inquiry. The experiments were begun too late in the year, and under the serious disadvantage, from which much of my phyto-chemical work here suffers, of the absence of a greenhouse. Still I have obtained some striking results, which if confirmed by further analyses, and supported by the very obvious synthetical experiments which they suggest, may throw much light, and must throw some, upon the nature and production of chlorophyll.

The experiments, of which I propose now to give an abstract, were performed with three plants having their green leaves variegated with white patches, or else bearing both white and green leaves. The plants were—1, Acer Negundo; 2, Hedera Helix; 3, Ilex Aquifolium. The microscopic appearances were not neglected, but are purposely not alluded to here. I shall designate the plants simply as Maple, Ivy, and Holly, respectively, in this communication.

The Maple leaves were from trees in the Agricultural College Botanic Garden, and were gathered on September 17. The Holly was obtained from Messrs. Jefferies' nurseries on September 24. For the Ivy, I am indebted to Mr. Taylor, of Cirencester, a number of plants being laid under contribution, the date of collection being October 4. In every case I gathered the leaves myself, and without the intervention of knife or scissors. Weighed bottles received the specimens, so that no moisture could be lost during transit to the laboratory. It is scarcely necessary to say that every precaution was taken to gather only such leaves as could fitly be compared in age and condition of growth. The water, the combustible or volatile matter, and the ash were first of all determined. The results translated into percentages are here arranged in a tabular form:—

	Maple.		Holly.		Ivy.	
	White	Green	White	Green	White	Green
Water	82.83	72.70	74.14	62.83	78 88	66.13
Organic matter ..	15.15	24 22	23.66	35.41	18.74	31.63
Ash	2.02	3.08	2.20	2.47	2.38	2.24

The watery character of the white leaves, and their comparative poverty in combustible or so-called "organic" constituents, is very marked. It may be said, speaking broadly, that the fresh green leaves of all three plants contained one-third more solid matter than the white leaves. The mineral matter or ash, when not absolutely more abundant in the white leaves, forms a larger part of their dry matter.

The nitrogen in both Ivy and Holly was found more abundant in the dry matter of the white leaves than in that of the green; but the percentages of nitrogen found in the fresh leaves of the two plants were such as to render further analyses necessary.

The matters soluble in ether were estimated in the dried leaves of Holly and Ivy. Of these matters, including wax or fat, resin, chlorophyll, and several other organic compounds, fresh white Ivy leaves contained 1.29 per cent., the green giving 3.27 per cent. Similarly white Holly leaves contained 1.75 per cent., and green Holly, 2.54 per cent.

But the most remarkable differences in composition between white and green leaves were noticed on submitting the ashes of the several plants to quantitative analysis. The nature of the results may best be seen by the following table:—

Percentage Composition of Ash of

	Maple.		Holly.		Ivy.	
	White	Green	White	Green	White	Green
Potash	45.05	12.61	35.30	16.22	47.20	17.91
Lime	10.89	39.93	21.50	34.43	12.92	48.55
Magnesia	3.95	4.75	3.23	2.43	1.11	1.04
Ferric oxide ..	(?)	(?)	3.11	3.11	2.62	2.31
Phosphorus pentoxide	14.57	8.80	9.51	7.29	10.68	3 87

Although the above figures will require some correction (owing to the carbon dioxide of the various ashes not having been deducted); and although several important ash constituents, such as chlorine and sulphur trioxide, have yet to be taken into account before a final judgment can be formed, yet these percentages already teach us a good deal. In the ash of all three plants there is the same kind of difference between the white and green parts. In the ash of the white parts potash abounds, and in the ash of the green parts lime; while in the ash of the white parts there is invariably a higher proportion of phosphates than in that of the green. There is, however, no indication that the presence of chlorophyll in the green parts involves a higher proportion of iron. On the whole, the composition of the ash, as of the organic part of these plants, suggests a comparison of the white parts with the younger and more active parts of ordinary plants, while the green parts resemble the more mature organs. At present, further deductions would be hazardous, but a series of synthetical experiments on variegated plants is at once suggested by the foregoing analyses, and by the observation that, in some calcareous soils, many variegated plants quickly revert to their normal green condition. I hope before long to report the results of growing variegated plants in soils nearly destitute of lime, but abundantly supplied with potash salts, and phosphates. *A. H. Church, Royal Agricultural College, Cirencester.*

SELF-FERTILISATION OF PLANTS.

THE Rev. George Henslow read a paper on the above subject at the meeting of the Linnean Society on November 1. Commencing by expressing his gratitude to Mr. Darwin for the great assistance derived from that author's works, he, however, took exception to his phrase "evil effects of" self-fertilisation; for, although such may have appeared to him to have occurred in the case of some of his cultivated plants, yet the object of the paper was to show that self-fertilisation was a great principle in Nature; that plants naturally so raised are as healthy as any others; that innumerable adaptive contrivances are to be found facilitating self-fertilisation—and it must be remembered that setting seed is the sole "end" which can be legitimately recognised in plant life—that such plants are the most widely dispersed and are in every way "the best fitted to survive in the struggle for life."

After detailing the nature of the observations which induced the belief of any plants being specially adapted for self-fertilisation, the author enumerated the chief facts connected with it. As these have, in a modified form, appeared in the *Gardeners' Chronicle* this year, it will not be necessary to reproduce them. The remainder of the paper consisted of an exposition in detail of each of these facts; several are deduced from Mr. Darwin's works, but the section on special adaptations consists of an elaborate account of plants taken from nearly every British order which are self-fertilising, and some of which gave opportunity for the author to advance theories of plant life. For example, Fumaria officinalis. The three anthers of each group of stamens form a three-sided box, into which the horn-like stigma is thrust, and thus becomes pollinated. The pollen grains are numerous, but only set one seed. This plant, therefore, illustrates a principle advanced by the author, that all inconspicuous self-fertilising flowers are degradations, in the sense of being more advanced states of differentiation, but involving a reversion to self-fertilisation. In many such plants the stamens are reduced in number, though the full number is often retained, while in Scleranthus they vary from ten to one, yet only one seed is set. Hence the author was led to controvert Mr. Dyer's views that cleistogamous flowers are primitive forms, by showing that transitions occur between these and the usual states; and he stated as his belief that probably no primitive forms whatever exist; that all the Monochlamydeæ and still more Achlamydeous Angiosperms are degradations and not primitive types.

Viola tricolor v. arvensis served as a text for what the author called individual adaptability. Dr H. Müller has shown how this and several other plants are "dimorphic" in that, while one form is conspicuous and adapted for intercrossing, another by a slight modification becomes self-fertilising. The author found an instance where a placentiferous process grew from the style and projected from the orifice of the "head"; and in a plant of the con-

spicuous form of Pansy the "lip" or "tongue," as he preferred to call it, was so long and recurved as to "lick up" the pollen grains from the petal in front of it upon which they had fallen.

Several facts such as these have led the author to believe that plants have an individual adaptability, and can assume certain structures which perhaps may never be found again. These, and the fact that so many genera, while possessing species with flowers adapted for intercrossing yet had others habitually self-fertilised, led him to regard the acquirement of the property of self-fertilisation as a source of the origin of many species as now existing.

Capsella bursa-pastoris, or Shepherd's Purse, illustrated another feature. Not only are small flowered Cruciferæ habitually self-fertilised, but may be recognised by having a globular stigma instead of a lobed one. Moreover, by tracing the development of the floral whorls of plants from nearly every order that there are marked differences in the respective rates of growth of the corolla, stamens, and pistil of which are self-fertilised and those which are intercrossed. In the case of the former the pistil grows either at an equal rate as the stamens or much faster, and so matures its stigma slightly before or simultaneously with the anthers; whereas in proterandrous flowers the pistil lags behind, and is often a long time immature, while the stamens and after them the corolla have arrived at maturity.

Salvia clandestina furnished another instance of self-fertility, for whereas in large-flowered species the anther-cells are adapted to strike the back of a bee on entering the flower, in this species the stigmatic branches are much elongated, and coil back between the anther-cells.

Pinguicula lusitanica does the same — the stigmatic lobe plunges itself into the upturned gaping anther-cells.

With reference to the wide dispersion of self-fertilising flowers the author had examined a great many floras, and found that those British plants which are most widely scattered over the world are self-fertilising forms, and that if they had conspicuous allies these were not to be found. Thus Stellaria media is widely dispersed, but S. holostea nowhere; Malva rotundifolia is diffused, but M. moschata and M. sylvestris nowhere, &c.

The inference deducible is that if the conspicuous forms have migrated they have died out from want of the visits of insects. Such is negative evidence, while there is the positive evidence that self-fertilising forms can establish themselves, thus proving that they are the "best fitted to survive in the struggle for life."

REMINISCENCES OF COUNTY WICKLOW.

Having had the pleasure of spending a short time in the "Green Isle," and particularly in the above-named locality, it may interest some of the readers of the *Gardeners' Chronicle* who have not had the same opportunity if I mention a few points of interest which struck me as worthy of note.

Arriving at Kingstown I took the train to Bray—the Brighton of Ireland—and it proved to be a very interesting ride, the road skirting the seashore nearly all the distance, passing Dalkey Island on the left, about a mile from the land, and Killiney, dotted all over with its well-to-do-looking residences. Having reached Bray, I found on enquiry that Killruddery, the fine estate belonging to the Earl of Meath, was about two miles distant, and made up my mind at once to walk there, but I soon found that they were Irish miles. This fine domain is extensive and well wooded, comprising hill and dale, and containing some very fine trees, particularly of Quercus Ilex and the true Highland Pine, the finest examples of the kind, indeed, that I had seen. The contrast between those two fine evergreens and the rich autumn tints of the Oak, Elm, Beech, Lime, and Chestnut was magnificent. The pleasure-ground, as well as the flower-garden, is extensive. The latter is rich in geometrical designs, but having a prevailing fault—that of crowding in too many beds—they lose their individuality. The bedding was, however, very well done, and much credit is due to Lady Meath for the excellent taste displayed by her, and to Mr. Moore for the able manner in which he has carried out her ideas. Mr. Moore is not unknown to fame, having filled some first-class places in England, notably Alton Towers and Belton; and, if I mistake not, he was one of the first to make a success of keeping Grapes in bottles of water.

As carpet-bedding is rather in my way, I was pleased to see the quiet way in which it is establishing itself in Ireland. The best examples seen were here at Killruddery, but I have grounds for believing that this style of bedding will be carried out much more extensively next season at Powerscourt, and other places of importance. It is surprising to see how fertile the country is: even in the woods the common Ferns grow out of character; for instance, Athyrium Filix-fœmina, Lastrea Filix-mas, and Lastrea dilatata are more like groves of short-stemmed Dicksonias. From the mild and moist climate of the country one is not surprised to see unusually fine specimens of plants and trees. At Killruddery the New Zealand Flax, Phormium tenax, is 12 feet in diameter, and of Dracæna australis there are fine plants receiving no protection during the winter.

Passing on to Holybrooke, the residence of Sir George Hudson, Bart., the same richness of growth was seen. The finer kinds of Fuchsias were growing in beds as we grow Rhododendrons in England, and the robust character they acquire makes them unrecognisable as the same kinds we see grown in pots. The finest specimen of the Ilex Oak I have seen is at Holybrooke; unfortunately I have not the dimensions, but it would be interesting if Mr. Byrne, Sir George's gardener, would give the particulars. Some of the newer kinds of Conifers are thriving, and will some day vie with the fine old Highland Pines for the supremacy they now enjoy. Two stems of Lilium giganteum, one with thirteen and the other with seventeen seed-pods, showed how fine they must have been. How beautiful the Escallonias are when seen as they are here and at other places in Ireland—the varieties montevidensis, macrantha, and others; here also the annual Calceolaria pinnata has found itself a home, springing up year after year in the border, and very pretty it is. In the conservatory was a singularly pretty pillar plant, an Aristolochia with smooth shining rather small leaves, with flowers like those of A. sypho; this plant seeds very freely, bearing pods from 3 to 4 inches in length.

To visit Charleville, the seat of Viscount Monk, a real Irish car was brought into requisition, and from Bray we took the new drive made by Lord Monk some years ago, which runs parallel to the River Dargle, but at a considerable altitude. This is one of the most beautiful drives possible, the steep banks on both sides of the river being well wooded, and every now and then rocks are seen projecting up and beyond the trees. Then again you look down upon the stream with its large boulders and sharp projections, leaving no doubt upon the mind but that the "stream runs fast." Leaving this new drive, and entering the more private domain, we find ourselves in a well-wooded park of some extent, and soon we are introduced to one of the best possible kept lawns, which is well furnished with many fine specimens of Wellingtonias, Deodars, &c. Here is a fine avenue of the Cedrus Deodara and another of grand plants of Irish Yew. Charleville is great in hedges, and they are well kept. I don't admire hedges without a use or purpose; it appears to be the fashion in Ireland. Flower gardening is done by Mr. Douglas, the gardener, with much taste, but the effect is lost in the hedge compartments. Every department was in excellent order. Alterations were being made to the Vine borders, which will no doubt enable Mr. Douglas to show his skill in that line to great advantage.

Remounting our car we soon find ourselves at Powerscourt, the princely domain of Viscount Powerscourt. Great and manifold are the works which have been undertaken here during the last ten years, and the cry is still Onward!—and I believe I am not mistaken that in Mr. Penford his Lordship has a gardener who will not disgrace the work carried out before his time. A new flower garden has not long been completed, where, as I remarked in noticing carpet bedding, I believed it would be carried out on an extensive scale, and from the position of this terrace garden no better place can be found to exemplify this fashion in flower beds. It will be seen from several elevated points, and in passing from the mansion down the grand flight of steps to the lake beyond a closer inspection may be obtained. If well carried out carpet bedding is more effective at a distance, and will bear a closer scrutiny than any other system of bedding. Arriving at the lake, the care with which the banks and the ravine beyond have been planted is apparent. A judicious selection of tree, shrub, and plant has been made with the view, as it were, to blend Art with Nature—graceful weeping trees, elegant Pampas-grass and Arundo conspicua, Phormium tenax, &c. By the way, Arundo conspicua is not nearly so much grown as it deserves, its flowering season is so much in advance of the Pampas-grass that if planted together the effect produced is extended for a much longer period. This portion of the grounds is rich with flowering shrubs. In the garden proper will be seen fine ranges of glass well stocked with flowering plants; the Peach-houses are in excellent condition, so are the vineries. In some two or three were still to be seen some grand examples of good Grape growing. The flower-bed arrangement in front of the range of glass was all that could be expected at that late season of the year. Both time and space forbid that I should write more concerning this fine place except to record the satisfaction it gave me to see the extensive use that Lord Powerscourt is making of the new Conifers in planting them in quantities on either side of the new splendid drive which conducts the visitor from Powerscourt to the Waterfall, a most romantic spot, where a sheet of water is thrown at a great height over a smooth almost perpendicular rock into a rocky bed below, from whence flows the famous Dargle. I am almost at a loss which to prefer most—the morning drive by the river-side, with its well-clothed banks, or the evening drive from the Waterfall through the rocky glen, the interstices of which were filled up with such a carpet-bed of Furze in flower and Heath as only Nature could produce. And were anything wanting to complete the picture it was to be found in the framework of mountains—the "great Sugar-loaf Mountain" on the one hand, and the small "Sugar-loaf" on the other, with Bray Head in the distance.

Before taking leave of the beauties of Wicklow, I cannot omit mention of a very pleasant visit made to Bellevue, an estate belonging to W. R. Latouche Esq. Here is, perhaps, one of the finest views to be seen in this or any other country. It is seen from the "Octagon-house," which is perched on the summit of the hill commanding a view of the "Glen of the Downs," an extensively wooded glen, in which the trees are as smooth as if they were clipped, owing, no doubt, to the fact of the sea breeze blowing through the glen, which is merged in the uninteresting flat district between this point and Wicklow town, which is seen in the distance. Returning from the Octagon-house, we are brought to the mansion and gardens through a fine young plantation of Deodars, Weeping Spruce, Austrian Pines, &c. The kitchen garden is old. There are no extensive glass erections, but a very interesting corridor, leading from the house to the conservatory. This corridor has some remarkable specimens of Myrtles, Acacias, Ceanothus, Pelargoniums, &c., planted against the back wall. The conservatory contains some finely-managed Camellias. The gardener, Mr. Colgan, has quite the gift of plant-growing. In an intermediate stove were excellent examples of good cultivation. On the lawn may be seen a large Fuchsia Riccartoni, 27 yards in circumference, and on a wall close by is a specimen of the Carob tree, covering a space 8 yards by 4 yards, and plants of Edwardsia grandiflora and Olea excelsa are nearly as large.

If these remembrances of a pleasant visit interest only a few of your many readers, and induce them to record similar facts and sights, I shall consider I have not written in vain. *George Thomson, Crystal Palace, Sydenham.*

HERBS AND SIMPLES.

At the meeting of the Worcestershire Naturalists' Field Club, held on October 25, Mr. Edwin Lees read a paper "On the Medicinal and presumed Magical Virtues of the Common English Plants." Mr. Lees said that his paper was founded on some Saxon documents in Government keeping that had been published under the sanction of the Master of the Rolls, and was entitled *Leechdom, Wortecunning, and Starcraft of Early England.*" From this chronicle it appeared that in the good old times the common plants of the woods and fields were considered to be remedies for every disorder incident to the human body, and were cultivated in the Saxon herb gardens. Some of the "yarbs," as country people call them, were considered to have a very powerful influence, so that the common wood Betony was expected to cure twenty-eight different disorders, and a common saying was, "He has as many virtues as Betony." The

Vervain, now often seen growing in the vicinity of rustic habitations, was esteemed against all poisons, and even the Stinging Nettle, the Bramble of the hedges, Celandine, Borage, and Horehound would cure "infirmity of the joints," "heart-ache," and a dozen other things! Millefoil or Yarrow was good for sixteen different ailments, so if the plant remedies in the book of Saxon *Leechdom* could be relied on at the present time, there would be little necessity to consult an M.D., and the regular M.R.C.S. might look in vain for patients.

In those days, too, witchery and the evil eye were much dreaded, and elves with wicked intentions were believed to wander about at night to work malicious tricks. But there were talismanic plants that had power to upset such influences, and a salve made up of fourteen different plants, if smeared on the forehead and eyes of any nocturnal visitor, would stop his malignant efforts! It was, however, necessary to lay hold of him, which might not be so easy. But in many cases it was necessary to gather plants at particular times and with certain ceremonies, without which their efficacy could not be depended on. Thus Periwinkle had a host of virtues and good qualities ascribed to it, and among other things it was said in the Saxon *Leechdom Book*—"If thou hast this Wort with thee thou shalt be prosperous in thy doings, and ever acceptable." Mr. Lees humorously remarked that to test this, at the last meeting of the Club he had stuffed some branches of Periwinkle in his hat, but forgot that he ought to have gathered it when the moon was either nine, eleven, or thirteen nights old. Unfortunately neglecting this, the Periwinkle not only proved useless, but a gust of wind at night blew off his hat in crossing the railway bridge at Stourbridge, and in the darkness it could not anywhere be found.

After giving numerous amusing instances of the supposed power of plants in former times, and notices of the village herbalists and doctoresses that then were in vogue, ever ready with their plant decoctions and sage counsels, he instanced the popularity of Culpepper's *Herbal* only a few years since, as a proof of the credulity of people in general as to the wonderful qualities of the commonest weeds, all of which were commendable for something. Even yet herbalists made a living by gathering Tansy, Wormwood, Centaury, Sanicle, and other plants, and although the commoner vegetable remedies were excluded from the Pharmacopœia in the present day as being of little or no efficacy, perhaps our incredulity in the herbs so valued in olden times may be carried too far. Many plants had been introduced by the various tribes that had invaded Britain, and these, nurtured and esteemed for a time but afterwards neglected, yet remained in the vicinity of civilisation, and were recognised as "domestic plants." The late Mr. George Jordan, long a valued member of the Club, and who lived to be near ninety years of age, used to relate that in the days of his youth most of the common people lived upon salted viands all through the winter, and there was thus a necessity in the spring to imbibe diet-drinks as they were called, made from decoctions of various plants, to purify the blood and prevent scurvy. This necessity had passed away, but still botanists and lovers of Nature were curious to gather up the plant lore of the past, and like industrious bees extract instruction from every opening flower, and find something worth notice even in the humblest weed.

POTASH AS VINE MANURE.

POTASH as a manure for Vines has been recommended by more than one good Grape grower, and with good reason, as I intend to show farther on. But the chief end for which this paper is written, is to call attention to the statements concerning this which appeared lately in a contemporary. The article to which I refer pointed out the use of potash as a manure for the Grape Vine, and the writer gave his method of supplying potash to his Vine borders. I wish to say something on this, as his method is almost sure to lead into error any who may have reason to suppose that potash has been deficient in their borders, and are intending to follow the writer's way of supplying it. The method was to save all the garden rubbish and burn it, and apply the ash to the Vine borders with the idea of supplying potash in sufficient percentage to make matters right.

In order to understand the case fully, we must take into our consideration how Vine borders are made, and what they are chiefly manured with. The manner of making we may pass over, as that is familiar enough to every gardener, with the remark that most good loams contain a far greater percentage of lime than of potash, although potash is present in all good loams. This percentage of lime is farther augmented, in a majority of cases, by the addition of lime rubbish, and often enough a sprinkling of quick-lime. Then bones are almost always added, and these furnish phosphate of lime and magnesia. Sometimes horse-droppings are added, and sometimes a little common stable-yard manure, and in this case the addition of mineral matter is chiefly lime, silica, and magnesia, with a little potash. This is the food generally given to a plant which wants potash in a greater percentage than lime to supply its wants as regards mineral food. And then when people get these facts placed before them, and see that potash is what is deficient, then we have those who profess to lead telling them to manure with the ashes of garden rubbish.

Garden rubbish is a somewhat vague definition of what to burn in order to get proper ashes for Vine manure, but it most likely arises from the erroneous idea so prevalent among people, who really do not know anything about the matter, that all wood-ashes whatever consist chiefly of potash. And this is the error which I wish to point out. I will enumerate some kinds of "garden rubbish," of the ashes of which I am able to give the analysis by such eminent authorities as Liebig, &c.:—Old Pea-stakes, generally either of Beech or Fir wood; orchard thinnings or prunings, chiefly of Apples; Pea-straw, Potato-tops, Asparagus-tops, Brackens (where used); Mustard (garden), Spinach, &c.

Ash of

	Beech-wood.	Fir-wood.	Apple-wood.	Pea-straw.	Potato-tops.
Lime (carbonate)	49.54	50.94	63.60	47.81	43.68
Potash (carbonate)	11.72	11.30	19.24	7.30	2.35
Soda (carbonate)	12.37	—	—	—	—
Potash (sulphate)	3.49	—	—	—	—

	Asparagus-tops	Brackens.	Mustard.	Spinach.
Lime (carb.)	—	24.80	20.81	13.11
Potash (sulph.)	6.01	0.70	9.80	9.69
Soda	34.21	—	—	34.96
Silica		73.00	—	—

A glance at this table shows that potash, which we have seen to be most wanted, is very subordinate to lime, which is present in too great percentage without the addition of such ashes of garden rubbish. This table should demonstrate how unsatisfactory such general directions are, and how very apt to mislead those who have no such data to guide them. To compare with this table I give another, to show the wants of the Vine as regards potash and lime:—

	Ash of— Vine-wood.	Grape juice.	Grape must.
Potash	37.48	76.30	62.74
Lime	43.68	6.00	5.11

	Grape skins.	Grape stones.
Potash	46.89	29.45
Lime	21.73	35.57

It will thus be seen that potash and lime should be supplied in nearly equal quantities in the food afforded, and this is not done in the usual way in which borders are made up, nor does the application of the ashes of garden rubbish make up the deficiency, but rather add to the already preponderating percentage of lime when such articles as we have enumerated are employed to furnish the ash. I have only given a few, and, if necessary, could double the number of different plants which yield more lime than potash in their ash, but I merely mention the names of a few so that they may be avoided for such a purpose unless the lime they contain is ignored for the sake of the potash they yield. I may here say that the potash in all ashes readily dissolves in water, while lime in the state of carbonate is insoluble, and by taking advantage of this fact a manure-water made from ashes will be rich in potash with no lime if the liquid thus made be drawn off clear. When the ashes are added bodily to the border the carbonic acid evolved by the decaying organic matter present will convert the carbonate of lime into the bicarbonate, in which state it is easily dissolved. Some waters (hard ones) have a percentage of bicarbonate of lime; if a little lime-water be added to such all the lime present becomes the insoluble carbonate, and if this is allowed to sink to the bottom and the clear water drawn off, it is freed of lime and rendered soft.

Plants (or parts of plants) yielding more lime than potash in their ash, in addition to those already given:—Broccoli leaves, Centaurea (Bluebottle), Cabbage leaves, Elder bark, Elm, wood and bark; Flag (sweet), Flax, Hops, Lucerne, Linseed (equal), Moss (Sphagnum palustre), Madder-root, Orange tree, Pines, Parsnips, Sabine wood (scarcely a trace of potash), bark of Lime tree (old mats), Thistles, Ground Pea, Onion stalks. A few of these can only find their way to the garden-heap occasionally, and in limited quantities, but some of them are always present in quantity. It will thus be seen that "the ashes of garden rubbish" is no true guide to what we are really giving. It seems to me that the proper thing to give as manure to an established Vine border is just what is removed from the Vines annually. The leaves and prunings constitute the greatest amount of ash-yielding matter thus removed, and the collecting of these and reducing them to ashes and putting this on the borders would replace exactly what is thus removed. The only other item, and which cannot thus be replaced, is the fruit; and the amount of potash removed by this means is almost infinitesimally small, something less than 6 lb. in a ton of Grapes, and there need be little difficulty in replacing this. For instance, 1 ton of cow-urine furnishes over 70 lb. of potash salts, or a great deal more potash than is wanted in a ton of Grapes.

Perhaps it may not be out of place here to point out the fact that most guanos furnish phosphate of lime to a greater extent a good way than potash salts generally. The percentage of the lime phosphate is about 30 per cent. against 5 per cent. of alkaline salts. Those who deal greatly in guano-water for their Vines may note this. At the same time I may point out that there are certain plants and portions of plants whose ash is so rich in potash, that those who have a mind to supply the substance in that way may be none the worse for having a selection of "rubbish," which could be kept separate for that purpose. I will tabulate a few of these:—

	Ash of— Artichoke (roots), Jerusalem.	Beetroot tops.
Potash	44.5	21.26
Lime	2.3	8.65

	Beetroot.	Hemlock.	Gooseberry.
Potash	39.0	12.80	38.65
Lime	7.0	8.39	12.20

	Lettuce.	Leeks.	Onions (Portugal).
Potash	46.01	33.115	39.005
Lime	6.05	9.955	9.326

	Cucumbers.	Celery.	Cauliflowers.
Potash	34.39	22.07	34.39
Lime	6.31	13.11	2.96

	Bean straw.
Potash salts	35.36
Lime salts	45.00

And perhaps a few more; but these are quite enough to illustrate my purpose in this instance, and may enable not a few to guide their actions according to method instead of in a vague way, which they themselves are unable to account for. *A. H.*

SPOUTED WALLS FOR FRUIT TREES.

YOUR correspondent, Mr. T. Shingles, writing from Tortworth, drew attention to the failure at that place of Peach trees which had had the advantage of a wide coping of glass, and which during the time of the disastrous days in spring had an additional covering of netting suspended from the glass coping. I am glad Mr. Shingles spoke out in this way, for if those glass copings are found to be of no practical value there is no use in one being at the expense of putting them up; but I should think a good deal of this glass coping or shading has lately been put up about the country. Perhaps others will be kind enough to give their experience.

Without glass coping or covering of any sort my outdoor Peaches have this year been marvellously successful. The fruit were plentiful on the trees, and excellent. The varieties are Stirling Castle, Belle Beauce, and Padley's Seedling. Some years ago these trees suffered severely from what I thought to be drip from the coping of rain or sleet freezing on the thicker branches of the trees. The trees on many parts were denuded of their bark, and for a time I was wicked enough to think that some mis-

chievous youth had been climbing up the branches on to the top of the wall. This idea could not long hold good, for an open door close by obviated any necessity for climbing. I therefore came to the conclusion that the injury to the bark was sustained by the effects of the freezing influence of drip from the sandstone coping. To remedy this supposed evil I had the wall spouted, and have not since observed any fresh injury to the bark, and the injured portions are now healing nicely over by a covering of healthy bark.

These trees are maintained in health by scrupulous attention to the cleanliness of their leaves in early spring, just at the time when the blossom is in full bloom and the leaf-buds partly expanded. This is the time when the greenfly does its best to effect a lodgment, and a little timely administration of tobacco-water at that stage does much to ensure success and comfort in Peach management for the remainder of the season, and so on for the healthy maturation of plump buds and shoots for the next. The Peach, no doubt, delights, in this country, in being placed against a warm wall, but by doing so we place it in some respects in a most unnatural position—1st, the warmth of the position invites the breeding and maturing of all the insects that Peach trees are heir to; there is first the greenfly, second the spider, and third brown-scale, and even thrips. All these must be fought with and effectually driven off and kept off, far beyond the boundaries of either the Yantra or the Lom. There is again in this artificial position the drip from the coping; this downpour on the wood and leaves of the trees is unnatural, and should be obviated by the spouting of the eaves of the coping. Other manipulations carefully and timely attended to will all tend to produce healthy and handsome trees, and fruit also in the season worthy of the artist.

Unfortunately, the day the photographer came the wind so disturbed the leaves as to prevent him from obtaining a plate sufficiently clear, but, such as they are, I send three of them. By examining them with the aid of a reading glass you will find them closely dotted all over with fruit, and alike from the top of the tree to the lower branches. I might easily dot the fruit all over with a red pencil, which would make them more visible, but then it might be said that I dotted where there was no fruit, so I prefer sending you the plates just as they were taken.

The bees which did such good work in my early Peach-house were moved to the second, third, and fourth houses—not because I thought the blossoms at that later period of the year required their assistance, but their having been agitated so early in the year, and evidently making good use of their opportunity, I resolved they should have the benefit of a run all through. The hive, which was not one of the strongest to begin with, swarmed in June, at which time I put on, and have lately taken away a very nice super of honey. One coincidence of the presence of the bees in the early house was a crop from a small Oldenburg Nectarine of over twelve dozen splendid fruits. From the same tree I never before could gather more than a dozen. This tree I had often thought of replacing by another, but on account of its good behaviour this year I have granted it a respite, and hope that, by the assistance of the bees during other years, it will keep faith with me.

In early houses I consider it is absolutely necessary to assist Nature in the fertilising of the blossoms, and having such good results by calling in the aid of bees I look upon the "finger and thumb" process as a practice obsolete—a thing of the past. *W. Miller, Combe Abbey Gardens.* [The trees alluded to are, we can testify from our own observation, beautiful specimens of training, well furnished to the bottom, and, as the photographs show, bore an excellent and an even crop throughout. Eds.]

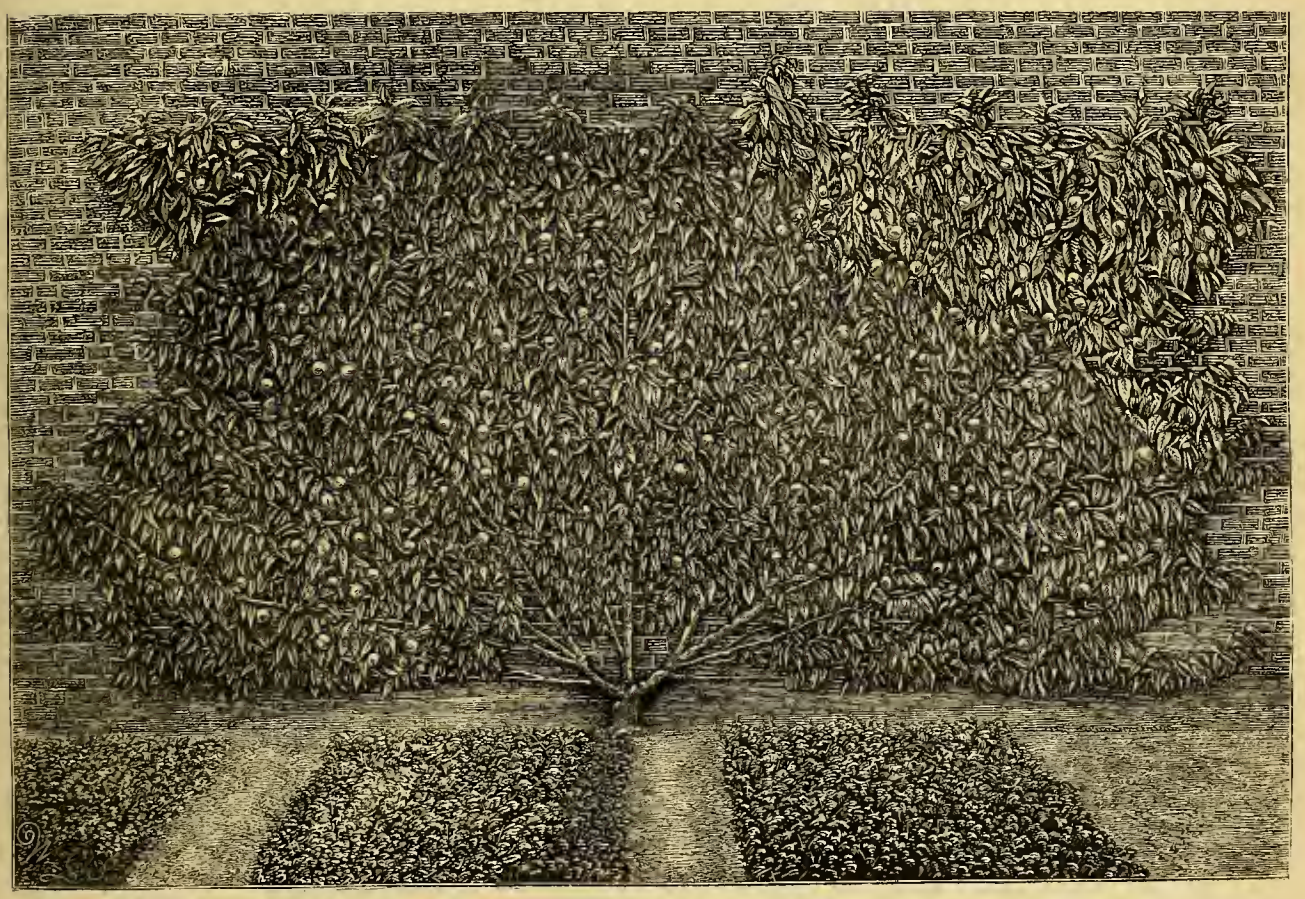


Fig. 116.—Belle Beauce Peach Tree, grown on the Seymour System, by Mr. Miller, at Combe Abbey.

GREENHOUSE HARD-WOODED PLANTS.

(*Concluded from p.* 558.)

An old practice in the potting of Heaths was to elevate the balls so high in the pots that little room was left for water; this was done with a view to keep the collar of the plants sufficiently dry, which is essential, but it can be effected equally well by keeping it somewhat higher than the rest of the surface of the ball, leaving this sloping gradually from the centre to within a little distance of the sides of the pot; by this means the whole can be kept enough below the rim of the pot to allow proper space for watering. Three-quarters of an inch is not too much for plants in 8-inch or 9-inch pots. Studiously avoid light potting; in all cases ram the new soil so as to make it as close as that contained in the old ball. If this is not done, in giving water afterwards it will pass down the sides through the new material, leaving the centre in which the roots exist so dry as to cause death or disease.

After potting keep the house a little closer than usual for a few weeks, giving no side air; and, if the weather is bright and dry, sprinkle the surface on which they stand, so as to counteract the loss of moisture from the leaves given off by evaporation. It may be well to state here that although they are essentially air-loving plants, and are able to bear a freer admission in direct contact with them than the generality of the subjects grown in greenhouses, still during the time the cutting March winds are blowing side air should be admitted to the house with caution—even to such as do not receive a shift at this time, or the leaves will most likely be injured to an extent that will cause them to become of an unhealthy bronzy colour, from which they rarely recover, dying and falling off before their allotted time, which, as a

matter of course, is alike detrimental to health and appearance. As soon as they are potted all the stronger branches should be bent well down in a horizontal position, close to the rims of the pots; if this is not attended to whilst the plants are young the omission can never afterwards be remedied, as the shoots of many sorts get too strong to bend, and the requisite outline cannot be preserved, as the strong growths, even if repeatedly stopped, have such a tendency to take the lead in an upward direction that the weaker branches are starved and ultimately die off, leaving the plants naked and unsightly at the base, for which there is no remedy, as few Heaths will bear cutting back far into the old wood. Whatever stopping is required in the shoots should be done at this stage, as the object with this young stock is to lay the foundation of future shapely specimens rather than any consideration for the bloom they make this first season.

In a few weeks the roots will have begun to enter the new soil, when more air may be given. Each plant must now be daily looked over so as to ascertain if it requires water, continuing this all through the summer. Many fail to grow these plants satisfactorily through erroneous impressions entertained as to the water they need. It is generally understood that if a Heath flags through want of water death is likely to follow, and from this impression those in charge are often induced to give water before it is absolutely needed. This is equally certain to bring about an unhealthy state, fatal in its consequences. Taking the family collectively, they require the soil to get drier before water is applied than other plants, and the harder-wooded and slower-growing the variety, the more necessary is it to treat in this way. But in all cases when water is given enough should be applied to moisten the whole of the soil, but not to saturate it, as from the extremely fine delicate nature of the roots they cannot bear any excess. As a matter of course the more vigorous the condition the more necessary it is to see they do not get too dry before watering. The same holds good in the case of the softest free-growing kinds, and with all the soil during the summer season should never be allowed to get so dry as in the winter when comparatively little growth is in progress.

Through the summer provision should be made for standing the pots on a bed of ashes in the house; this applies to all excepting the soft-wooded winter-flowering kinds, which should go out-of-doors by midsummer. If only a few inches in thickness it will be much more conducive to free growth than bare shelves; the moisture which the ashes contain softens the air and makes it much more genial to the plants during the growing season, at which time it should be daily freely sprinkled with the syringe. The plants themselves should not be syringed—for although this promotes growth, it makes them so soft as to render them more liable to the attacks of mildew. Neither should they be shaded in sunny weather, or the effect will be similar. They should be kept under glass until the beginning of August, at which time they ought to be stood out in the open air on a bed of ashes sufficiently thick to exclude worms, letting them stand close enough, so that each plant will screen the pot of the one behind it from the sun during the middle of the day. The direct action of the sun on the pots has the effect of injuring the roots, that with a healthy plant lay in quantities against the inner surface. Should there be an appearance of drenching rains, lay them down on their sides. Take them in about the middle of September, for, if left out until the nights are frosty, the young growth will suffer.

Winter as before in a light airy situation, attending to their wants as advised for the preceding season. If all has gone well they will need more root-room the following spring, giving a 3 or 4-inch shift in the case of those with plenty of roots, and less to such as are not so strong. Most of the plants will flower during the spring, summer, or autumn, according to their season of blooming, and make nice decorative subjects; but if used in this way they must not be put in dark houses, or crowded amongst other plants, or they will suffer thereby. Where it is deemed more desirable to grow them on quickly to a larger size, then it will be well to pinch out the points of the shoots about the beginning of February; this will cause them to break out bushy, to further assist which tie out the strongest shoots, as advised in the spring previous, treating through the summer and following winter as before. They will by this have formed nice compact plants, and should be let to bloom, after which the freest growing kinds ought to have their shoots shortened back to about two-thirds of their length; but all the slowest growers should merely have their flowers picked off as soon as they have faded, not allowing these to remain on to form seed, which has a weakening influence. They should be treated in this way all through their existence, for, if left to seed, it will not only have the effect of causing them to flower later the ensuing year, but also reduce the quality and strength of their blooms.

Staking and tying should be carried out each winter, when the plants are most at rest. Use no more sticks than necessary to hold them in their proper position. The weakest wooded varieties will need the most support, but in all cases do not put the stakes down deeper into the soil than requisite, as they cannot be got in without more or less breaking the roots. When the plants are only wanted for home decoration fewer sticks will suffice than when they have to be moved about considerable distances for exhibition, in which case they must have their shoots better secured.

The subsequent treatment year after year will be much of a routine character, in accordance with the directions already given, using the potting soil in a more lumpy state as the plants get bigger, and always letting them have enough root-room as they require it, for if ever allowed to become pot-bound they are liable to die when shifted. As the plants get old and in pots as large as deemed desirable, they may with advantage be assisted with weak manure-water during the spring and summer; and when they occupy pots of considerable size it will be necessary at the time they are turned out to harden in the summer to put a piece of old mat or canvas round the pots, so as to break the force of the sun.

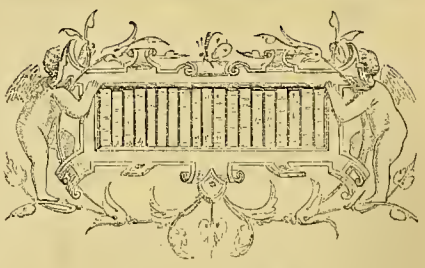
There are a few kinds that require especial treatment. The yellow-flowered, drooping-habited E. depressa should be stood out in the full sun from the beginning of June until autumn, or it will not sets its flowers freely. This sort does not usually bloom well two seasons together. One of the finest Heaths in cultivation, E. Cavendishiana, will bear after flowering placing in a comparatively warm, close, moist atmosphere, such as suits Azaleas, whilst making their growth—previous to which, when its gets too tall, its branches may be cut much closer in than most other sorts will do with; it will bear their being shortened in to the extent of one-third, but after it has made growth in such a structure it should be exposed to the open air for a month before autumn, or it will be too soft to winter well. The winter flowering kinds, of which E. hyemalis may be taken as a representative, should after blooming have their strong shoots cut freely back, or they will soon get too tall. The spring flowering E. propendens ought to be treated similarly.

The following are a selection of the best kinds that will give a succession of flower over a great portion of the year:—

E. Victoria	E. exquisita
E. M'Nabiana rosea	E. Massoni major
E. Hartnelli	E. Lindleyana
E. Devoniana	E. æmula
E. mutabilis	E. eximia superba
E. aristata superba	E. Paxtoni
E. Cavendishiana	E. Shannoni Turnbullii
E. depressa	E. insignis
E. Candolleana	E. Shannoni glabra (new)
E. propendens	E. opulenta (new)
E. tricolor coronata	E. Parmentieriana rosea
E. ,, Eppsii	E. Irbyana
E. ,, Wilsoni superba	E. Austiniana
E. ventricosa coccinea minor	E. Jacksoni
E. ,, magnifica	E. Marnockiana
E. ,, grandiflora (Story)	E. retorta major
E. ,, Bothwelliana	E. hiemalis
E. obbata	E. Wilmoreana
E. ampullacea obbata	E. gracilis
E. Fairieana	E. ,, vernalis

The above forty varieties are diversified in colour and form, good growers, and come into flower in something like the order in which they are named from the early spring through the summer, autumn, and winter; and, whether for exhibition or home decoration, may be relied upon as calculated to give satisfaction.

Insects—Heaths possess one great advantage over most other plants, they are little liable to the attacks of insects. Scale, both brown and white, will live upon them. In the case of a plant affected with the latter it is much better to destroy it at once than to run the chance of its being communicated to others. The brown species is less difficult to deal with, although not easy to eradicate; where present it is confined principally to the wood. It may be kept down by the use of the brush and sponge, and washing with a moderately strong solution of insecticide in the autumn, after growth is complete. *T. Baines.*



Notices of Books.

WE are happy to announce the publication of a new edition of *Thompson's Gardeners' Assistant* (Blackie), under the superintendence of Mr. Thomas Moore. The old edition was for the time at which it was published the best general treatise on gardening in the language, and we are assured that no pains have been spared to bring the work up to date. Several new sections have been added relating to orchard-houses, heating, laying-out of gardens, florists' flowers, carpet-bedding, table decoration, the management of conservatory and stove plants, &c. So enlarged and improved, *Thompson's Gardeners' Assistant* forms a cyclopædia which no garden library can dispense with. We shall allude at greater length to the contents of the volume at a future time. *M. T. M.*

—— We notice the publication of a second edition of *The Clematis as a Garden Flower*, by Mr. Thomas Moore and Mr. George Jackman. The former edition was a model of what a garden monograph should be. While giving sufficient clues and indication to the physiologist and botanist requiring information of a character not ordinarily desired by the cultivator, it gave a very complete account of the history, production, and culture of the numerous varieties which the skill and good fortune of the raisers had brought before the public. The introduction of these fine varieties constituted a distinct era alike in horticultural botany and ornamental gardening, and most desirable it was that its history should have been written. In this second edition many new features are introduced, in accordance with the increased knowledge which experience has given of the qualities of the several varieties and their fitness for particular work. The descriptive lists have been recast and extended so as to include the latest additions and the certificated varieties, and the volume now ends with a very useful index of species and varieties classified according to their botanical origin, and their habit of growth, flowering, &c. The Clematis now belts the year with flowers, with the exception (even that not always valid) of about one month. The writer of these remarks has in his own small garden began the year with calycina and cirrhosa, and followed up with tubulosa, Jackmanni, and graveolens till cirrhosa again made its appearance. Alike for dressed garden, exhibition purposes, wilderness walks, and rooteries and rough banks, the Clematis as a whole is unrivalled. Would that some enthusiats would follow up the advice given by a writer in this journal, and plant a number of the free-growing varieties in such places as the Underclifle in the Isle of Wight, the greensand cliffs at Folkestone and Sandgate, and hundreds of similar localities by the coast and inland. *Y.*

—— M. André de Vos has republished his very useful *Enumération Méthodique des Plantes Nouvelles ou Intéressantes*, or "Enumeration of the New or Interesting Plants published or alluded to in the principal Horticultural Journals of Europe for the year 1876." M. de Vos has not confined himself to a mere list of names, but has given us a brief descriptive paragraph and a reference to the work in which the plants in question are figured and described. The arrangement is according to the natural orders. In future it is to be hoped that M. de Vos will give in addition an alphabetical index to the genera, for the sake of those who are not botanists enough to know under what order to look for a particular genus. In the meantime we can but tender our hearty acknowledgments to the author of this very serviceable enumeration.

PUBLICATIONS RECEIVED.—Journal of Forestry.—Wiener Obst und Garten Zeitung.—Monatsschrift des Vereines zur Beförderung des Gartenbaues, in den K. Preuss. Staaten.—Le Moniteur Horticole Belge.—The Rose Annual, by William Paul.—Revue Horticole.—Annales du Jardin Botanique de Buitenzorg.—Florist and Pomologist.

Garden Operations.

PLANT HOUSES.

Greenhouse Hard-wooded Plants.—Azaleas.—The useful character of these plants in giving a long succession of flowers is now much better understood than it once was. There are few plants adapted to conservatory decoration that, by suitable treatment, can be made to flower over such a considerable portion of the year. Independent of the different forms of vittata, a totally distinct section undeservedly much neglected, which will bloom without forcing from September to March, there is no difficulty with a sufficient number of the ordinary varieties, in having them in from Christmas to midsummer; but neither this early nor late flowering can be accomplished except by plants that have received the requisite treatment for two or three years, so as to gradually induce a habit of blooming early or late as the case may be. Not but that plants that flowered best during the early spring may be forced to have them in bloom at the beginning of the year, or late ones, on the other hand, retarded, so as to open their flowers much later than hitherto; but to be had in early they would require the application of more heat than is consistent with the flowers standing well when open, whereas if they have been in previous years gradually brought on to open their blooms in the winter they will do so with less forcing, by which means the flowers will last much longer either on the plant or when cut—the latter a matter of great importance at the present day. In the same way plants that have previously had their flowering kept back more or less can be induced to bloom still later without being subjected to the chilling process often resorted to, and which ends in the flowers opening not more than half their natural size. Such as are wanted in bloom soon after Christmas should at once be placed in a little heat and brought on gradually. They may have a little moisture overhead by syringing once a day, but over much should not be used, as it encourages too much shoot growth, and makes the whole soft. Plants that flowered late, say up to the end of June, and have through the autumn been subjected to sufficient heat for maturing their growth and plumping up their bloom-buds will be approaching completion in this respect; they should not be removed into cooler quarters too soon, under the impression that this will have the effect of inducing a later disposition to flower. Plants with thoroughly plump, well-ripened flower-buds I have always found easier to retard late than such as had their growth stopped in a softer state. Whatever tying is required to these later plants should be finished at once; for home decoration comparatively little support is required, but there is one essential that should never be lost sight of, that is, to keep the strongest branches well tied down to the base. Plants that are somewhat earlier and have finished their growth and are wanted to bloom late should be kept as cool as possible with plenty of air on in the daytime, and also at night when there is no likelihood of frost; as a matter of course they will now require much less water, but never let the soil get so dry as is sometimes practised.

Soft-wooded Greenhouse Plants. — Pelargoniums.—The free early-flowered section of these plants, now so much in demand for conservatory decoration and the production of cut flowers, and which by the selection of suitable varieties and the requisite treatment can be had in bloom during the latter part of winter, must now receive every attention by being sufficiently tied out to secure sturdy growth; they must be well elevated up to the roof glass, and be subjected to a temperature a little higher than that of an ordinary greenhouse, 45° during the night will answer for them. Primulas.—There has been considerable advance in the varieties of these plants during recent years; the fine double flowered varieties of the large bloomed section, totally distinct from the old dwarf-growing, weak constitutioned double-flowered white forms, are a great acquisition. There are some now which are thoroughly robust strong growers, with the individual bloom-stalks sufficiently long to adapt them much better for bouquet work, with the flowers as double and almost as large as the blooms of a moderate sized double Balsam. Their propagation by cuttings no doubt makes their increase a much slower process than raising the single kinds from seed, as well as entailing a little more labour; yet nevertheless they are worth all the trouble, if only for the single fact that their flowers stand so much longer than the single ones—the vexatious disposition the blooms of which have to fall off when a few days old with the slightest touch is well known to all who have had much to do with the arrangement of cut flowers. To do them well through the winter without damping, they, in common with all the kinds, should be kept in a temperature of from 45° to 50° in the night, and close to the glass. If the corner of a small pit along with Cyclamens can be afforded them it will just meet their requirements. These last-named should now be well attended to. Look over them carefully, to see that they are free from greenfly, which conceals itself under the leaves in a way that, unless sought for, it is not detected until much injury is done. Plants in full bloom should as they come in be removed to the conservatory, or wherever required for decorative purposes, but the main stock ought to be still kept on in the growing pit or house where they can have a temperature such as already indicated. Seedlings sown the latter part of the summer will by this time be ready for pricking out into pots or pans drained and filled with good loam to which has been added some sand and leaf-mould, also keeping these near enough to the glass to prevent the leaf-stalks being drawn up weakly. Mignonette intended for early flowering, as well as the later crop, must receive the requisite attention; such plants as are required for spring blooming should if they now show flower have it pinched out. Where the pots are well filled with roots the plants should be sufficiently supplied with manure-water to which has been added a little soot; there is nothing tends more than the latter to impart to the leaves the deep green healthy tint which adds so much to the appearance of Mignonette in pots, and without which, however full of flower, it does not look well. *T. Baines.*

FRUIT HOUSES.

Peaches and Nectarines.—In the preceding Calendar upon this subject I referred to the importance of using the utmost diligence towards the extirpation of insect pests before recommencing forcing operations for the ensuing season. If such matters have had due attention, allowing an interval of a few days after the trees are dressed to allow the composition employed therein to set firmly, forcing operations may be commenced whenever desired. To have ripe Peaches and Nectarines by the middle of May next season, a gradual excitement should be permitted to take place at about the middle of the current month, in the first instance by merely closing up the house entirely at night and keeping it so whenever cold weather prevails; under other conditions give sufficient air to prevent the internal temperature ranging much higher than that which exists out-of-doors, and unless absolutely required by stress of weather, use as little fire-heat as possible during the first fortnight or three weeks, when 45° to 50° at night, 55° during daylight, and about 65° from solar aid, will amply suffice. More than this may prove to be a source of mischief, and therefore to insure success it is best avoided. A moist condition of the atmosphere will be most conducive to excite vegetation, and therefore it should be maintained by sprinkling the floors or borders in the house occasionally, and the trees at morning and afternoon. Take advantage of unsuitable weather out-of-doors for pushing forward the necessary work which remains to be done before forcing commences in later houses. By no means neglect to give a plentiful supply of water to borders which are protected from obtaining any benefit from the rainfalls, and complete as expeditiously as possible any lifting of the roots or root-pruning which still remains to be done. *G. T. Miles, Wycombe Abbey.*

Cucumbers.—If the demand for Cucumbers is not excessive the plants expected to yield a supply from December onwards will be greatly improved by the removal of nearly all the young fruit and male blossoms, unless, as is sometimes the case, the plants have limited room and are growing extra strong, when moderate cropping will be found the best course to follow. To produce an unlimited supply up to Christmas is no difficult task, but to continue it up to the end of March is the best test of skilful management; and assuming that heat, soil, and structure are all that can be desired, light cropping until the plants are thoroughly established will be found the stepping-stone to success. Although winter culture is by no means difficult, there are certain rules, simple in themselves, which must be followed pretty closely so long as daylight is more than counterbalanced by darkness. A minimum temperature of 70°, with a rise of 10° to 15° by day from sun-heat, and a bottom-heat of 80° to 90° should be maintained. The soil or turf, taken off thin, moderately heavy, may be used rough as it is brought home, little and often, with a liberal admixture of broken bricks and lime rubble which will admit of a free passage for roots and liquid-manure when the time for feeding arrives. Syringing the foliage, as a rule, will no longer be advantageous, but moisture must be produced by damping the beds, paths, and walls, filling up evaporating-pans, and the frequent introduction of small quantities of fresh horse-droppings. Ventilation at the top of the house on all favourable occasions, as a means of changing and sweetening the atmosphere, rather than lowering the temperature, must not be overlooked; and last, though not least, cleanliness will form an important item in the daily routine, as mildew and canker are very often fostered by a close, damp, unhealthy atmosphere. The usual remedies, as is well known, are sulphur and quicklime, but prevention being better than cure, the insertion of a few ventilating bricks on a level with the surface of the soil, and, if practicable, opposite the return pipes, will very often render the application of these antidotes quite unnecessary; growth will be more vigorous, and, naturally, red-spider will be less troublesome. Where bottom-heat is obtained from hot-water pipes, and pot culture is closely followed, worms are seldom troublesome, but under the old system of growing the plants on dung-beds with decaying animal manure in the compost these pests increase rapidly, and very soon render the soil unfit for maintaining healthy growth. The usual remedy for their expulsion is lime or soot water, applied at or a few degrees higher than the temperature of the soil. The former cannot be made too strong, but the use of the latter requires care and judgment. *W. Coleman.*

KITCHEN GARDEN.

The question of the propriety or usefulness of laying down the stems of Broccoli intended to stand through the winter may still be called an unsettled one, since many practical men and good gardeners object to it. I think myself that the necessity, or otherwise, should be taken with a little grain of consideration. I never trouble to disturb any dwarf-growing and hardy sorts, such as Cattell's Eclipse, Carter's Matchless, Dalmeny May, and such-like, but I do think it is a good thing to bend down all the lanky-stemmed taller growing sorts, and cover them with earth up to the base of the leaves. The great point of injury will generally be found at that where the leaves radiate from the stem, and this is most frequently caused by sudden alternations of temperature, from frost to thaw, to which they are subjected in fickle winters, and to which the tall varieties are so much more susceptible than the dwarf sorts, since the foliage of the latter keeps the stems shaded, and they thaw more gradually. In any case now is the time for the operation to be looked to, at the same time if the garden is infested with the short-tailed mouse means should be taken for their destruction, for they are great vegetarians, and find a very comfortable home for the winter under a good head of Broccoli foliage, and a capital larder in the centre of the plant, of which they appear very fond. The fine open weather we have had lately has been very favourable for the autumn growth of the Brassica tribe; plants to stand the winter have grown freely, and are looking healthy and vigorous. See that they are kept free of all decaying foliage, and if necessary the ground stirred up between the rows. The autumn Broccolis of various sorts have come in very freely, and amongst them Veitch's Autumn Cauliflower quite maintains its supremacy as one of the very best, and it is very accommodating as to size, as it may be cut when 4 inches over, and in very good ground may be grown to 10 inches or a foot in diameter. It, however, does not protect itself with foliage, and when grown to the required size should be stored under cover secure from frosts. The sorts which protect themselves may be kept out much longer by bending a few leaves over the centre.

Cabbages to stand through the winter season may now have a final earthing-up, and the stirring of the soil amongst the beds of Lettuces, &c., must be persevered in as long as possible, as it tends greatly to keep in check the ravages of snails, and this operation should be supplemented by dressings of soot and lime mixed together in a dry state. This must be carefully attended to in the case of Cauliflowers under hand-glasses which, owing to the favourable weather, are looking more than usually strong and vigorous and with care will soon be out of the way of the attacks of snails. The same dressing should also be followed up on the beds of Tripoli Onions and the Carrot beds to stand through the winter; in this case the dressing should be liberal and stirred in deeply to disturb grubs. Mazagan and Early Long-pod Beans may be at once got in on well cultivated stiff ground. Before sowing the Beans stir them up in paraffin oil—about a table-spoonful to a quart; no need to soak them any length of time, merely wetting them with paraffin at the time of sowing is all that is necessary. On or about the 20th will be the best time to get in a sowing of Peas on a warm sheltered border, one having a southerly aspect is the best. Daniel O'Rourke and William the First are good sorts for this sowing; the seed of this should likewise be wetted with paraffin before sowing. They are best sown rather shallow, and the earth drawn over so as to form a ridge. Take advantage of the dry weather to finish off the earthing-up of Celery where necessary; stir the soil about the roots of the latest planted crops to stand through the winter, but it is not advisable to earth it up at present, as it stands the frost better when the crowns are fully exposed; the rows of Celeriac may also have the soil stirred about them, and a few inches drawn up to the plants will help the swelling out and blanching of the large roots, which is their chief excellence. If Globe Artichokes are not already protected let it be done at once; half-decayed leaves are an excellent material for the purpose, and in very severe weather it is also a good plan to introduce a good covering of the same amongst the stems of the dwarf winter Broccoli. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 10, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Nov. 12	Sale of Dutch Bulbs, at Stevens' Rooms.
TUESDAY,	Nov. 13	Blackheath Horticultural Society's Show. Sale of Stock at the Horsell Birch Nursery, Horsell, by Protheroe & Morris (three days). Sale of Ferns, Orchids, Lapagerias, Lilies, &c., at Stevens' Rooms.
WEDNESDAY,	Nov. 14	Brixton and Clapham Horticultural Society's Chrysanthemum Show (two days). Gravesend and North Kent Chrysanthemum Society's Show (two days). Wimbledon and District Horticultural Society's Autumn Show (two days). Carter's Root and Vegetable Show, at the Agricultural Hall (two days).
THURSDAY,	Nov. 15	Meeting of the Linnean Society, at 8 P.M. Sale of Orchids, at Stevens' Rooms.
FRIDAY,	Nov. 16	Southampton Horticultural Society's Chrysanthemum Show. Sale of Nursery Stock at the Whitchurch Rectory, Edgware, by Protheroe & Morris.
SATURDAY,	Nov. 17	Ealing District Chrysanthemum Society's Show. Sale of Roses, Fruit Trees, Bulbs, Shrubs, &c., at Stevens' Rooms.

THE summer has ended, and with it the long series of exhibitions of horticultural societies which are now thickly held in almost every district of the country. In large cities and towns, in smiling looking villages, in near and in remote districts alike, tents have been pitched, and public halls and schoolrooms utilised for the purpose of presenting in public the horticultural productions of the neighbourhoods. An immense amount of activity has been put forth, all the agencies that flower shows call into play have been hard at work; competitions have taken place; victors have triumphed and the vanquished mourned; committees have estimated the results, financial and otherwise, some to their gain and others to their loss; and now the curtain has dropped on the varying scenes, and the actors are resting from their labours till the opening year again summons them to renewed exertions. The question may therefore be put—What is the result, on the position and progress of horticulture, of these exhibitions—is it beneficial or otherwise?

On the whole, no doubt, the influence is a beneficial one, but there are shadows cast athwart the retrospect. It cannot be denied that many exhibitions are simply financial speculations on the part of their promoters. A few persons see in a flower show a prospect of profit, they care little for horticulture as such, but they are willing to make it a means to an end; a committee is formed, a schedule framed—very often in the interest of some few plant cultivators whose productions are indispensable to an attractive exhibition. If the day be fine, and the gate money satisfactory, all goes well as a marriage feast, just claims are satisfied; but if a wet day results a collapse of the speculation follows, exhibitors are offered half the value of their prizes, and occasionally litigation is resorted to before a mutual understanding is reached. All such shows accomplish little or nothing creditable to horticulture.

The best and most satisfactory results are attained when a society exists in any locality for the purpose of holding one horticultural exhibition or more during the summer, though societies, as a general rule, fail to use their opportunities to the best advantage. A horticultural society should include all who are personally interested in horticultural pursuits; and, in addition, those who, not having the love of or leisure for gardening pursuits, yet recognise their social and commercial importance, and support movements having for their object the extension and the improvement of gardening in the localities in which they are active. A society supported by the personal interest and annual subscriptions of its members should not degenerate into a mere commercial or financial speculation, though this sometimes happens; the funds necessary to carry on the operations of the society should be sufficient, if not to actually cover, yet considerably diminish any financial risks accruing from a wet day—a contingency that may be looked for as likely to occur once in three or four years, if not oftener. The financial undertakings of a society should not be greatly in excess of its income derived from annual subscriptions; there must be of necessity a certain amount of speculative forecast, but it should be carefully computed, for debts are soon contracted, and they hang like a millstone round the neck of a committee of management. A horticultural society taking upon itself financial obligations of a serious character, should aim at the establishment of a reserve fund to fall back upon in case of failure from inclemency of weather or otherwise. A society newly instituted should be supported for the first two or three years by means of a guarantee fund, until it is able to establish a reserve fund. Many societies have suffered utter collapse through want of this necessary adjunct; a wet time has followed two and three years in succession. Committees have to make up the deficiency, and tiring of this, resolve on the dissolution of the society. Numerous exhibitions have come to an end in this fashion.

The framing of extravagant schedules is a common failing. The sanguine men in a committee most frequently outvote the cautious members; they want some few features heavily subsidised to draw in outsiders for the purpose of making a show. Money is often little better than fooled away after this fashion, and the local cultivators, taking umbrage at what they deem a slight, foment discord, and societies with divided councils are rarely successful. A society should take a high view of its duties. It should aim at doing the greatest amount of good. Primarily it should endeavour to draw out the best horticultural productions of its immediate district; it should also give encouragement to new features of a desirable character—for variety goes a long way towards securing continued interest; and when it has done this—keeping its money prizes within its means, if it has aught to spare, it may then go outside its circle of operations, if it be deemed expedient to do so. But caution is urgently needed in all ventures of this character.

Keen business capacity is a great want on committees of horticultural societies, and this is one reason why nurserymen are sometimes desirable as office-holders on flower show committees; but if nurserymen are admitted at all, it should be with the consent of their fellows in the trade, else jealousies arise and imputations of making an unfair use of opportunities. Be this as it may, the selection of good men of business is a much more important matter than appears on the face of it, and for want of proper caution we have known funds frittered away wildly and uselessly. While, then, practical horticulturists, amateur and professional alike, may reasonably take upon themselves a good share in the management of a horticultural society, let them seek to secure the services of men of position and business capacity in the direction of affairs. Their presence and co-operation may avert disaster, and they will be certain to inspire confidence, as the public are rarely slow to support movements they are enabled to contemplate with approval. As soon as possible after the show is held all claims should be satisfied, the accounts audited, and a statement placed before subscribers and others. If the annual exhibition be held in July, a general meeting of the supporters of the society should be convened in December and January, in order that the executive may take counsel with their constituents. It greatly assists in the direction of keeping alive an interest in the society.

At the general meeting the committee of direction should be elected for the ensuing year, and power be then given to revise the schedule of prizes and issue it, and fix the day of exhibition without delay. This gives intending exhibitors ample time to prepare their exhibits, and commensurate space in which to prepare all necessary details. Hurried work is rarely so thorough or so satisfactory as that accomplished by time and with due deliberation of purpose.

—— WE have several times had occasion to speak in the highest terms of the BEDDING AT CLEVELAND HOUSE, Clapham Park, as standing in the very foremost rank of summer decorative displays, more particularly in reference to the style now well known as carpet-bedding. We now give an illustration (fig. 117) of a Vine border so arranged. The materials used were such as are generally employed in this kind of bedding, but the arrangement was so far different that the ground for some parts of the design was sunk some inches below the ordinary level, whilst for the accommodation of such plants of taller stature used to stand up in relief small beds were raised, which further assisted in breaking the too formal and objectionably even surface usually seen in this description of gardening. The plants in this way elevated were small examples of Dracæna australis, Chamæpeuce diacantha, and Echeveria metallica. The sunk portions were filled with Nertera depressa, Sedum glaucum, and Golden Pyrethrum, and the rest of the filling-in consisted of Echeveria secunda glauca, Sempervivum californicum, S. tabulæforme, Sedum lydium, Mesembryanthemum cordifolium variegatum. The subjects used to give colour were Alternanthera amœna, A. paronychioides, A. versicolor, Coleus Verschaffeltii, and Pelargoniums Crystal Palace Gem and Mrs. Kingsbury, up to the wall of the vinery. The arrangement collectively was one of the very best and most effective which Mr. LEGG has produced, and this is saying not a little. Speaking of Vine borders, we are no advocates for cropping these at all where it can be dispensed with, but it often happens that vineries are placed in such positions that it becomes an absolute necessity, for appearance sake, to plant the borders with something, as in the present case; and the effect upon the Vines is greatly different according as different plants are used. Here, as will be seen, there were no gross feeders greedily sucking out the nutriment requisite for the sustenance of the Vines, and the continual application of water in dry weather to many of the plants employed, insured the border being kept sufficiently moist, so that the Vines were not likely to suffer through want of moisture. That they were quite at home under the treatment was evident from the fine crops which they have this, as well as preceding years, produced, and which were in keeping with the rest of the gardening here, whether as relating to the flower gardening, plants grown in pots—large specimens of subjects the most difficult to cultivate, as well as small things for general decoration; or the indispensable occupants of the kitchen garden, which collectively have always been in such condition as to evince Mr. LEGG's undoubted abilities as a general gardener. It is to be regretted that, as Mr. LEGG resigned his charge of the gardens at Cleveland House last week, we may not again have the pleasure of including his *recherché* displays amongst the horticultural attractions of the metropolis, but we hope soon to hear that he has met with an appointment worthy of his great ability.

—— Mr. MACDOUGALL, gardener, Carbury Tower, Musselburgh, was presented on Friday afternoon, October 26, by his friends and well-wishers, on the occasion of his leaving his present situation, with a piece of silver plate, a beautiful timepiece, and a purse of sovereigns, as a mark of esteem and friendship shown towards him by his personal friends in Carbury and its neighbourhood.

—— The HEAVIEST BUNCH OF BLACK GRAPES that has ever been grown, or, we should say, that has ever been recorded, is now on view at Mr. NOBLE'S, Florist and Fruiterer, 22, South Frederick Street, Dublin. The variety is Gros Guillaume, and the grower, Mr. ROBERTS, gr. to the Countess of CHARLEVILLE, Charleville Forest, Tullamore, King's Co. Its weight is 23 lb. 5 oz.; length, 24 inches; and width across the shoulders, 22½ inches; and in point of colour, bloom, size of berries, and general finish, it is described as all that could be desired. It came off the same Vine that produced the large bunches which Mr. ROBERTS exhibited twelve months ago at the Royal Horticultural Society of Ireland's Exhibition held in Dublin. It will be remembered that three of these bunches weighed collectively 45 lb. 6 oz., and the heaviest of the trio turned the scale at 16 lb. 6 oz. A portrait of this bunch was given in our number for January 27 last. Up to this time the largest bunch of black Grapes that we have any record of was Mr.

Hunter of Lambton's famous Black Hamburgh, which weighed 21 lb. 12 oz, and, singularly enough, this bunch also made its first public appearance in Ireland, being shown at the International Fruit Show held at Belfast in August, 1874. Mr. Hunter then beat the largest bunch of black Grapes on record, which was one of the same variety—Black Hamburgh—weighing 13 lb. 2 oz, and shown by himself the previous year at Manchester. Mr. Roberts' monster bunch now stands third on the list of heaviest bunches (irrespective of colour), being 2 lb. 15 oz. less in weight than the bunch of Raisin de Calabre, 26 lb. 4 oz., shown by Mr. Curror at Edinburgh in September, 1875, and 2 lb. 5 oz. less than the White Nice, 25 lb. 15 oz., shown by Mr. Dickson, of Arkleton, at the same time and place.

—— Our indefatigable friend, Mr. Worthington Smith, not content with exploring the mysteries of the Potato disease, has turned his attention also to the devising a process of photographing direct on the wood, so that the engraver may follow Nature's own lights and shadows. The processes hitherto employed have all been more or less unsatisfactory, but if we may judge from the samples of "Cryptotype," as Mr. Smith calls it, which have been submitted to us, success seems within Mr. Smith's reach. A Cryptotype of the Rev. M. J. Berkeley on wood, enlarged from an ordinary *carte de visite*, is certainly an extraordinary reproduction.

—— The Dale Testimonial has not thus far obtained such attention from growers of the Chrysanthemum as we think it is entitled to; but as the enthusiasts in the autumnal flower are now everywhere gathering in force, perhaps advantage will be taken of the circumstance to promote a good cause. We are advised that the subscription list will shortly be closed, therefore those who contemplate subscribing will do well to embrace the present golden opportunity, and they may forward their subscriptions to the Treasurer, Mr. Shirley Hibberd, Bridge House, Stoke Newington, N.

—— Branches of the remarkable South American shrub Colletia cruciata, Hook., were forwarded by the Rev. T. H. Sotheby, of Langford Budville, Somerset, for exhibition at the last meeting of the Linnean Society. These, it seems, were derived from the primarily introduced stock in Lady Rolle's garden at Bicton. They were of unusual vigour.

—— Osmanthus fragrans is flowering in the cool Economic-house at Kew, and filling the division with delicious perfume. The flowers are used in China for scenting Tea, and the green kind known as Pekoe is much prized for the fragrance imparted. Another specimen is flourishing on the wall outside, but it is most appreciated when grown under glass, and in pots it flowers profusely. It is grafted on Privet at Kew, and apparently with much advantage. Cinchona officinalis and Crotalaria juncea (Sunn Hemp) we may mention as flowering in the warm end. The flowers of the latter are extremely beautiful, resembling in a great degree the common yellow Broom.

—— The first ordinary general meeting of the session of the Institution of Surveyors will be held on Monday, November 12, at 12, Great George Street, Westminster, S.W., when the President, Mr. Edmund James Smith, will open the session with an address. The chair to be taken at 8 o'clock,

—— At the recent sale at Manley Hall, the Council of the Royal Botanical and Horticultural Society of Manchester purchased the large Azalea-house, which will shortly be erected in the Society's gardens at Old Trafford, and be used as a show house. A large permanent iron framework is also to be put up over the Exhibition ground. We also learn that the exhibition announced to take place on the 27th inst. at the Town Hall, will be held in the gardens on the above date.

—— The vitality of popular errors is a feature as marked as it is unpleasant. One of these errors, as we believe, is the statement that the Eucalyptus has any special power of averting or destroying malaria, apart from its rapid growth and transpiration, and the improvements in the condition of the soil consequent on planting. As an illustration of our remark, we refer to a statement by a correspondent of *Nature* that he and many others known to him had suffered from malaria in the very heart of a Eucalyptus forest. But if the anti-malarial qualities of Eucalyptus are open to doubt, what shall we say as to the ridiculous statement that the Eucalyptus trees are somehow inimical to most quitoes? Nowhere, we believe, are these pests more troublesome than in the Eucalyptus forests of Australia. It is a pity that such false and exaggerated statements should be made, as they are sure, in the end, to excite a prejudice against a tree whose utility is likely to be very great.

—— The following are the proposed changes in the present system of Registering Letters and Issuing Post-Office Orders. From January 1 it is intended to reduce the registration fee from 4*d.* to 2*d.*, and to indemnify the owner, provided of course all regulations have been complied with, to an extent not exceeding 40*s.*, in case of the letter or contents being lost during transmission by post. It is hoped that this will save postmen the temptations to theft, too often offered at present by the despatch of unregistered letters containing articles of value. From the same date the commission on money orders for less than 10*s.* will be raised from 1*d.* to 2*d.*, the present rate

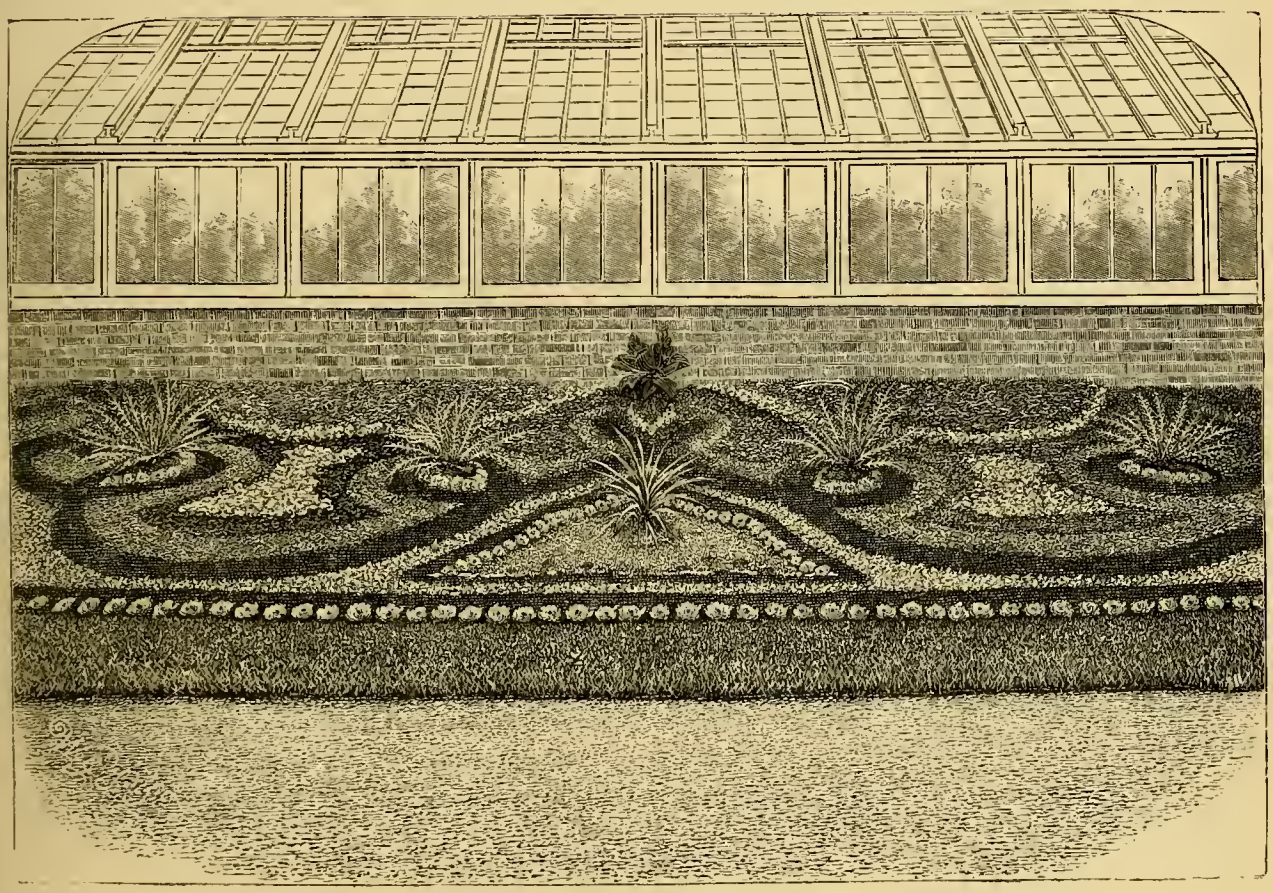


Fig. 117.—Carpet bedding on a vine border at Cleveland House.

being attended with a very heavy loss to the Exchequer. For the convenience of persons residing in the rural districts, the walking postmen who collect letters will, for the first time, receive letters for registration and give a receipt.

—— The following Orchids are now in flower in the collection of Dr. PATERSON, Fernfield, Bridge of Allan, N.B. :—

Cypripedium barbatum, two flowers on one stem
,, niveum
,, insigne
Vanda cœrulea, eleven flowers on one stem
,, tricolor, Veitch's var., two spikes
,, tricolor Patersoni
Limatodes rosea
Pleione lagenaria
,, Wallichiana, two vars.
,, præcox
,, maculata
Mesospinidium sanguineum
Miltonia Moreliana atrorubens, Wingate's fine var.
,, candida
,, spectabilis, rare var.
,, Clowesii major
Oncidium ornithorynchum
,, verrucosum
,, Rogersii
Cattleya Loddigesii, two vars.
,, Leopoldii
Dendrobium chrysanthum
Calanthe Veitchii
,, vestita rubro oculata
Lycaste lanipes
,, Skinneri, two large flowers on stem
Lælia Perrinii
,, anceps
,, superbiens
Odontoglossum Rossii majus, fine var.
,, bictoniense
,, Uro-Skinneri
,, constrictum
Cœlogyne speciosa
Masdevallia Veitchiana
,, ignea
Zygopetalum Mackayi
Catasetum species from Bahia
Phalænopsis grandiflora
Neottia picta maculata
Epidendrum rhizophorum, in flower all the year round
Sophronites cernua

—— The ordinary monthly meeting of the SCOTTISH HORTICULTURAL ASSOCIATION was held in 5, St. Andrew's Square, on Tuesday night, under the presidency of Mr. MALCOLM DUNN, Dalkeith Gardens. Fifteen new members were elected; and a very interesting paper on the hybridisation of plants was read by Mr. ROBERTSON BROWN, Ahercorn. A letter was also read from Mr. DOWNIE, of Messrs. DOWNIE & LAIRD, offering a prize of £5 to journeymen gardeners for the best original plan of a flower garden. Votes of thanks were voted to Mr. BROWN and Mr. DOWNIE, and the offer of the latter was remitted to the Council to make the necessary arrangements for a competition.

—— Mr. GEORGE TEMPLE, late gardener at The Cliff, near Brighton, has been appointed gardener to Lady GEORGIANA CODRINGTON, Dodington Park, Gloucestershire.

—— Under the name of "SANGUINNAIRE, OU THÉ ARABE," a packet of the flowers of Paronychia argentea, Lam, has recently been received at the Kew Museum from Consul General PLAYFAIR, of Algiers. This Tea, which is new to us, seems to be sold not only in Algeria but also at the Parisian pharmacies. It is sold essentially as a medicinal agent for alleviating chest complaints or assisting weak digestion, and a teaspoonful of the dried flowers is stated to be sufficient to make a breakfast-cupful of the infusion. We are unable to give any opinion as to its efficacy in a medicinal point of view, we can only say that apparently it is of a very weak nature, and has more in common with a weak solution of hay than anything else we can liken it to. The name of the plant furnishing this tea is not stated on the packets, its determination was made after comparison at Kew.

—— An example of an undetermined species of FUNGUS IN SUGAR CANE was exhibited at the Linnean Society (November 1), by Mr. E. M. HOLMES, who stated that it had been forwarded to him for examination, with a memorandum that this same growth had been the means of causing the destruction of a plantation in the Soult, in India.

—— A remarkable instancce of SLOW GROWTH and durability OF A CONIFEROUS TREE is recorded in the ninth volume of the *Transactions and Proceedings of the New Zealand Institute*, by Mr. JOHN BUCHANAN. The tree in question is Podocarpus spicata, the Matai of the Maoris, a common forest tree almost throughout the island of New Zealand. Mr. BUCHANAN describes a prostrate trunk, which was pointed out to him in a valley near Dunedin. He calculates that the tree must have lain where he saw it at least 300 years from the fact that its trunk was enfolded by the roots of three large trees, which must have grown from seed since its fall. The three trees seated upon it and rooting in the earth on both sides, thus holding it in their embrace, are all Griselinia littoralis, with trunks 3 feet 6 inches in diameter. They were recently felled, and the growth rings count over 300, thus approximating 300 years, during which the timber of the Podocarpus has remained so fresh and sound that it has since been split into posts for fencing purposes. The measurement of the fallen trunk was 135 feet long, and 3 feet in diameter at its base; and as the sap-wood and branches were gone it must have measured, when alive, at least 160 feet in height, with a diameter of 4 feet. Mr. BUCHANAN states that the wood is close-grained and heavy, and of a dark reddish-brown colour, and the yearly growths very narrow and numerous, showing eighty-eight rings to an inch! The semi-diameter being 18 inches gives for heart-wood alone a period of 1586 years, and with sap-wood growths added Mr. BUCHANAN calculates that the age of the tree when it fell was at least 1880 years. If to this again be added the 300 years during which it has lain prostrate, we have a period of 2180 years, within which no great disturbance of the forest has taken place in the immediate neighbourhood of Dunedin. There is no doubt of the great age of this tree, but we think Mr. BUCHANAN must have based his estimate upon an inch of the outer part of the heart-wood, which would be very misleading; and we also think that the period of 300 years he assigns to the sap-wood which had disappeared too high. Again it is possible that trees make two growths annually in the climate of New Zealand.

—— We hope shortly to present our readers with a full account, accompanied by illustrations, of the new arrangements for HEATING the PALM HOUSE at KEW, as devised by Mr. RIVERS, C.E., the engineer to the Board of Works.

—— A kind of Coffee that would flourish in a temperate climate would doubtless be a great boon to the inhabitants of some of our colonies, New Zealand for instance. That such a plant probably exists we learn from a paper read by Mr. J. C. CRAWFORD before the Wellington (New Zealand) Philosophical Society, in February of the present year. It is no other than Coprosma Baueriana, a shrub now not uncommon in English gardens. Another species, C. lucida, has also the reputation of yielding berries, which are even in an uncultivated state a very good substitute for Coffee. But Mr. CRAWFORD particularly calls attention to the claims of C. Baueriana for a thorough trial to test the value of its seeds as the basis of a wholesome and agreeable beverage. It is a small tree or shrub, very hardy, and flourishes well close to the sea and in most exposed situations. It bears fruit in abundance, apparently without fail; and it is easily propagated from cuttings and seeds. Horses and other animals greedily devour the foliage. Mr. CRAWFORD collected a quantity of the berries, the seeds of which when roasted and ground have a splendid coffee aroma, and when made into coffee the result seems to be thoroughly satisfactory. And he is of opinion that they have a great source of wealth in this plant.

—— Mr. E. B. JONES, late gardener at Calveley Hall, Tarporley, has succeeded Mr. WM. HARRISON as gardener to Sir RICHARD BROOKE, Bart., Norton Priory, Runcorn, Cheshire.

—— In the *Revue des Sciences Naturelles* we find some remarks by M. BARTHELEMY which are of interest in relation to the question of the DESCENT OF THE SAP which has excited some attention of late in our columns. The well-known effect of a ligature or of ringing in producing a swelling above the ring or ligature, as illustrated in our columns p.309 has been explained by some writers on the assumption that gravity was the cause of the swelling. In answer to this objection M. BARTHELEMY experimented on the pendulous branches of certain trees, Weeping Willow, Ash, &c. In these cases the effect of a ligature or of ringing was seen in the production of a swelling below the ligature, just as in the case of the erect branches, but in this case of course in opposition to the direction in which gravity would act. M. BARTHELEMY varied his experiments in different manners, but always with the same substantial result.

—— The culture of MIGNONETTE in pots for the London market is an interesting aspect of horticultural enterprise. Those who are accustomed to see the charming pots of Mignonette in Covent Garden market, so compact in habit and yet so robust in growth, have generally but little acquaintance with the mode of culture adopted by the growers. One of the largest of these is Mr. JOHN REEVES, of Acton, and on his nursery may now be seen something like 15,000 pots of Mignonette in various stages of growth, from pots nearly ready to send to market, to those where the seed is now coming through the soil. The strain grown is a remarkably good one that has been well selected, and comes near to what is known as Parson's Giant Mignonette. The seed is sown thinly in 48-pots, in a good light potting soil, and then thinned out to about eight plants as soon as large enough. At the height of about 6 inches these plants throw up blooming spikes, with side flowering branches coming up also. The seed sowing period commences in July, and it is sown successionally up to the middle of October. The earliest sown seed has by this time grown into plants that are blooming ready for market. When the seed is sown the pots are stood in somewhat slanting shallow cold pits, so that the pots come nearly to the glass. It is well sprinkled and shaded from the sun, and growth soon takes place. After the plants are thinned out, they are kept fully exposed to light and air, the lights being put on only when absolutely required. A pot of sweetly fragrant Mignonette in autumn is a pleasant surprise; and this method of growing this popular flower ensures with that grown in the open ground a supply all the year round.

—— We learn from Mr STEVENS that Mr. EDWARD KNOWLDING, from the gardens of the Duke of SUTHERLAND at Trentham, has received the appointment of head gardener to the Duke of LEINSTER, at Carton Park, near Maynooth. Mr. KNOWLDING has given the greatest satisfaction while employed at Trentham; and it may therefore be expected, now that a wider field is open to him, that the ability he has displayed in a subordinate position will prove the passport to success in the more responsible post he will now occupy.

—— The VEITCH MEMORIAL PRIZES will again be offered in 1878. In accordance with the powers entrusted to them the trustees have allowed part of the interest to accumulate, with the intention of raising the fund by those gradual accretions to £1000. It has now been decided to set aside for 1878 £50 as money prizes, to be offered at the show of various selected provincial horticultural societies widely dispersed over the United Kingdom. Each prize will consist of the handsome but inexpensive Veitch Memorial Medal and £5. The societies to which it will be offered for 1878, and the subjects provisionally fixed on, but subject to revision to suit the dates of the respective shows, are as follows:—

MANCHESTER.—The best specimen Orchid.
YORK.—Three bunches of Black Hamburgh Grapes.
CLAY CROSS.—One dish of Peaches and one of Nectarines.
HEREFORD.—Twelve cut blooms of the best new Rose sent out within the last five years.
DEVON AND EXETER.—A collection of twelve kinds of vegetables, distinct.
BRIGHTON.—One bridal and one ball-room bouquet.
WOODBRIDGE.—Three stove and greenhouse plants, distinct.
READING. — Three stove and greenhouse plants, distinct.
DUBLIN.—Three bunches of Muscat of Alexandria Grapes.
BELFAST.—Twelve cut blooms of the best new Rose sent out within the last five years.

All the exhibits are to be shown by *bonâ fide* gardeners alone, and to display superior cultivation. We think the distributive method of offering these prizes an excellent one, since it will stimulate horticultural effort in various directions and in widely separated centres.

—— Dr. GEORGE KING, Superintendent of the Royal Botanic Gardens, Calcutta, has now, it seems, settled the question as to the identity of the plant bearing the so-called WINGED CARDAMOM of the bazaars of Northern India. This moot point the late Mr. HANBURY was much interested in. By Dr. PEREIRA it was supposed to be the produce of Amomum maximum, Roxb., but this is indigenous to Java. To the Indian species ROXBURGH gave the names A. aromaticum and A. subulatum, and this latter Dr. KING proves (in his recent communication to the Linnean Society, November 1) is that which yields the Winged Cardamom of Nepal. Its true habitat is the Morung Mountains, and not the Khasia Hills, as VOIGT averred.

Home Correspondence.

The Late Potato Show at the Aquarium.—Your correspondent, "A. B.," supposes I have entered into discussion with him. I have not. I directed your attention to matters of fact in connection with this subject because you signified your approval of his letter. To expostulate with you, for whom I entertain respect, is one thing, and to discuss with him (or her, or it) is another. He has accused me and my friends of dragging a society through the dirt to promote the sale of gin and our own glorification. And after this he has the audacity to speak of "my friend Mr. Shirley Hibberd." I am no friend but an enemy to the anonymous slanderer, and I shall esteem it a favour if in any further communications from that source you will, if my name should appear, carefully erase it. I have laboured hard to keep my name sweet, and intend, even if at some cost, that it shall not be dragged through such mire as "A. B." appears to have prepared for it. And once more as to matters of fact, addressing myself to you only, that you may be induced to reconsider your approval of a principle undefined. The very improper letter of "A Committeeman" gave rise to this useless correspondence. The man who wrote that letter was one of the most clamorous for holding the show at the Aquarium, and, having carried his point, was bound to be loyal to the cause, and keep his small grievance to himself. It is well known that I laboured hard to locate the show at South Kensington; and the end of it was, that I was left in a minority of one. I make no complaint against the manager of the Aquarium; loyalty to the cause would keep me silent unless I had a greater grievance to complain of than the "Committeeman," with his whining abuse of people who complied with his wish and treated him generously; but though I sought to locate the show at South Kensington, I will not again labour to that end at the dictation of an anonymous slanderer, even if fifty editors back him up and approve of his "principle." *Shirley Hibberd, Stoke Newington.* [When the personal element, which has unfortunately crept into this discussion, has been eliminated, there will be an opportunity for discussing general principles on their merits. At present it will be better to close the correspondence. Eds.]

"A. B." and the Royal Horticutural Society. In "A. B.'s" very good letter, p. 564, there is one sentence to which I venture to take exception. A. B. writes as if the "being's end and aim" of the Society was shows; perhaps he remembers, as I do, the fitful glories of the old days at Chiswick, when the Society was fashionable and magnificent: but, poor and persecuted by weather as it has so often been since, surely it is better, when the ground has shifted from under us, to look about for props on more solid and firmer ground. Instead of looking back to the time when the Society had almost the monopoly of shows, would it not be well to look at the present great fact, that there are now twenty horticulturists fond of their gardens and able and willing to back up a national horticultural society if permitted to do so with a moderate subscription, for one who existed in Chiswick show days? Look at the list of subscribers to the National Rifle Association, how many of them go to its great exhibition days at Wimbledon in July? People subscribe because they think it does good useful national work, and they would subscribe to ours for the same reason if they felt the same conviction. I hold that, good and pleasant as shows are, it is not to them that the Royal Horticultural Society should look as its main means of support. *George F. Wilson.*

The Royal Horticultural Society and its Awards.—A friend of mine told me some days ago that the Royal Horticultural Society had sent him 10*s.* in lieu of two large bronze Banksian medals that had been awarded to him as 1st prizes at the last great summer show. He considered that he had been shabbily treated; I thought he was a lucky man to get the money instead of the medals, seeing that the actual value of the bronze medal is only equivalent to its weight in the Queen's pennies, and sixty pennies weigh nearly 20 ounces, which the Royal Horticultural Society's bronze Banksian medal probably does not. I heard from another friend who showed a good collection of fruit at the same show that the munificent sum of 10*s.* 6*d.* had been sent to him as the value of the 1st prize that was awarded; and I am reminded of this circumstance by a statement made to me the other day by Mr. Denning, gr. to Lord Londesborough, that a Lindley Medal which had been awarded to him proved, on being broken, to be composed of white metal gilt over, and to be only of the actual value of 4*s.* 6*d.* per ounce, which was about the weight of the medal in question. The Lindley Medal has always been considered in the light of a Blue Riband amongst growers, and has only been awarded to exceptionally fine productions, on account of its supposed value. As a matter of fact, I believe that in gold the medal costs about £13, but I hear that only two of those which have been awarded have cost this amount. Comment on this system of liquidating the Society's debts needs no comment, but should be made public. *Y.*

The National Rose Society.—In your paper of last Saturday it is stated that the subscriptions and donations to the National Rose Society amounted to £67. Will you allow me to correct the error, as they amount to nearly £300. *H. H. D'Ombrain.* [The error would not have occurred had a copy of the balance-sheet been sent to us. Eds.]

The Entire-leaved Tulip Tree.—I would take it as a favour, and I think it would interest others as well, if some one would give information as to the Liriodendron tulipifera integrifolia, or entire-leaved Tulip tree. I have been anxious to know whether it really exists in European collections. In the *Arboretum Segrezianum*, just published, it is enumerated, and *Illust. Hort.*, xv., tab. 574, given as reference to an illustration, but there is no figure of it there or anywhere in the work. The entire-leaved form was, I believe, first found wild by Bartram, and seeds are said to have been sent to Europe from the tree, but no one since his time has seen it here, and it has been the fashion for collectors to search for trees less lobed than others, in order to fill orders for the entire-leaved form. In a communication which I had the honour to make some time since to the Philadelphia Academy of Natural Sciences, I pointed out that trees, and most plants in fact, had separate juvenile and adult characters, and that when the juvenescent character was carried through life, as it is occasionally, the plants were the analogues of imbeciles in the animal world; and further, as reproduction is a function of maturity, trees retaining their juvenescent character through life, rarely produced seeds. Those who may like to pursue this subject further will find many curious facts bearing on it in my paper above referred to. I will only say here that this entire-leaved Tulip tree is one of these "imbeciles." The normal condition is always to have entire leaves in its first year's state, and this has simply carried its infantile form with it through life. For other reasons given in that paper, but not necessary to be re-produced here, I may say the lobing or integrity of leaves is often a sexual character, and which therefore will not have any hereditary influence; and I am, therefore, inclined to believe that to preserve the entire-leaved Tulip tree in its purity, grafting or some asexual form of propagation has to be resorted to. In short, I doubt whether much seed was ever obtained from a perfectly entire-leaved form, or, if any seedlings were raised, they would be entirely true to the original. Can any one inform me? I enclose a leaf; you will see there is no sign of a lobe in it. It is from a tree I re-discovered last year. *Thomas Meehan, Germantown, Philadelphia, U.S.*

Do Roots Digest?—In your issue for October 6, p. 441, I see you draw attention to Dr. Carpenter's views on the assimilation of sewage and other decaying organic matter by plants. The question there raised is whether plants, by their roots, absorb and digest decaying organic matter or not? The subject will doubtless receive the attention of vegetable physiologists with time and opportunity, and by-and-bye we shall have the evidence obtained by both sides before us, from which we shall be able to arrive at a satisfactory conclusion as to whether plants generally have the power of absorbing and then digesting decaying organic matter. I have an idea that roots have a certain power of digesting and then absorbing decaying organic matter. I have often observed that the fibre of peat and sphagnum decays much more quickly (when used in Orchid growing) when the roots have taken full possession of the contents of the pot compared with what takes place in the case of plants whose roots do not ramify to the same extent as in the other case. I have another case bearing on this point. Two years ago I potted-on some Azaleas with very fibry peat, in which there was a good dash of silver-sand naturally. As I had a quantity of the material it was stacked in a shed for future use, and to-day it is still good fibry peat, although not so tough as it was two years ago. But what I want to draw attention to is that a few days since, when regulating the drainage of these Azaleas, I could not find a particle of fibre in those pots which were well filled with roots, not even over the crocks, where I placed the very toughest fibre which I could find, but in those pots not very well filled with roots the fibre was still apparent, although considerably decayed. No doubt the waterings and the higher temperature assisted in the decomposition of the peat in the pots as compared with that in the shed, but how are we to account for the fact of its total disappearance where the roots were abundant, and its partial disappearance where the roots were less abundant, but with other conditions the same, if we do not account for it by supposing the roots to aid in its disintegration? *A. H.*

Mandragora microcarpa.—In the *Gardeners' Chronicle* in the early part of the present year (vol. vii., new series, pp. 212 and 438), the flowering of Mandragora microcarpa at Wallington, the seat of Sir Walter C. Trevelyan, was recorded. Since then the plant has produced fruit, as has also a plant of M. officinalis, and thus an opportunity has been afforded of showing how distinct are the two species. These two plants grew side by side, but M. microcarpa began to flower several weeks before M. officinalis; indeed, the former continued flowering all through the last severe winter and spring, and quite uninjured, while the leaves of the latter were somewhat injured by the frost. All the parts of M. microcarpa are smaller than in M. officinalis, and the flowers and leaves are of a dark purplish tint. The fruit is also different, being of an oval form, and smaller than that of M. officinalis, which is quite round. Though I have not been able to find a figure of the plant under the name of M. microcarpa in any botanical work, yet I am inclined to think what Gerarde* and Bulliard† figure and describe as the "female Mandrake" must be the plant in question. Moreover, it appears to me that the plant will be found to be identical with the plate of Atropa Mandragora in Sibthorp's *Flora Græca* (vol. iii., t. 232). Perhaps, also, M. autumnalis (figured in Sweet's *British Flower Garden*, 2d series, vol. iv., t. 325, from a plant which flowered in the month of December, many years ago, at Abbotsbury, in Dorsetshire) and M. microcarpa may be one and the same species. *D. W.*

Worm Farming.—I think the person who wrote the paragraph headed "worm farming," at p. 570, could not have had much practical experience in fishing, and certainly not in worm catching. It is there stated that dew or lob, cockspur and brandling worms are caught in the meadows at night. I have myself caught thousands of dew-worms in the manner mentioned, but I never heard of any one catching either brandlings or cockspurs in this way, firstly, because they are never found except in a manure heap, ground recently manured, and similar situations; secondly, as the cockspur is usually about an inch in length, certainly not more than an inch and a half, any one would be very clever to catch them in the grass at night, even if they were there to be caught. Also I do not see how catching worms, keeping them a week and selling them, can be called worm farming, and especially breeding, as the breeding takes place in the fields without the slightest human interference. Lastly, the object in keeping worms a short time in moss is not to toughen them, as there is very little difference in toughness between a worm just caught and one that has been kept a week. The real aim in keeping them is that they may scour themselves and thus become brighter and redder, in order as it is supposed to make the bait more tempting to the fish. *Charles E. Pearson, Chilwell.*

Culture of Schizanthus.—This is one of the most elegant and showy annuals we have when grown-on as a pot plant. It is not so much grown as it deserves to be. It is of very easy culture; the seed should be sown and but very lightly covered about the middle of August, and put into gentle heat. A piece of glass should be put over the pot, as it will keep the soil moist without too much watering. The seed will soon germinate, and as soon as the plants are sufficiently large to handle they should be pricked out about six in a 4-inch pot, and kept close in a little heat until established; then brought into a more airy part of the house. When the plants begin to fill the pots with roots they should be repotted, one plant into a 4-inch pot. The compost I use is loam and leaf-mould, with a little sand added to keep the soil open. Keep them as before for a short time, not allowing them to be drawn for want of a little attention, and when the plants are about 4 inches high pinch out the centre, which will cause them to make several breaks, and form nice little plants. Let this be done about a week previous to potting-off again, as no plant should be stopped and then potted at once. If properly handled they will require another shift into

* Gerarde in his *Herbal, or General Historie of Plantes* (1633), says, "The female Mandrake is like unto the male, saving that the leaves hereof be of a more swart or darke greene colour; and the fruit is long like a Peare, and the other is round like an Apple."

† Bulliard (*Herbier de la France*, 1780): "Mandragora flore subcœruleo purpurascente=Mandragoras fœmina.—Cette espèce diffère essentiellement de la précédente, tant par la forme et la couleur de ses fleurs, que par la forme et le volume de son fruit, la surface et la couleur de ses feuilles." And I may just add the following quotation from the late Dr. Danbeny's *Lectures on Roman Husbandry* (1857):—"Dioscorides mentions a male and female kind [of Mandrake], which, Sibthorp says, are merely varieties, the male being larger and more downy than the female; but Pliny distinguishes the male as the white variety, and the female as the black, corresponding with the spring and autumnal Mandragora of modern botanists."

48-sized pots about the middle of November, using a little rotten manure in the compost, as they delight in a rich soil. In this pot the plants will stand through the winter months. About the middle of February give them a shift into a size larger pot, using the same compost. Each plant will require a neat stake to keep it upright. After each shift be careful not to use much water, a slight sprinkling overhead being as much as required until more roots are formed. During winter water only at the roots, giving no more than is absolutely necessary, as they are liable to damp-off. For their final shift put them into 8-inch pots, and keep them staked to your own taste, as they are plants which can be brought into any shape which the cultivator may think fit. They are also well adapted for hanging baskets in the conservatory or greenhouse; in fact they will make pretty objects anywhere. If these few points are attended to they will amply repay the cultivator. A little liquid manure occasionally will prove very beneficial to them just before flowering commences, which will be in April and May. As a cut flower it forms a very prominent feature in stands, also for bouquet work, on account of its durability. The following I have found make a nice variety:—humilis, Grahami, Priestii, retusus, retusus alba, occulata grandiflora, pinnatus. *W. Biggs, Sandfield Park.*

Egyptian Vegetable Remains.—In the late Alexander Braun's notes on the "Remains of Plants in the Egyptian Museum at Berlin," a translation of which appeared in last week's *Gardeners' Chronicle*, one of the plants mentioned as being represented by its fruits in both the Vienna and Florence collections, but not at Berlin (the fruits in this latter collection having been wrongly identified as such), is Cordia Myxa. It may not be generally known that the wood of this plant is credited with having been used by the Egyptians for making their mummy cases. Amongst some specimens of fruits, seeds, &c., received some time since at the Kew Museum from the tombs at Thebes, were some pieces of wood of mummy cases, and upon comparing these with specimens of the wood of Cordia Myxa already contained in the museum, little doubt was left as to their identification. The wood is soft, and at the present time is of little or no use except for fuel, for which purpose it is said to be especially adapted, owing to the readiness with which fire is kindled with it by friction. It is of a yellowish brown colour, with numerous fine white lines forming the medullary rays closely set together. In India at the present time the fruits are eaten when ripe, and are also used for pickling. With regard to the fruits of Hyphæne Argun, which, it is stated, are "buried by the natives for a time, whereby the albumen obtains an agreeable flavour, resembling the Cocoa-nut," no mention is made of the edible nature of the fibro-fleshy portion, which encloses the albumen as in the Doom Palm itself, and, like that Palm, has a sweetish gingerbread flavour; indeed, it is said as a proof of its affinity with Hyphæne in contradistinction to that of Areca, in which genus it was first placed, that the "fibrous layer in the pericarp is wanting." In the Kew Museum are fresh fruits of H. Argun, from which it seems that the normal size is about that of a large and plump Olive, the fibro fleshy pericarp being nearly a quarter of an inch thick, whitish, mottled with brown, and the albumen ruminated with brown markings. Considering the thickness of the pericarp in a fruit of this size, and its agreeable sweetish flavour, which is still distinctly marked in the fruits in the Kew collection after being preserved there for several years, it is somewhat remarkable that we have no evidence of its value on this account. That the fruits of the common Doom Palm were used as food by the ancient Egyptians is apparent from the fact that amongst the collection previously referred to as being found in the tombs at Thebes and forwarded to Kew, is a mass forming a kind of cake and composed of the crushed fruits of this Palm. While writing of Hyphæne I may perhaps say that I have examined the large collection of fruits of H. thebaica in the museum, and in none is there a trace of the development of more than one ovule. On the question whether or not the Olive was cultivated by the Egyptians, the fruit not having been found in any of the graves or coffins, I may say that a small vase containing a thick, dark-coloured oil was amongst the collection before referred to, and upon submitting it to examination and analysis it was stated to be Olive oil. *John R. Jackson, Museum, Kew.*

Peach Failure in 1877.—Those who still adhere to the old practice of growing their Peaches on the open wall must have had their calculations sadly upset this year. During this summer I have seen in more than one county in Ireland the labour of years dashed aside; trees beautifully trained, with every part as neat as the most fastidious could wish, but all to no purpose. We have now to deal with dead trees and dead branches, and I may say trees in consumption. Query—What is the matter? I do not know. Ask the gardener. He does not know either. All he knows is, that he covered the trees with nets, &c. They bloomed well, and in most cases set their fruit well, but all at once the leaves wither, the branches die off, and the tree that carried such beautiful fruit last season is dead. What is the cause? Was it those bitter east winds that we had, or the continual cloudy, damp weather during February, March, and April? During those three months we had rain on sixty-three days and nights, but no severe frosts (not more than 8°, March 20), but during that time we had very bitter winds from the east, and to that I believe we must attribute not only the loss of the crop but of the trees as well. I believe in most instance in the unheated orchard-houses the crop has been successful. That ought to teach us that glass, however placed, is the best protection. At Woodstock we depend entirely on indoor Peaches. We commenced to gather in the beginning of July, and have not yet finished. We have gathered nearly 1000 fruit, not all from unheated houses, but nearly so. I must also say that Sweetwater and Black Hamburgh Grapes ripened perfectly under the roof of a Peach-case (not heated), and this at nearly 600 feet above sea-level, with the ground sloping to the east. I would, therefore, say to all who have walls, cover in at least some portion of your trees, and save the disappointment in future seasons like the one we have just passed through. *G. Dodd, Woodstock Park.*

Dendrobium album.—In the gardens of J. C. Bowering, Esq., Forest Farm, near Windsor, I noticed a few days since a plant of Dendrobium album growing and flowering quite as freely as D. chrysanthum, which it much resembles in growth, one bulb I measured being 3 feet 6 inches long, clothed with flowers as white as those of Odontoglossum pulchellum, with the exception of a small pale yellow blotch in the interior of the labellum, some of the flowers measuring 2 inches across. It is a plant worthy of a place in all choice collections of Orchids. *S. Johnson, Royal Nurseries, Ascot.*

The Tomato Crop.—Your correspondent's case with regard to Tomatos, p. 565, is similar to my own, and I know it to be a general one in this neighbourhood, and I was rather surprised when I read the remark on which he comments. Here they grew very rapidly, and blossomed well, but owing to the unpropitious weather (with but few exceptions) did not set. At the beginning of September a disease (similar, if not identical with the Potato disease) appeared among them and spread with such rapidity that in a very short time most of them were a mass of decay. A few, however, escaped and continued to blossom, and during the favourable autumn set well, but were all destroyed by frost on the night of October 16. *H. Hill, The Gardens, Glynn Park.*

—— We have experienced precisely the same difficulty in the ripening of the Tomato this season as your correspondent, "T. P.," p. 565. Our Tomatos this season occupied the same quarters as they did last year, when we had abundance of ripe fruit, and this season we only gathered about two dozen ripe. On account of frost a few weeks ago we had them all cut from off the plants, and hung up in bunches in one of the vineries, where they are ripening tolerably well. Solanums and Aucubas have not got one quarter so many berries as in previous years. *R. Greenfield, Priory Gardens, Warwick.*

Tomato and Solanums.—In reply to "T. P.'s" query at p. 565, I beg to say that with us (near Salisbury) the Tomato crop has been very good and satisfactory in every respect. They have been planted and trained against the walls and attended to in the usual way—thinning of the foliage and shoots, training, &c. The same may be said of the Solanums, which have been planted-out at the proper time (May) in suitable soil, and watered and stopped, lifted and potted in due time, and with consequent results—heavily laden with berries, which are now colouring nicely and to our entire satisfaction. *H. W. W.*

Gardeners and their Employers.—Would you allow me to ask a few questions through the medium of your journal? 1. Supposing that a gardener (head) has been in a situation, say, for two years, more or less, and that when he went to that situation he had taken with him some cuttings, plants, or seeds of valuable exotics, and had grown them, whose property would they be when the gardener left that situation? [We believe the gardener could not legally remove them without permission of the employer, and therefore they become virtually the property of the latter. Eds.] 2. Supposing a gardener to have bought some plants with his own money, without his employer's knowledge, when the gardener leaves has the employer any claim on them? [We should say, Yes. He paid the gardener and found all the conveniences for growing, and, as in the previous case, except the employer permits it the plants could not be removed from the premises without laying those who took them open to a charge of theft, so that on this point also the employer can detain them. Gardeners ought not to do such things without permission, then such an unpleasant question as this could not arise. Eds.] 3. If a gardener be paid weekly what notice should he have, or should he give, before leaving, supposing there was no arrangement made about that when he was engaged? *H. G.* [Legally only one week's notice is necessary on either side, but the usual rule is to give a month's notice. Eds.]

Autumnal Foliage.—I send you a spray of the newish Purple Birch, which, as you will see, has taken on most beautiful autumn tints, which fact will add much to its other features as a pictorial tree. As a rule, autumn tints this season have been poor and short-lived. Cratægus azerolus is, so far as colour goes, as much like Liquidambar as can be. Perhaps the most beautiful autumn colour I ever saw is found in the leaves of the rare Berberis Thunbergii (a few of which I enclose), which are nearly scarlet. The nearest approach to it was that of the foliage of some starved plants of Rhus cotinus, the especial colour of which we seldom see, but perhaps we should if it was planted on dry ledges, in clefts of rocks, and similar positions. Here in the natural soil it keeps green till Christmas. *T. Smith, Newry.*

Vine Mildew was not heard of till found by Mr. Tucker, of Margate, in 1847, but since then the fungus pest has spread abroad, and it is well worthy of inquiry as to the cause of it. Some ascribe it to old or badly ventilated Vine-houses, glazed with dark or green glass; but mildew is often less virulent in such than it is in the best constructed vineries. Formerly Vine-houses were little better than glazed frames placed slanting against a wall, yet Vines would thrive in them free from mildew, while Peaches beside them were seldom free from it, especially the Red Magdalene. This says little for the belief of those who contend that the Vine blight is the same kind as that which affects Peaches; if so, however, that only adds to the vexed question—Why is the Vine fungus so prevalent now and not before? Some suggest that the pest is new, and was introduced on Vines from abroad, as other parasites have been; others that higher culture of the Vine and sudden changes of climate have rendered it a more susceptible prey for mildew spores. The first, if correct, seems the easiest way of settling the question, while the other opinion does not help it a bit, because the Vine had been long cultivated here in the open air, and in some seasons with success, free from mildew, whether they were weak or strong. As regards changes of climate, our seasons seem to have gone much in the way for "better for worse." However, those who adhere to the theory that sudden changes of weather are the cause of mildew, seem imbued with the belief of the season's poet—"A brush from Russian winds brings on the clammy mildew." It is an old custom in Norfolk to call hazy weather "ruke" or a "mildoc." Such, however, only favours blights by affecting plants so as to render them better prey for their spores as they float in the air. From those, though unseen, parasites grow like plants from seed, whose leaves they blight. That, however, may seem only fanciful, but not by those who know the Greek term "cryptogamia," applied by botanists to plants low in the grade of vegetable life. If this should catch the eye of Mr. Berkeley, who has revealed much on the hidden or mysterious growth of vegetable parasites, perhaps he will have the goodness to notice if the Vine mildew is of foreign origin, as hinted in the foregoing remarks, and thus greatly oblige others as well as *J. Wighton, Cosey Park.*

Root Pruning.—I think your correspondent (p. 521) makes a mistake if he thinks that root pruning will in any way bring about maturity in the wood of the past season, as I have found it otherwise. I have given much attention and study to it for many years. But my method might more properly be termed "lifting," and although it differs widely from Mr. Rivers' method, I must confess that I am solely indebted to him for it. I think your correspondent is quite right in saying that the larger roots convey most water to the branches. Perhaps few have noticed that there is a corresponding similarity between root and branch, but I have noticed that below the side of the tree where there is a large branch will be found a large root. But to make the matter more plain plant a tree in poor soil and you will have a long weak growth of branches, and if you examine the roots you will find that they too are weak and long, and this when there is everything favourable to the tree's development as far as light, air, &c., are concerned. On the other hand, take for example a tree in a wood under other trees and there we do not wonder about the weak long growth of the branches; but let any one examine the roots of such a tree and I think they will be found long and weak too. Now this is not occasioned by the want of nourishment as it was with the tree in the poor soil, for you have, it may be, several inches of decayed vegetation. Now I must confess I am not a sufficient physiologist to know why this is, all I know is that it

is so. And again, by frequent and judicious root-pruning, lifting, or what you please to term it, so that you can give frequent (if necessary) stimulants, you get a beautiful mass of fibres very near the surface and not far from the stem, which in my opinion is most important, and not only so but all you can desire—above-ground fine short-jointed wood full of flower-buds and the flowers, too, nearly twice the size of those on ordinary trees, flowers that have much more (in my opinion) power to resist adverse weather, &c. I fully agree with your correspondent that pruning should be done early, and also that it should not be too severe—much better to raise the roots; but I do not agree that all roots within a certain radius should not be removed. I used to draw a circle round the tree, guided by its size, &c., and cut off every root, digging a trench with the spade and working the soil into the trench with a fork, so that every root might be discovered, and then turn the tree over, leaving a few roots on one side, so that the check might not prevent a crop of fruit the first year, but the following would be the most abundant; you then have the chance of adding manure or compost at will. I should much like to see this matter gone into, and I can assure your readers it will well repay all trouble and expense. *George Lee, F.R.H.S.*

—— A correspondent signing himself "F." recommends the timely root-pruning of fruit trees, in order to counteract in a measure the evil influences arising from abnormal growth, which may be fairly traced to the exceptional character of the past season, and with the performance of the operation itself or the many excellent hints advanced by your correspondent there is little to find fault; there are, however, one or two new theories propounded upon which in a practical sense I am not at all clear, and it is solely with the view of extracting further information that I am tempted to supplement the remarks of "F." rather than to criticise them. The subject, or rather practice, of root-pruning is forcibly advanced by "F.," and few, if any, practical men, can scan over the various points in detail without recalling to his memory some reminiscence of past experience, yet if there be one unsound link in the chain of circumstantial (I cannot call it positive) evidence it disconnects the whole system in a practical light, and leaves nothing but a tottering fabric remaining. The point that seems most inconsistent with present views is that which is either logically or illogically attributed to the functional part or rather power of "big roots" in their relationship as "feeders" to the tree of which they form a part. Does their functional capacity not exceed that of a "self-working water-pump?" or do they supply the tree with no other element than water alone? If in their functional capacity as feeders they supply the tree with other known elements in the same proportion that they are supposed to do water, they are in point of fact the sort of roots that ought to be encouraged; but if, on the contrary, their presence only stimulates a preponderance of aqueous matter which is gathered from unhealthy sources, and that the fibrous roots are the mainstay and life and vigour-producing power of the tree, then we are left to plod in the old track, and have still to abide by what "hard facts" and practice have written down as unmistakable proof of the superior power of fibre over the more simply constructed things as food supplyers. Nor can we see by what mode of reasoning the fibre will not propel any element if it be present in the soil in greater quantity to the branches than the naked inert limbs referred to by your correspondent, unless on the assumption that the latter travel beyond the range of mere fibre in a downward direction, and pump up water from subterranean wells below. Just for sake of example take a tree of any sort, I care not what, that is being removed, and that is unequally furnished with those naked roots, and take another of equal size that is well supplied with fibre and see which will show signs of active vitality first. Why the latter will grow and flourish long after the former is dead and gone, and for this reason, the fibrous roots become active immediately, and seek out nourishment for the tree at once. The naked fleshy limbs have to wait to make fibre before they afford any support, and while this process is going on the stores of sap in the tree become exhausted, and the tree dies. I am here trying to find a parallel between the power of two supposed set of roots. Would a tree die if it were even supplied with "crude watery sap" from a source which is supposed to supply it in quantity? Or is it from the incapacity of the power of these roots to supply it that death takes place? One or other of these theories must be correct, and will no doubt be cleared up by some one. The next and only point to which I will at present advert is the supposed potency of root-pruning as a means of promoting the earlier and more perfect maturity of the wood and buds. Are we to take this as a benefit to be derived in the current year or not? We have it, I think, plain enough from "F." that the mere cutting away of a few big roots some time in October will lessen the flow of crude watery sap into the branches. This may be so, but will it be in time to assist or hasten maturity? I think not, and would prefer beginning at the other end with a view to accomplish so desirable a purpose, by pinching the strong shoots early in the season, thereby directing the flow of sap into numerous channels, or, in other words, having two or three shoots instead of one. Pinching should be done early, or not at all; and if attended to in proper time, even without a crop, it will lessen the necessity for root hacking which may be requisite in cases of continued neglect, or over-rich soils or shy-bearing varieties; but there can be no earthly pretence for having big watery shoots as long as we have a finger and thumb and the will to use them. *W. Hinds.*

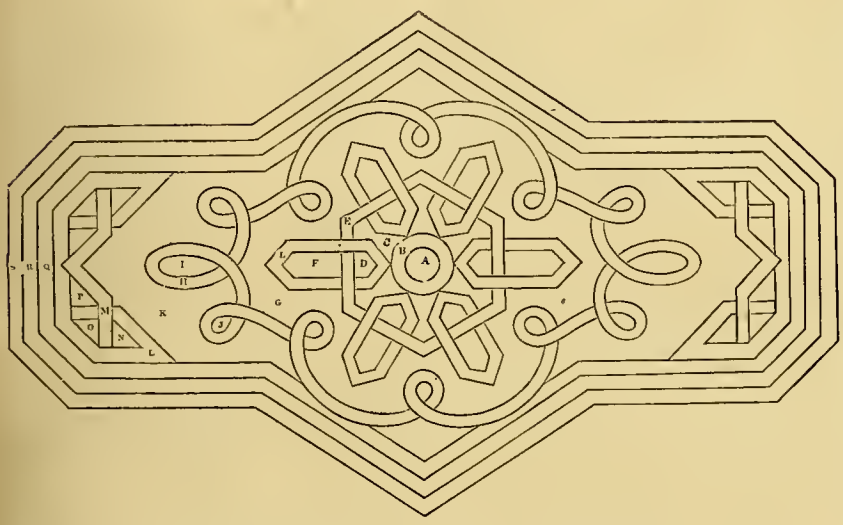


Fig. 118.—Design of a Carpet-bed at Doveridge Hall.

Carpet-Bedding.—In August last, having occasion to visit some relatives at Doveridge, I called at the Hall Gardens to see the carpet bedding, which more than realised my expectations, and notwithstanding the cold and wet season was looking tolerably well; one bed in particular was very beautiful, and yet when closely examined was found to be composed of plants easily propagated and grown in quantity. Through the kindness of Mr. Povey I am able to give a plan (fig. 118) of the bed and the plants used in the planting. In the centre of the bed was a good specimen of Yucca quadricolor, A, with a groundwork of Echeveria secunda glauca; but the planting will be best understood by reference to the annexed plan. This flower garden being laid out in two terraces, the situation is very favourable for this popular style of bedding, as the beds are all in front of the best windows, and being looked down upon have a charming effect, and during the past two seasons have been much admired by all who have seen them. The following are the references to the plan:—A, Yucca quadricolor; B, Echeveria secunda glauca; C, Mentha pulegium gibraltaricum; D, Sedum anglicum; E, Alternanthera amœna; F, Sedum acre elegans; G, Sedum glaucum; H, Alternanthera versicolor; I, Mesembryanthemum cordifolium variegatum; J, Mentha pulegium gibraltaricum; K, Sedum glaucum; L, Golden Feather; M, Alternanthera amœna; N, Echeveria secunda glauca; O, Teucrium aureum; P, Sedum anglicum; Q, Mesembryanthemum cordifolium variegatum; R, Alternanthera paronychioides; S, Echeveria secunda glauca. *G. Silcock, Somerford Gardens.*

Desfontaineaspinosa.—This is a neglected shrub, or one that I believe is adjudged as tender. No doubt a low situation on strong soils does not suit it, but on an elevation of about 100 feet it does well here on a dry, sandy soil, and still better on a dry, strong loam, where at an elevation of 500 feet I have a plant that has obtained a height of 4½ feet, and as much in diameter, having the dark green and to all appearance the hardihood of the common Holly. I think it was about the middle of July that I computed there were from 900 to 1000 of its rich, waxy, yellow and orange blooms out, and I thought it was one of the handsomest, if not the handsomest shrub I ever saw. Last year it remained in bloom until after Christmas. *Cumbrian.*

—— This plant grows and flowers in the open shrubbery at Broughty Ferry 200 feet above the sea, on ground exposed to all the winds that blow. Last year it flowered in September, this year it came into bloom in August, and now (November 2) two perfect blooms are out and another coming. It has been planted out several years, and has had not a leaf injured by weather, nor has it received a mulching or protection of any sort. *D. U.*

Flowering of Arundo Donax.—In the *Gardeners' Chronicle* of this and last week your correspondents have stated that Arundo Donax has not flowered with them. I have several large plants here which flower most abundantly, and are the admiration of all who have seen them. *R. Hanbury, Poles, Ware.*

The Potato Disease.—It has often struck me as curious, that amongst all the writings upon the Potato disease, no one has suggested the probable manner in which it at least may be perpetuated. It is a common practice here and elsewhere to gather all the haulm, the very rotten Potatos, &c., and throw all to the manure heap, which is carefully preserved until the time for planting comes round again, then this is carried to the garden or field (in the case of small planters here they never use manure for any other crop), shallow trenches are thrown out, or lazy-beds formed, the manure spread in or upon the surface, the seed laid upon this and then covered with soil. Now from what has been written upon the resting-spores of the disease, a manure heap would seem to offer favourable conditions in which they could hibernate; this being so, the wonder is, not that the disease is perpetuated, but that the noble tuber survives at all. Growers often tell me that they have broken up a new piece of ground upon which most certainly never Potatos grew before, and yet the first crop is diseased. They quite overlook the fact that they themselves carried it there. Again, a common practice here is to leave the late crop in the ground till November or December—until, in fact, all the bad tubers have disappeared (not so the resting-spores I fancy). Now as many people follow crop after crop for several years upon the same ground, no wonder that there is still Peronospora in the country. I am aware that this is by no means the universal practice, but it is very common here. Assuming that some crop other than Potatos succeeds the latter practice, we know little I believe as to the resting capacities of the spores or their capacity to grow on other plants. Who knows but that if a sack of Potatos or a glass of water was to get into the British Museum the antediluvian spores lately recorded might not yet wake up. *T. Smith.* [Mr. Smith's discoveries at once suggested the destruction of the infested haulm, and we have often pointed out its advantages. The antediluvian spores are silicified beyond recovery. Eds.]

Hardiness of Plants.—We often meet with strange examples of the comparative hardiness of various plants. I have two beds of Fuchsias growing side by side, one the old Madame Cornelissen, and the other the somewhat newer albo-coccinea. The frosts during the early part of October killed the latter quite to the ground, whereas the plants of the former are still (November 3) quite uninjured, with all their leaves and some flowers still on. I know some instances where this last has lived for years on open walls and has become quite large, 6 or 8 feet

high and proportionately wide, and flowering in the most profuse manner all through the summer. *T. Smith, Newry.*

Protecting Early Vine Borders.—The time of year is fast approaching for early vineries to be started, and as many are still wedded to the old practice of piling huge hotbeds on the borders it may not be without interest or profit to inquire the why and wherefore of such a proceeding, and whether it is not productive of more harm than good. To follow blindly in the track of our forefathers is to stand still in matters horticultural, and as well might we stick to the old system of dung-beds and heating by means of flues as stifling the roots of Vines by covering them with the enormous heaps of fermenting materials we frequently see used. That they endure it in the way they do year after year only shows that they are endowed with more strength of constitution than most other plants, or they would soon show unmistakable signs of distress, but their power of vitality is such that they struggle on and live through it all, and the treatment goes on without scarce a thought as to the benefits derived. In a natural way we see the buds of trees gradually swelling after the fall of the leaf, and more rapidly as the days lengthen, and yet at that time the ground is cold and wet, and remains many degrees below the heat of the air all the year through. Why then should Vines require to have their roots treated differently to any other hardy plant? That when forced early it is necessary and highly important to keep the frost out of the ground and away from the stems I readily admit, but beyond that, except warding off heavy rain or snow, all else is at least questionable. In a state of Nature in woods and under trees we see the leaves strewn thickly over the ground, where they answer the double purpose of giving back a portion of what has been taken from the soil and of protecting the roots in a most effectual manner. No doubt that these in small quantities would form the best covering that could be used for Vine borders if they could only be kept in position without blowing about, as they would lie light, and being the best of non-conductors would keep cold out and the stored-up warmth of the earth in. It may be objected that forced Vines are not in a natural state, but in reality there is little difference between them and others that come on of their own accord, as the roots simply respond to the call made on them by the application of heat to the tops in the way they do after spring fairly sets in. Vines that are started early every year are prepared for it, as they get part of their season's rest while others are in active growth, and therefore require no extra inducement to get them to start. That bottom-heat is a mistake, and that better Grapes can be grown without it than with it, I feel certain; and so convinced am I of its injurious effects on the border and health of the roots that I have long since abandoned the use of it, and now apply either a thin coating of leaves with a little Bracken strewed over them, or the Bracken alone, and the Vines are now considerably stronger, and finish off better fruit than before. This is not to be wondered at if we consider that during five months when under a hotbed the border is impermeably sealed from the air and borne down under a heavy weight that compresses the soil so close as to render it sodden and sour, but if this were the only ill effect, the summer's sun and a fork-up of the surface might help to set matters right. From close observation I am strongly of opinion that the heat acts much as a fire does when applied to a boiler in setting water in motion in a series of pipes. In the ordinary course sap flows no faster than the slowly swelling buds require it, and to make good the loss caused by evaporation through the pores of the bark, but when heat is applied to a leafless plant the pressure is so great that the sap must perforce find an outlet somewhere, and has therefore to return back through the lower roots, thus keeping up a continuous flow and return. [Is this fact or theory? EDS.] The effect is as exhausting as bleeding that takes place after late pruning, or even more so, as they are then quickly in leaf, and the sap after that is utilised and passes on through its proper channels in a natural way. It is not long since a great stir was made about heating Vine borders from below by a series of hot-water pipes, and many went to much expense in having arches built or chambers made in which to place them; but what has come of it all? and where can any of these costly appliances now be found in use? At St. James' Hall many years ago I remember seeing three bunches of the most perfectly finished Muscats I have ever met with, which came from The Denbies near Dorking, and which were said to have been cut from Vines growing in a border heated from below in the above manner, but with that exception I have seen nothing resulting from them that would in any way recommend their adoption. Those three bunches of Muscats created such a furore in the Grape growing world at the time that all were anxious for borders constructed and heated in the same way, and many were the visions indulged in as to the future of Grape growing on that plan; but time has since proved, by the more sensational bunches that have recently been exhibited, how fine they can be grown without any such aids. If bottom-heat were necessary or in any way beneficial, there can be no question that its application from below by means of hot-water in either tanks, gutters, or pipes, is the right mode of using it, as then the aëration of the border is not interfered with in the way it is when a mass of stable-manure and leaves are laid on the top. The importance of the sweetening influence of the atmosphere on soil and its beneficial chemical effect on the same is now generally recognised, and it is found that ground on which the light and air does not act soon becomes unfit for the roots of plants, as is clearly shown when they happen to be growing in dirty pots or under concrete, as was once tried for Vines. I remember some twenty-five years ago this came in fashion, and many borders were coated over with an impervious plaster that was expected to work wonders by drawing heat from the sun, thus giving it without cost or labour. This, perhaps, it did, but like the huge hotbeds in use it excluded the air, and tenacious of life and long-suffering as the Vine is it was not slow in resenting such treatment, and its use had to be abandoned, as under it roots languished and died from the soil becoming close and inert, and Grapes that used to colour like Sloes assumed that pucy-red shade which is a sure index that the food supply is either deficient in quantity or quality. There are few of us who would think of laying a heap of strongly fermenting manure over the roots of a favourite tree, as we should expect by so doing to injure its health, and yet we put on a Vine border what we should hesitate to throw as a convenience elsewhere. Although I have never been to Combe Abbey I am informed that Mr. Miller, who, as is well known, grows some of the best Grapes that are produced, not only does not use any fermenting material at any time, but does not ever cover his borders in winter. No doubt he has a good soil and plenty of drainage, which gives natural warmth to the border, and quite as much of it as Vines require. If perchance the temperature is lowered by snow-water or rain passing through, the air, which quickly takes the place of moisture, soon raises it again to a sufficient degree to suit and encourage healthy root-action. *S. W.*

The Ash of Celery.—The ash of Celery is so unlike in its composition all other plants of which any analysis has come under my notice, that I give it here just to show how one may err in the application of manure when one has no data to guide them in their treatment of different subjects. It differs from any other plant in having a very much larger percentage of potassium and chlorine. The composition of ordinary stableyard manure approximates pretty closely to the composition of an ordinary rotation of kitchen-garden crops, especially when the farmyard urine is utilised in the garden. There is a loss of silica, no doubt from the fact of it being present in a great percentage in straw, but that is not considered worth troubling much about; but as regards the Celery crop the difference between the wants of that plant and the mineral salts supplied in ordinary stableyard manure is so great as to cause the loss, as far as regards the Celery crop, of nearly everything save potassium and chlorine. Here is the analysis:—

Potash	22.07
Magnesia	5.82
Lime	13.11
Phosphoric acid	11.58
Sulphuric acid	5.58
Silica	3.85
Phosphate of iron	2.66
Chloride of potassium	33.41

Now there are actually a few garden products with as great a percentage of potassium as here, but as these substances are not of much account here, we must compare the wants of Celery with the food usually given. Ordinary stableyard manure supplies everything named in tolerable abundance except these, and, as we know the value of the manure is just according to the presence of the substance most wanted, it follows, then, that whatever manure we give to Celery will only feed that crop as far as potassium and chlorine in an available form may be present. As the percentage of these in stableyard manure is too little, it follows that the addition of these alone will equal in value a further addition of stableyard manure. Let us suppose, then, that Celery planted in the usual way is going to get a soaking of manure-water, what should we give? The answer is very simple. Cow urine is very rich in the salts of potash, but still with this chlorine is still wanting. Common salt (chloride of sodium) supplies this want, but care must be exercised in its use. All the salts put together contained in the plants of a trench of Celery when full-grown does not amount to much, and the chlorine of potassium, it will be observed, only forms a little over one-third of the whole ash. My own practice is to make a manure-water for Celery of cow urine one part, pure water four parts, and to each canful of water I add about half a teaspoonful of common salt, and I am quite satisfied with the results. In very wet weather we make it more concentrated, and when very dry more dilute: but in the latter case we flood the trenches. I may add that I find common salt, applied in this way, or by sprinkling very slightly during rainy weather, to have a very beneficial effect on all the Brassica tribe of plants, but our situation is inland and subject to bleaching rains, and this has to be taken into account as the rain which fall in certain places, East Lothian for instance, carries more salt to the land than can possibly be removed by the crops. *A. H.*

Asparagus Dregeanus.—I send you a small spray of Asparagus Dregeanus, a lovely species. The stems are procumbent, hanging over the edge of the pot on a shelf, and bearing profusely the charming white, red-stamened flowers, and literally perfuming the house. What a chaste and beautiful fringe this would be for a bridal bouquet. *T. Smith.* [A very elegant plant. EDS.]

Orchids in October.—The following have adorned the show-house during the month of October:—

Cattleya superba	Masdevallia ochthodes
,, marginata	Dendrobium cumulatum
,, bicolor	,, secundum
,, maxima	,, chrysanthum
Lælia Perrinii	,, palpebræ (bicolor)
,, Dayi	Epidendrum striatum
Miltonia candida grandiflora	,, aromaticum
Odontoglossum Alexandræ	Cleisostoma latifolia (worthless)
,, Rossii majus	Rodriguezia species (a spike of small flowers in shape same as R. secunda, but a pale yellow)
,, grande	
,, angustatum	
,, Bluntii	
Pleione lagenaria	Cœlogyne brunnea
,, Wallichii	Lycaste Skinneri
,, biflora (new)	,, lanipes
,, maculata	,, leuco-flavescens
Zygopetalum cœruleum	Scuticaria Hartwegii
,, intermedium	Stanhopea Wardii
,, Mackayi	Cypripedium niveum
Bifrenaria aureo-fulva	,, Roezlii
Oncidium Rogersii	,, longifolium
,, tigrinum	,, barbatum
,, Forbesii	,, Harrisianum
,, crispum	,, insigne
,, macranthum	,, Sedeni
,, varicosum	Burlingtonia venusta
,, prætextum	,, decora picta
,, ornithorynchum	Sophronites grandiflora
Saccolabium papillosum	Mesospinidium sanguineum
Vanda cœrulea	,, vulcanicum
Masdevallia Chimæra	Maxillaria picta
,, Nycterina	Ornithidium sophronitis (a small but brilliant crimson flower blooming amid dense foliage of the richest green. A little gem)
,, Veitchii	
,, melanopoda	
,, Peristeria	
,, Harryana	
,, Lindeni	

Edward W. Cox, Moat Mount, Mill Hill, Nov. 3.

Seedling Calanthes.—In the gardens of C. Baring, Esq., at Winkfield, near Windsor, there is an immense quantity of seedling Calanthes, which have been raised in a very simple but yet uncommon manner. The parents are fine plants of Veitchii, of which there are a large quantity and all remarkably healthy. These flowered last season most profusely, and produced seed in abundance. The seed-pods were allowed to hang until May last when they burst, and being so arranged that the seed could drop on the neighbouring pots, they commenced coming up in July in great numbers, and continue to do so; those which first appeared are now just commencing to form their bulbs. Besides these many other Orchids are being raised from seed here, including Cypripediums, some of which are sufficiently advanced to produce flower-spikes; some of them promise to rank AT amongst future varieties of this beautiful class. Mr. Baring takes very great personal interest in the crossing and raising of these in particular, and devotes a great deal of time to them, besides sparing no expense to procure the very best. Odontoglossums crossed with Zygopetalums is a new feature here, which promises to give some novelties. Amongst those in flower specially worthy of notice might be mentioned an extremely fine plant of Mesospinidium vulcanicum, Odontoglossum bictoniense, with spikes 4 feet long; many fine plants of Odontoglossum grande, a beautiful piece of Oncidium varicosum, O. Papilio majus and Kramerii, Stanhopea Wardiana, Dendrobium album, with bulbs 4 feet long, flowering almost their entire length; and last, but not least, a magnificent specimen of Peristeria elata (the dove flower), with thirty flowers on seven spikes. Although Orchids are undoubtedly the *specialité* here gardening generally is carried on with much spirit. The kitchen garden is good, and the flower garden second to none in the neighbourhood. The whole is under the careful management of Mr. Staddon. *H. R. J.*

Another Plea for the Neglected Tree.—On reading "P. P. C.'s" plea for the beautiful deciduous Cypress, I was astonished to find he never so much as alluded to the rich and splendid autumnal tint it not only assumes but retains longer than most other trees. As I turn my head from the *Gardeners' Chronicle* to the window my eye falls upon a specimen about sixty years old, a perfect cone, about 33 feet high, its graceful branches being densely

covered with reddish-brown Fern-like foliage; and standing as it does in the midst of the golden-tinted Tulip tree and Aspen Poplar, the sombre green of the Yew, Box, and Rhododendrons, and the Aralia japonica, with its large exotic-like foliage and white flowers, it forms a striking and beautiful object. "P. P. C 's" concluding remarks seem to imply that the deciduous Cypress is somewhat tender, and particular as to soil; meanwhile the one he speaks of is growing on stiff but dry clay soil, the one I have described is growing in a light sand, but only 6 or 7 yards from a well, and I know of two other trees about the same size, one growing on a light sandy soil, inclined to peat, the other on a small island, with the water only a foot or so below the surface, and in a low situation that must be very much subject to frosts: the other two trees stand higher, and exposed to the east wind, which they stand better than most of our common trees. *Cumbrian.*

Bicoloured Gymnogramma.—I send you along with this what to me seems a most extraordinary occurrence—a Gymnogramma frond with a golden back, cut from a plant of G. tartarea, which has, as every one knows, silvery backs. I was to-day cutting some Fern fronds, and on cutting this happened to notice the colour, and immediately examined the plants (three in number), but could not find any other trace of gold. It is quite impossible that any mistake could have been made, as we have no golden Gymnogramma at all upon the place. *T. Smith.* [Such freaks are not uncommon, but we do not know the cause. Eds.]

A Good Late Melon.—To those wishing for a good-flavoured late Melon, I would recommend Victory of Bath. We have been cutting that variety here the past few weeks (pronounced by my employer excellent), and grown alongside with Eastnor Castle, it proves far superior in flavour to that variety. I cannot speak so highly of Dr. Hogg as your correspondent, p. 436. If I grew but one green-fleshed it would certainly be Victory of Bath. *C. H., Chalfont Park, Slough, November* 5.

A Plea for the English Ivy.—I have often wondered how it came about that our beautiful native Ivy (Hedera Helix) should have been thrust aside in favour of its more robust, but coarser relative, the Irish variety. That the latter is a bold, quick growing, handsome, evergreen climber, is allowed; but in no whit is it better, or in my opinion so handsome as our native plant. People who only see the native plant trailing along the ground, in the hedgerow, or the wood, with its small palmate leaves, may have no idea of its appearance or the proportions it will assume under cultivation or favourable circumstances for development. It is the native Ivy that lends the charm, and I may add the poetry, to most of the remains of our old castles, abbeys, and other ruins: take away their Ivy and their charm is gone; and imagine a ruined tower clothed (or smothered) with Irish Ivy, compared with one mantled over, or partially so, with our native plant. The Irish Ivy differs from the native just as a Pumpkin differs from a Melon, in being larger and coarser only. However beautiful the Irish Ivy may be, its great fault is that the leaf-stalks are over long, and where cultivated on walls, dwellings, &c., must undergo an amount of clipping which renders it for a long time like a sign-board without reading, while the native kind seems a part of the stone or rock on which it grows, and will have twenty leaves for the other's one. So much for the prejudice in discarding, perhaps, the most beautiful of our native plants. Let me assure those who are about to plant Ivy, whether as an ingredient in panel or geometrical gardening, or for whatever purpose employed, with the same amount of care the English Ivy will be far more satisfactory than its rival, and, humble as it may seem, there is no known limit to its growth. There are in the neighbourhood of Banbury immense Poplar trees fully 100 feet high smothered with it. I have been induced to put these remarks together from the fact, that while scarcely enough Irish Ivy is grown to meet the demand, our native Ivy is seldom inquired after. *T. Williams, Ormskirk.*

Callas or Richardias.—These are largely grown for the London market, and there are few plants that are more appreciated, either as pot plants or as cut flowers. It seems to be a favourite window plant among the working classes, who prize their "white Lilies." Like other hardy plants, it is easily grown and well repays liberal treatment; it is propagated by the small bulblike offsets formed on the old roots: they are picked off as small as Peas, and are grown on in well prepared beds till strong enough to pot for market. Early in October all the stock is lifted and sorted into sizes, after picking off all the offsets. The strongest roots are potted, generally into 4-inch pots, in a compost of loam and a little dung and sand, and set in a cool pit or house, where they can be shaded for a few days and receive liberal syringings till they begin to grow, when they should receive all the air possible. Some growers pot them in the spring and plunge them, which I think is the preferable way for small quantities, as they do not go so much to leaf, and do not receive such a check at lifting time; they flower quite as freely and are more easily forced, as the pots are full of roots. They are introduced in batches into an intermediate house as required, and are not generally started very early, as they are apt to go blind if started much before Christmas. It is here that those plunged have the advantage, as they often show flower early in the season. The smaller roots are sorted into sizes at lifting time, planted thickly in boxes and grown on in a cool house, where they can be protected from frost; in May they are all planted out and, with liberal treatment, it is surprising how soon the smallest offsets make marketable plants. In private establishments it is not grown in quantity nearly so much as it deserves to be, for as a cut flower for vases it has no equal. *E. W.*

The Wilson Raft.—I have been asked, What is doing with the "Wilson raft?" Will you allow me to answer this question in your columns? The "Wilson raft" has done what I hoped for from it—it has shown after more than a year's trial that water-plants, bog-plants, and moist-soil plants, can in an ordinary garden be grown thoroughly well side by side. The one trouble I have had is from water-logging: as the wood of which the raft is composed becomes more and more saturated with water it of course becomes less buoyant, and sinks deeper and deeper. A relative who has seen much service in India suggested a pontoon. Carrying this idea out further, we propose to get rid of all question of saturation by having the raft, supports and all, made of metal. We have a photograph which shows the raft with its growing plants fairly well; and as a thoroughly competent engineer has now taken up the matter, I hope soon to have a working drawing of an inexpensive practical metal raft which will answer every purpose. I shall then send you these two, in the hope that you will think them worthy of being engraved for the *Gardeners' Chronicle.* My friends have taken care that I shall not be uplifted by the invention. They impress upon me that the idea is not new. One of the first I spoke to on the subject—a horticulturist of great experience—thought very highly of the notion, and at first thought it quite new, but afterwards recollected that the Persians grew Melons on something like rafts. Mr. Taylor, one of the most experienced of Messrs. Veitch's staff, when he first saw the "Wilson raft" in operation, exclaimed, "How simple—and how odd it never occurred to any one before!" Mr. Roger, the able superintendent of Battersea Park, tells me that he grew some plants on a float years ago. One friend told me point blank, "You know the raft is not new. The Chinese grow trees on floating islands." I care little whether it be old or new. One thing is, I think, certain—that practically rafts are not used, at any rate to any extent, in this country; I mean that the "Wilson raft" shall be largely used, and expect that many lovers of very beautiful tribes of plants will thank me for having called their attention to a simple means of growing them. *George F. Wilson.*

A Plea for Herbaceous Plants: Carpet Bedding.—I think it will be admitted that your correspondent, Miss Hope, is rather severe in her criticisms on carpet bedding and on the paucity of herbaceous plants to be seen in botanical and other gardens. If it be admitted that "all fashions" are necessary in public parks, why so much severity against that which has been admitted on all hands as an attractive feature in such places?—and as all the attempts at carpet bedding which Miss Hope has seen, except at Clapham, Victoria Park, and Battersea, have been but caricatures of those places, I think it proves that some skill is necessary to copy "artificial carpet bedding." It does not appear that your correspondent is very clear on the subject of herbaceous plant borders, and evidently cannot trust to such plants making an effective display of themselves, for in the remarks made it is suggested that, "between each strictly herbaceous plant there should be a prominent plant of interesting habit or foliage;" then the names are given of such trees as are considered suitable for the purpose. It is then apparent that it is not to be an herbaceous border after all, but a tree and shrub border supplemented by them, the shrubs and trees to be permanent and effective—two qualities not obtainable in herbaceous plants. Thus the reason why their cultivation is not more extensive. A little further on Miss Hope goes on to describe an effective mixture of pillar Roses, Clematis, &c., still further proving that herbaceous plants, for whom such an earnest appeal is made, are only to play second fiddle in a display which no one doubts can be made very satisfactory. I have seen a number of herbaceous beds and borders, but never one such as your correspondent describes as not being "torn up at the first frost;" this may be so in a sense, for as a rule there is little left in an herbaceous border to be torn up when the frost comes. *George Thomson, Crystal Palace, S.E.*

Reports of Societies.

Royal Horticultural: *November* 6.—Sir Joseph Hooker, C.B., President, took the chair at the Scientific Committee.—Dr. M. C. Cooke made the following communication on "Diseased Mulberry Leaves." On September 3 some diseased Mulberry leaves were sent by Mr. Lee, of Clevedon, to the secretary of this committee, who forwarded them to me for examination and report. The letter which accompanied them stated that the leaves of the writer's Mulberry trees had been attacked by some fungus for four or five years. It made its appearance on the south side of the most southerly tree in the first year, and did not spread over the whole tree, nor until last year did it affect the whole of the trees (six in number) where it first appeared, and also ten others at a distance of some 300 or more yards. This year the first spots appeared about the middle of August. Subsequently I wrote for a further supply of leaves which had the disease a week older, and in sending these Mr. Lee remarked that the disease did not spread so rapidly this season as it had on previous occasions, probably on account of the coldness of the weather. The leaves are disfigured by orbicular discoloured whitish spots, with a broad purplish margin. Each of the spots is occupied in the centre by a small, dark brown, immersed perithecia, which exudes a large quantity of uncoloured spores through a perforation at the apex, and these accumulate on the surface of the spots, giving them a white mealy appearance. The spores are cylindrical, obtuse at the ends, usually slightly curved, and ultimately having about five septa. It is most undoubtedly Septoria Mori, described by Leveillé some years ago, which is common throughout the Continent of Europe, and extends to the United States of North America. I have compared the specimens, by the kindness of the Rev. M. J. Berkeley, with authentic specimens in his herbarium communicated by Dr. Leveillé himself, as well as with specimens from other parts of France, Germany, Italy, and North America. I was led to extend this examination and comparison, because in his original description Leveillé makes no mention of the septation of the spores, which was very marked in the Clevedon specimens. I find, however, that although the majority of spores exuded on the surface of Dr. Leveillé's specimens have no distinct septa, that some of them have the endochrome divided, and in a few the septa are formed. It must be confessed that this could not be seen with the spores in their natural condition, but when stained by roseine they at once become manifest. Leveillé not having resorted to this mode of examination overlooked the septa, and hence the discrepancy. The fresh specimens from Clevedon offered spores with septa so distinct that no staining was necessary.. The spores measure .035—.05 × .003 mm. When first describing this species in the *Annales*, Dr. Leveillé distinctly intimates that the species is probably of a deleterious or destructive character. Mentioning the subject to Dr. Maxime Cornu during my recent visit to the fungus meeting in Paris, he remarked that though extremely common he was not aware that it was considered injurious to the trees themselves, although the theory had been promulgated that this disease of the leaves was the cause of the silkworm disease. It need not be added that this theory has no solid foundation.

The experience of Mr. Lee shows that this parasite has a tendency to spread itself in succeeding years, and from this locality, the first recorded in Britain, it is probable that it will now extend itself over the country, as Puccinia malvacearum has done. It is just probable that had he collected and burnt all the diseased leaves which appeared the first year that the invader would have been vanquished, but it is doubtful whether it has not established itself now too firmly to be easily dislodged.

A singular circumstance in connection with these leaves at first complicated the examination very much, and greatly increased the difficulty of determination, this was the association of other fungi with the Septoria. Nearly every spot had its centre blackened by some parasite which it was ultimately found had no relation whatever to the original disease, but was referable to a quite distinct family and genus. This parasite consisted of cylindrical spore masses, with a short stem and almost always obtuse apex, from .05—.07 mm. long, divided by numerous septa, constricted at the joints, and torulose, of a clear brown colour when mature, reminding one strongly of the spores of Zenodochus on a reduced scale. I have no doubt that this is an undescribed species of Sporidesmium, to which I have applied the name of Sporidesmium parasiticum* allied to Sporidesmium exitiosum,

* *Sporidesmium parasiticum*, Cooke.—Parasiticum, atrum, sporis breviter stipitatis, multi septatis, torulosis, brunneis, .05—.07 mm. long, .01 mm. lat. In pustulis septoriæ ad folia Mori.

Kuhn, but entirely and manifestly distinct, as I convinced myself by an examination of specimens in the herbarium at the Jardin des Plantes. This is manifestly a subsequent growth to the Septoria, is in no sense the cause of the discoloured spots, and would not affect the health of the tree.

In order to illustrate the rapid manner in which other fungi take possession of diseased spots I may remark that, in addition to the Sporidesmium, a species of Cladosporium, allied to Cladosporium epiphyllum, was found on some of the pustules, and in one or two instances I feel convinced that some Cercospora was present, but the better establishment of this fact would have occupied considerable time, and it evidently was not the prime cause of disease. In the genus Cercospora the spores are borne on short hyphæ, which are entirely free, and not enclosed in perithecia as in Septoria. In the present instance the spores were almost identical in size with those of the Septoria, the only appreciable difference being that the former are attenuated upwards, whilst the latter are uniform; this difference is so slight that only their mode of generation could be taken into account, and although I feel tolerably certain that I found the spores simulating Cercospora growing in fascicles on free threads, this circumstance requires confirmation before it can be positively affirmed.

New Vine Disease.—Dr. M. C. Cooke also showed specimens of a Vine disease which has lately appeared in some parts of France, and has given rise to some anxiety. It is the result of the attack of a fungus, Phoma viticola, and will be made the subject of a further report on another occasion.

Phyllotoma aceris.—Mr. MacLachlan alluded to the curious little discs cut out of the leaf of Maples by this insect, which was figured and described in our columns on August 26, 1876.

Gall on Oak, &c.—Rev. Geo. Henslow showed a fleshy gall on an Oak from Italy, and a section of Oak showing a pulley completely embedded in the timber, with no trace on the outside of the original injury.

Miscellaneous Exhibits.—Dr. Masters showed from Mr. Harrison Weir a multiple Grape, originating from the fusion of two or more berries. 2. A Grape within a Grape, sent by Mr. Thomson, of Clovenfords. The adventitious Grape occupied the position of a seed, and was only rendered evident by the cracking open of the parent Grape. 3. A root of Brassica Rapa raised from seed received from Professor Caspary, of Koenigsberg, and presenting the peculiarity that the root was studded with tubercles, some of which developed into adventitious buds. The plant was figured in the *Gardeners' Chronicle*, 1877, p. 149, vol. vii. The hereditary tendency is thus seen to be marked. 4. Various malformations, concerning some of which a further report will be forthcoming.

Sir Joseph Hooker's Trip to the Rocky Mountains, &c.—Sir Joseph Hooker then gave, in a few words, an outline of his recent trip in the Rocky Mountains, Colorado, and California. The main object of the trip was to trace the geographical distribution of plants, especially of trees, in America, to study the Conifers of California to settle their synonymy, &c. Great attention was paid to the young plants, as they were found in many cases to be extremely variable, even where the adult trees of the same species were relatively constant. Sir Joseph then entered conversationally into a few details relating to Picea nobilis magnifica, Pinus tuberculata, ponderosa, Jeffreyi, Balfourii, Cupressus macrocarpa, and several others—details of very great interest, which when arranged for publication we shall have the privilege, thanks to the courtesy of Sir Joseph, of laying before our readers. The thanks of the meeting were awarded to the President for his interesting communication.

FLORAL COMMITTEE.—G. F. Wilson, Esq., in the chair. The room was fairly well filled to-day with cheerful and attractive flowering plants; and there was a good muster of committeemen, but owing to the inclemency of the weather but few visitors put in an appearance. Messrs. James Veitch & Sons contributed by far the largest group of plants, principally Orchids, and a very striking group it was for the season. The committee recommended the award of a medal, and granted First-class Certificates for a new Tree Fern from Juan Fernandez named Dicksonia Berteroana; and for × Sarracenia Chelsoni, a hybrid between S. rubra and S. purpurea, and much resembling the first named parent. Amongst the Orchids were nice fresh flowering examples of Odontoglossum Roezli, Pleione lagenaria, maculata, and Wallichiana; the singular little Stelia Brüchmulleri, Calanthe vestita rubra, Veitchii superba, × Sedeni; Oncidium varicosum, Cypripedium cœnanthum, selligerum, Crossianum, tessellatum, marmorophyllum, Arthurianum, Ashburtoniæ, Sedeni, insigne Maulei, and Schlimii; Cattleya marginata and labiata, Lælia Perrinii, and Oncidium Weltoni, crispum, and incurvum. Besides these there were flowering plants of the pretty Vreisia brachystachys and the singular Pavonia Wioti, together with Pelargoniums Amazon, scarlet; Egeria, rosy crimson; Atlantia, cerise; and Heather Bell, pink, with white centre—all of Dr. Denny's raising; also the dark rosy crimson-flowered Eranthemum laxifolium, an introduction from the South Sea Islands, &c. Mr. Ollerhead, gr. to Sir Henry Peek, M.P., received a vote of thanks for a showy group of Orchids, which included Calanthe Veitchii and vestita rubra, Oncidium pulverulenta, Cypripedium Sedeni, Odontoglossum bictoniense, and O. Roezlii, Pleione lagenaria and P. Wallichiana, Lycaste Moreliana, Lycaste Skinneri, and Cattleya Dowiana. Mr. W. Smith, gr. to C. Lane, Esq., Badgemore, Henley-on-Thames, exhibited a magnificently flowered specimen of Vanda cœrulea, which was recommended for the award of a medal. It had two fine growths, on which were six spikes and eighty-nine flowers. Sir Trevor Lawrence, M.P. (Mr. Spyers, gr.), showed a grand specimen of the dark-flowered Oncidium crispum with half-a-dozen remarkably fine spikes of flowers—a Cultural Commendation was awarded. Mr. H. B. Smith, Ealing Dean, received a vote of thanks for a nice group of Cyclamens; and Mr. R. Parker, Tooting, a similar acknowledgment for a very choice collection of cut flowers of various hardy herbaceous plants, which included a dozen species of the showy Asters, such as A. multiflorus, horizontalis, ericoides, laxus, Amellus, novæ-belgii, Reevesii, pendulus, discolor, novæ-angliæ, spectabilis, &c.; also examples of such fine bedding varieties of Chrysanthemum indicum as Scarlet Gem, Madame Pecoul, Hendersoni, Cassy, and Frederick Pell; and Lithospermum prostratum, Helleborus niger maxima, Trollius asiaticus, Aponogeton distachyon, &c. Messrs. E. G. Henderson sent a dozen blooms of Japanese Chrysanthemums—all distinct, and of fine quality. A vote of thanks was awarded. Mr. Cannell, Swanley, sent a couple of dozen bunches of flowers of various Zonal Pelargoniums, fine in size, fresh and bright in colour. From the Society's gardens, Chiswick, Mr. Barron sent up a dozen plants of an exceedingly pretty mauve or lilac-flowered Primula capitata, an alpine species with farinose stems, which was awarded a First-class Certificate. A good specimen of Major Clarke's new Begonia Moonlight was also sent from Chiswick, to show what a grand plant it is for winter flowering. Mr. R. Dean, Ealing, received a vote of thanks for a plant of the new Godetia Lady Albemarle, lifted from the open ground, and flowering very freely in a pot. The plant was dwarf, and the colour of the flowers very bright and fresh.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. A few very meritorious productions came under the notice of this committee, amongst them being two bunches of Muscat of Alexandria Grapes of unusually high quality, considering the season. They were of good size and form, fine in berry and colour, and absolutely without spot or blemish of any kind. The exhibitor was Mr. Atkins, gr. to Colonel Lloyd-Lindsay, M.P., Lockinge Park, and the committee recommended the award of a Bronze Medal. Mr. J. Dinsmore, gr. to J. F. Blackwell, Esq., The Cedars, Harrow Weald, sent a very finely developed Charlotte Rothschild Pine, weighing perhaps between 8 and 9 lb. A vote of thanks was accorded. Mr. J. Hudson, The Gardens, Gunnersbury House, Acton, was awarded a Cultural Commendation for a particularly good dish of Golden Hamburgh Grapes. The same exhibitor also showed half-a-dozen handsome Queen Pines of the aggregate weight of 27½ lb., and the award of a Silver Medal was recommended. Mr. C. Tyler, gr. to W. R. Gosling, Esq., Hassobury, Bishop Stortford, again sent a specimen of his seedling green-fleshed Melon named Exquisite, which proved to be of excellent quality and was awarded a First-class Certificate. Mr. Harrison Weir, Weirleigh, Brenchley, contributed a capital sample of Muscat Champion, considering that it had been grown in a ground vinery; also some large bunches of Mrs. Pince's Black Muscat. Mr. Gilbert, gr. to the Marquis of Exeter, Burghley, sent a sample of his Improved Early Brussels Sprouts, which was much admired for its evidently fine quality. The strain is undoubtedly a good and useful one. Mr. Wildsmith, gr. to Viscount Eversley, Heckfield Place, exhibited a fine dish of Gros Colman Grape, the berries being of enormous size. Mr. Tillery, Welbeck, sent half-a-dozen fine Salway Peaches, and Mr. Bennett, of Rabley, a dish of ripe Garibaldi Strawberries. New varieties of Apples were shown by Mr. Penny (of Sandringham), Mr. Douglas, and Mr. Gilbert, but the committee made no awards to either of them. Mr. R. Dean sent a specimen of his Excelsior Long White Marrow and samples of a dozen varieties of Potatos; and Mr. J. B. Wilson, Claydon House Gardens, half-a-dozen good specimens of Veitch's Autumn Giant Cauliflowers. Messrs. Hooper & Co., Covent Garden, showed, on behalf of Messrs. Bliss & Sons, of New York, a collection of nineteen dishes of American Potatos. Messrs. James Carter & Co. exhibited a very large collection of Potatos, in which the samples were of much superior quality to what this and other seed firms usually exhibit. The committee recommended the award of a silver Banksian Medal to Messrs. Carter. From the gardens at Chiswick came about two dozen varieties of Turnips which have been under trial there this season, and of which we shall, no doubt, soon have an official report.

Natural History.

OAK GALLS.—During the present season I have been fortunate enough to find a few species of Oak-galls either previously unnoticed as British, or of such rarity that I should be glad to add a note of their occurrence in the neighbourhood of Isleworth to the paper on Oak-galls of 1876 in your number for October 13.

In the beginning of March of the present year I found galls of the Aphilothrix corticis (which had not previously been observed in Britain) in large numbers on an old Oak in Osterley Park. These galls may previously have been overlooked from their resemblance in their early and later stages to those of the single-celled form of Aphilothrix radicis. They are similarly about a quarter of an inch long, narrow, fang-like below and round-topped above, and similarly also to be found in young bark forming over an injured surface, such as an amputated limb or the riven channel of a flash of lightning, but in middle life the distinction between the two species is clear.

Then the Aphilothrix corticis galls appear as in the figure (fig. 119, magnified); the round top dies, decays, dries, and shrivels itself off (as in the upper figure), or may be lifted off, showing (as in the lower figure) the more permanent part of the gall with its circular sharp-edged mouth, closed inside by a convex woody cap, fitting into it like an inverted saucer in a Chinese teacup.

The Aphilothrix effects its escape by piercing an aperture through this internal diaphragm or secondary

FIG. 119.—APHILOTHRIX CORTICIS.

top, and as long as this remains the gall is clearly recognisable.

Another gall is still more interesting from occurring on the Turkey Oak (Quercus Cerris), which had previously been considered free from gall-growths in England.

Of these galls I found a very few last year, mostly in a much injured condition, on a tree of Quercus Cerris and one of Q. Cerris var. Lucombeana in the Royal Gardens, Kew. Early in the present year I again found this minute bud-gall on the same specimen of Q. Cerris, the galls for the most part empty, but with the insect in two cases enclosed so as to allow of it being determined as a hitherto undescribed species. The galls are only about the sixteenth of an inch in length, somewhat linear, completely rounded below, and terminating in a blunt point above, single chambered and thin walled, and placed in groups of two or more amongst the linear stipules, and though fairly numerous on this one tree of Q. Cerris difficult of detection from their extreme minuteness.

I may also add to the list of suburban Oak-galls one or two specimens of the scarce Spathegaster vesicatrix, a small circular gall affecting both sides of the Oak leaf, flat above, with a central point, and rays radiating from it, and convex on the under surface of the leaf. This gall has only recently been noticed as a British species. It has been found (*Entomologist*, No. 173, p. 251), by Professor Trail, at Banchory, and I have also found it in some small numbers at Sedbury Park, near Chepstow, in 1873.

The Neuroterus fumipennis, one of the scarcer species of Oak-spangle, distinguishable by its minute saucer-like form, and glabrous surface, pale green tint, and sometimes rosy rim, has been unusually plentiful this autumn, and the very rare allied species, N. læviusculus, somewhat saucer-shaped also, but of a

whiter tint and covered inside and outside with scattered pencils of brightly coloured hairs, has also been represented in the neighbourhood of Isleworth. *O.*

WITCH KNOTS ON THE BIRCH. — In the early part of the present year two interesting articles appeared in your paper (vol. vii., new series, pp. 249 and 281) on the curious witch knots found on the Birch. At Wallington, in Northumberland, the seat of Sir Walter Calverley Trevelyan, there is one of the most remarkable specimens which I have ever seen of the pendulous variety of the silvery-stemmed Birch (Betula alba pendula) covered with these witch knots. There are upwards of fifty of the "knots" on it, of various sizes, some being so large and compact as to look at a little distance like rooks' nests hanging from the slender branches. The tree (which has been planted about fifty years) has so curious and striking an appearance that it would be worth while to have a photograph taken of it. Close to this tree there is another of the same kind of Birch, of similar size and age, but, oddly enough, only two or three slight indications of "knots" are at present discernible on it. *D. W.*

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, NOV. 7, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Nov.	In.	In.	°	°	°	°	°				In.
1	30.22	+0.46	54.5	42.0	12.5	47.9	+ 1.7	40.4	76	N.W. S.W.	0.00
2	29.86	+0.09	55.9	36.9	19.0	46.3	+ 0.3	40.7	82	S.W.	0.00
3	29.90	+0.13	53.7	40.0	13.7	46.8	+ 1.0	38.7	75	WNW	0.03
4	29.64	−0.15	54.8	36.5	18.3	46.5	+ 0.9	40.3	80	S by W. S.W.	0.01
5	29.63	−0.16	60.1	47.1	13.0	52.6	+ 7.2	46.0	79	S.W.	0.00
6	29.48	−0.32	59.8	48.4	11.4	54.0	+ 8.9	52.0	93	S.S.W. S.W.	0.11
7	29.49	−0.31	58.2	52.0	8.2	53.6	+ 8.9	51.2	92	S.S.W.	0.33
Mean	29.75	−0.04	56.7	43.0	13.7	49.7	+ 4.1	44.2	82	S.W.	sum 0.48

Nov. 1.—A fine bright day. Partially cloudy till evening, then cloudless.
— 2.—Fine, but cloudy till evening. Overcast, and a little thin rain fell at night.
— 3.—A fine day, partially cloudy. Cool breeze.
— 4.—Fine and clear till 10 A.M., dull and cloudy after. Thin rain at 11 P.M.
— 5.—A very fine day. Cloudy at times. Mild.
— 6.—Overcast and dull throughout. Mild. Frequent rain.
— 7.—Overcast, dull and wet till 1 P.M. Fine, but very cloudy after. Mild.

LONDON: *Barometer.*—During the week ending Saturday, November 3, in the suburbs of London the reading of the barometer at the level of the sea increased from 29.90 inches at the beginning of the week to 30.16 inches by the evening of the 28th, decreased to 29.62 inches by the evening of the 29th, increased to 29.87 inches by the morning of the 30th, decreased to 29.66 inches by the evening of the same day; increased to 30.42 inches by the afternoon of November 1, decreased to 29.93 inches by the evening of the 2d, and increased to 30.14 inches by the end of the week. The mean reading for the week at sea level was 30.06 inches, being 0.38 inch above that of the preceding week, and 0.11 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 61½° on October 30 to 53¾° on November 3; the mean value for the week was 56¾°. The lowest temperatures of the air observed by night ranged from 37° on November 2 to 47½° on October 31; the mean for the week was 42¾°. The mean daily range of temperature in the week was 14°, the greatest range in the day being 19°, on November 2, and the least 9°, on October 31.

The mean daily temperatures of the air were as follows:—October 28, 50°.3; 29th, 51°.4; 30th, 51°.6; 31st, 51°; November 1, 47°.9; 2d, 46°.3; 3d, 46°.8; and the departures in defect of their respective averages were 3°.6, 4°.8, 5°.1, 4°.6, 1°.7, 0°.3, and 1°. The mean temperature of the air for the week was 49°.3, being 3° above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, were 106¾° on October 30, and 97° on November 2; on October 29 the reading did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27½° on November 3, and 30° on the 2d. The mean of the seven low readings was 35¾°.

Wind.—The direction of the wind was S.W., and its strength moderate. The weather during the week was fine and mild, and the sky partially cloudy.

Rain fell on three days during the week, the amount collected was a quarter of an inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 62½° at Liverpool, 61½° at Blackheath and Cambridge, and 61° at Truro, Bristol, and Leeds; the highest temperature at Hull was 57°, and at Eccles and Bradford 58¾°; the mean value from all stations was 60°. The lowest temperatures of the air observed by night were 33¾° at Wolverhampton, 37° at Blackheath, and 37¼° at Nottingham; the lowest temperature of the air at Truro was 46°; the general mean from all stations was 40°. The range of temperature in the week was the greatest at Wolverhampton, 25¼°, and the least at Truro, 15°; the mean range of temperature in the week from all stations was 20°.

The mean of the seven high day temperatures was the highest at Truro, 59°, and Plymouth, 58°, and the lowest at Hull, 54°, and Wolverhampton, Liverpool, and Bradford, all 54½°; the mean from all stations was 56°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 39¼°, and Nottingham, 41¼°; and the highest at Truro, 48¾°, and Portsmouth and Plymouth, both 46¼°; the mean value from all stations was 44°. The mean daily range of temperature in the week was the least at Liverpool, 8¼°, and the greatest at Wolverhampton, 15¼°; the mean daily range from all stations was 12°.

The mean temperature of the air for the week from all stations was 49¼°, being 5° higher than the value for the corresponding week in 1876. The highest were 53° at Truro, 51¼° at Plymouth, and 50½° at Portsmouth, Leeds, and Sunderland; and the lowest were 46° at Wolverhampton and 47¾° at Hull.

Rain fell on four or five days during the week at most places. The amounts measured ranged from 1½ inch at Bradford and 1 inch at Truro to a quarter of an inch at Blackheath and Sunderland. The average fall over the country was three-quarters of an inch.

The weather during the week was generally fine and mild, but the sky cloudy at times. Solar halos were seen on October 28 and November 3 at Bristol, and a lunar halo was also seen on October 28 at Bristol.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 58° at Dundee and 57¼° at Leith, to 54¾° at Aberdeen; the mean value from all stations was 56½°. The lowest temperatures of the air ranged from 38° at Dundee to 41¼° at Glasgow; the mean value from all stations was 39¾°. The mean range of temperature in the week from all stations was 16¾°.

The mean temperature of the air for the week from all stations was 48¾°, being 3½° higher than the value for the corresponding week in 1876. The highest was 49¾° at Glasgow and Leith, and the lowest 46¾°, at Aberdeen.

Rain.—The amounts of rain measured at the several places varied from 2¾ inches at Greenock, and 1 inch at Perth, to four-tenths of an inch at Leith. The average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 63½°, the lowest 35¼°, the range 28¼°, the mean 50½°, and the fall of rain 0.37 inch.

JAMES GLAISHER.

Law Notes.

A COVENT GARDEN CASE.—This was a representative action to test the custom of the trade, in which the plaintiff, J. Pankhurst, a salesman in Covent Garden Market, sued the defendant, a Mr. W. G. Green, a grower, of Gillingham, Kent, to recover the sum of 16*s.* for money alleged to have been paid as a deposit on twenty sieves belonging to the defendant. Mr. H. T. Roberts appeared as solicitor for the plaintiff, and Mr. R. Willis for the defence. It appeared from the plaintiff's statement that upon August 15 last he bought twenty sieves of Black Currants and paid £1 as a deposit on the sieves, which were subsequently returned with an application for the deposit, which being refused the present action was brought in order to test the custom of the trade. The witness said the fruit was what is termed in the market "soft," and could not be "shot," and therefore it was necessary to keep the sieves.

James Callum, the plaintiff's porter, was called, who proved receiving the goods and delivering sixteen sieves to the defendant, who refused to give back 16*s.* until the remaing four were sent back.

In cross-examination, witness said there was no custom in the market as to any specified time for the return of empties.—George Coombes, twenty years a salesman in the market, stated there was no limit as to return of sieves. He had had twelve, eighteen months, and even two years, frequently elapse before he received his own back. There is no custom in the market in this respect.—After three other witnesses had been called in support of the plaintiff's case, Mr. Robert Willis urged on the part of the defence that the goods were ordered to be "shot," and that the sieves were to be returned at once.

The defendant, being called, said that he expected the sieves would have been returned; he had sold 200 sieves that day, and always had his goods "shot."

In cross-examination by Mr. Roberts, the witness said the original cost of the sieves was 1*s.* 4*d.* each.

The defendant's son, called, corroborated the plaintiff's evidence, adding that he received payment of the goods and refusing to pay 16*s.*, as the whole of the sieves had not been returned.

The learned Judge considered that the custom of the market had been abundantly proved, that there was no limit to time for the return of empties, and therefore he should give judgment in favour of the plaintiff for the full amount claimed.—On the application of Mr. Taylor Roberts, his Honor granted the plaintiff his costs out of pocket, with costs of five witnesses who had been called.

Variorum.

THE NEW HULL BOTANIC GARDEN.—The first general meeting of the Hull Botanic Garden Company (Limited) was held at the Town Hall on November 3, Lieut.-Colonel Pease in the chair. Mr. Niven (the manager and secretary) read the directors' report, which at the outset stated that only four months had elapsed since the company was registered, consequently the work accomplished had been necessarily of a preliminary kind. The movement of the new garden had received a large amount of support from the residents of Hull and neighbourhood, and already nearly one-half of the shares had been taken up—a fact which augured well for the prospects of the company. Several of the shareholders had intimated their willingness to double the number of their shares in the event of there being any difficulty in getting a larger number taken up—a necessity which, however, they did not apprehend to be at all likely, as many persons, who would willingly give financial support to the scheme, withheld the same till the work was fairly begun. The purchase of the land from the North-Eastern Railway Company had been completed. A deposit of 10 per cent. had been made, and the purchase agreements exchanged. The necessary arrangements had also been completed with Sir James Walker, by which the road on the site of the old Spring-bank was secured. This the directors had found could not be done on any other terms than by purchase. Fairly satisfactory conditions had been obtained, and the directors hereafter might be successful in securing material assistance in the making of the road from other parties interested. So recently had these purchase agreements been completed that the directors had as yet nothing to report beyond the bare fact of their completion, and that in a few days the company would be in possession of the land. Several *bonâ fide* applications for the building sites connected with the new garden had been made at an amply remunerative price, but they believed that as the works in connection with the laying out of the new garden progressed, the value of those sites would be so much enhanced that they would prefer the company retaining them at present, knowing as they did that a little delay would be more than compensated for by the increased value the sites would acquire. The directors urged on each and all of the shareholders the necessity of an active canvass amongst their friends, as the larger the number of shares taken up the less would be the amount of calls necessary to be paid on each individual share, and the greater the support for the garden. The report was adopted unanimously. After a vote of thanks to the directors for the time and application they had devoted to the affairs of the company, the following gentlemen were appointed directors for the ensuing

year, in accordance with the articles of the company, viz. :—Messrs. J. W. Pease, J. E. Wade, R. Baxter, A. Wilson, Charles Johnson, S. Walliker, T. L. Read, S. R. Meggitt, William Denison, and James Reckitt. Messrs. Carlil and Birkenshaw were also appointed as auditors. The meeting then resolved itself into an extraordinary general meeting, and, upon the motion of Mr. Baxter, it was resolved—"That the articles of association of the company now produced, and signed by Messrs. Read, Baxter, Frankish, Walliker, Hamilton, Johnson, and Dawber, be and are hereby adopted, and declared to be the articles of association of the Hull Botanic Garden Company (Limited)."

ROOTERIES.—As a rule I am not a great admirer of rooteries, but there are conditions in which they may be used with advantage, and, like the skeleton, their beauty will much depend on the taste and judgment exercised in placing appropriate materials at Nature's command wherewith to clothe them. The materials provided, the rest should be left to Nature; and amongst these materials none will be found more appropriate than this species of Saponaria (ocymoides). One essential point is that the position should be tolerably well exposed to the sun. Associated with it, I might suggest some of our lovely Clematises, now a numerous family, all of which thrive best when allowed to ramble in natural disorder; a few of the wild Foxgloves, or, better still, some of the more improved garden forms interspersed, will add not only floral beauty to such a group, but give it a picturesque character, such as a few towering Lombardy Poplars or lofty Pines give to the landscape. To complete the picture, let the grass-line rising towards the base of the roots be crowned on its irregular undulating surface with a combination of the wild Bugles (Ajuga repentans), or, better still, its alpine form, whose flowers are of a blue almost rivalling cobalt; and the Lysimachia nemorum, or "Wood Money-wort," whose simple yellow flowers and fresh green foliage would add a beauty to such a group such as could be obtained from few exotics. A plant or two of common wild Honeysuckle would add its fragrance as well as its beauty to the scene. With such garniture, the rootery, too often an eye-sore, would be metamorphosed into a "thing of beauty and a joy for ever." *J. C. Niven, in "Florist and Pomologist."*

Answers to Correspondents.

FUNGI: *G. H., Yeovil.* 1, Hygrophorus pratensis, edible; 2, H. puniceus, qualities unknown; 3, H. virgineus, edible.

MOSSY SWEET WILLIAM: *G. C.* The specimen you send is an excellent example of what the French call by the above name. The true flower is not formed, but in its place the bracts are repeated over and over

FIG. 120.—MONSTROUS SWEET WILLIAM.

again, as shown in the accompanying illustration, fig. 120. The very old Wheat-ear Carnation is another case of a similar kind.

GRAPES OR CUT FLOWERS: *T. W. S.* asks us to tell him "Which of the two is most profitable, 9000 superficial feet of glass for the growing of Grapes, or 9000 superficial feet of glass for the growth of cut flowers for Covent Garden?" *T. W. S.* holds too exalted ideas as to our capacities.

HOLLIES: *T. B.* The present is a very good time to transplant Hollies, if done at once and done well. They may also be successfully transplanted in the late spring months if the conditions are favourable.

INSECTS: *D. B.* We do not find any insects with your specimen. They should be sent in a closed box, or corked quill.

NAMES OF PLANTS: *J. D.* Tetragonolobus (Lotus) conjugatus, a plant of the Mediterranean region.—*Subscriber, Co. Down.* The White Beam, Pyrus Aria.—*J. Van V.* Stanhopea Wardii.—*Ab initio.* Hornbeam, Carpinus Betulus, var. incise, fruiting.—*H. A. B., Ashfield.*—Francoa appendiculata.—*W. D. F.* Sedum Sieboldii and S. Sieboldii variegata, Platyloma rotundifolium.—*A. Killick.* Euonymus europæus (the Spindle Tree).—*A. B.* 1, Polypodium phyllitidis; 2, P. crassifolium; 3, P. repens; 4, Menziesia polifolia.—*Subscriber.* Adiantum hispidulum.—*T. S. P.* Cystopteris fragilis, var. dentata.

ORCHID FLOWERS DYING OFF: *J. T. S.* The samples sent look as if possibly injured by fumigation; or they may have been damaged by the sun, or by overhead watering, but without knowing all the circumstances, we cannot say whether any of these are the cause of your loss.

ORCHIDS SPOTTING: *E. C.* The spotting of the Calanthe flowers is from their being kept in too damp, and possibly too cold, an atmosphere, or from being caught by the spray in syringing.

TRANSPLANTING MACHINE: *Subscriber.* Barron's will be most likely to suit you. There is more than one size. It would be best to consult Mr. Barron himself.

VASE FOR SPRING FLOWERS: *J. D.* We hear that Mr. Matthews, of Weston-super-Mare, is making the vases in question.

CATALOGUES RECEIVED.—Huber & Cie. (Hyères), General Catalogue, New Plants, Tree Seeds, &c.—Little & Ballantyne (Carlisle), Priced List of Forest Trees, Ornamental Evergreen and Deciduous Trees and Shrubs, &c.—M. Bruant (Boulevard Saint Cyprien, Poitiers), Catalogues of Fruit and Forest Trees, Conifers, &c.—Messrs. E. G. Henderson & Son (Pineapple Nursery, Maida Vale, London, W.), Catalogue of Fruits and Roses, Shrubs and Hardy Climbers.—P. Hooftman (Gouda and Boskoop, Holland), Catalogue of Roses, Conifers, Plants, Seeds, &c.—Messrs. Desfossé Thuillier & Sons (Route d'Olivet, 23, Orleans, France), General Priced Catalogue.—Messrs. Verdier & Son (37, Rue Clisson, Gare d'Ivry, Paris), Catalogue of Gladioli, Iris, Roses, Pæonies, &c.—Messrs. J. Cocker & Sons (Sunny Park and Morningfield Nurseries, Aberdeen), Descriptive Catalogue of Trees, Shrubs, Climbing Plants, Rhododendrons, Fruits, &c.

COMMUNICATIONS RECEIVED.—R. P. (thanks).—J. H. G.—R. M. (next week).—J. B.—O. O.—W. G.—J. G. B.—J. H. T.—Redwood.—C. C.—S. P. O., St. Helena.—F. C.—W. T.—E. J. E.—R. G. W.—J. T. P.—T. T.—A. G.—H. A. B.—A. H. P.

Markets.

COVENT GARDEN, November 8.

The supply of home-grown Apples has somewhat fallen off, and first-rate samples are in demand at improved prices. Best Cobs sell freely, but for indiffent samples there is no demand. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 0– 5 0	Peaches, per doz.	20 0– ..
Grapes, per lb.	0 9– 6 0	Pears, per doz.	1 0– 3 0
Lemons, per 100	8 0–12 0	Pine-apples, per lb.	4 0– 8 0
Melons, each	2 0– 5 0	Figs, green, doz.	1 0– 3 0
Nuts, Cobs, per lb.	0 4– 0 6	Walnuts, per bushel	5 0– 8 0
Oranges, per 100	12 0–20 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Garlic, per lb.	0 6– ..
Asparagus, Sprue, per bundle	1 6– ..	Herbs, per bunch	0 2– 0 4
Beans, French, per packet	1 0– ..	Horse Radish, p. bun.	4 0– ..
— Scarlet Runners, per bushel	10 0– ..	Leeks, per bunch	0 2– 0 4
Beet, per doz.	1 0– 2 0	Lettuces, per score	2 0– ..
Brussels Sprouts, p. bush.	6 0– ..	Mint, green, bunch	0 6– ..
Cabbages, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Carrots, per bunch	0 4– 0 6	Onions, per bushel	3 6– ..
Cauliflowers, per doz.	1 6– 4 0	— young, per bun.	0 6– ..
Celery, per bundle	1 6– 2 0	Parsley, per bunch	0 9– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	0 3– 1 0	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	1 6– ..	Salsafy, per bundle	1 0– ..
		Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 2 0
		Turnips, per bundle	0 4– 0 6

Potatos:—Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Asters, 12 bun.	6 0–12 0	Mignonette, 12 bun.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, (Paper White), per doz.	3 0– 6 0
Calceolaria, p bun.	0 6– 1 0	Pelargoniums, 12 spr.	1 0– 3 0
Camellia blms., doz.	5 0–12 0	— zonal, 12 sprays	0 6– 1 6
Carnations, 12 blooms	1 0– 3 0	Primula, double, per bunch	1 0– 2 0
Chrysanth., 12 blms.	4 0–12 0	Pyrethrum	0 6– 1 0
Cornflower, 12 bun.	6 0– 9 0	Roses (indoor), doz.	1 6–12 0
Dahlias, 12 bun.	6 0–12 0	Stephanotis, 12 spr.	6 0–12 0
Epiphyllum, 12 blms.	1 0– 3 0	Stocks, 12 bunches	4 0– 8 0
Eucharis, per doz.	4 0–12 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz.	5 0–12 0	Tuberoses, 12 blms.	1 6– 4 0
Heartsease, 12 bun.	1 6– 6 0	Violets, 12 bunches	1 0– 3 0
Heliotropes, 12 spr.	0 6– 1 0		
Hyacinths, Rom. doz.	2 0– 6 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	6 0–12 0	Ferns, in var., p. doz.	4 0–18 0
Bouvardias, do.	12 0–24 0	Ficus elastica, each	2 6–15 0
Chrysanth., per doz.	5 0–12 0	Foliage Plants, various, each	2 0–10 6
Clematis	6 0–24 0	Fuchsias, per dozen	6 0–12 0
Coleus, per dozen	6 0– 9 0	Liliums in var., each	1 6– 6 0
Cyclamen, per doz.	12 0–24 0	Mignonette, per doz.	6 0– 9 0
Cyperus, do.	4 0–12 0	Myrtles, do.	3 0– 9 0
Dracæna terminalis	30 0–60 0	Palms in variety, each	3 6–21 0
— viridis, per doz.	18 0–24 0	Pelargon., scarlet, p. dozen	6 0– 9 0
Erica Hyemalis, doz.	18 0–42 0	Solanums	9 0–24 0
— gracilis, per doz.	6 0–18 0	Valotta purpur., doz.	9 0–18 0
Euonymus, in var., per doz.	6 0–24 0		

SEEDS.

LONDON: *November 7.*—One or two samples of new home-grown red Clover seed have been shown on Mark Lane, but as yet no opinion can be formed as to the result of the crop as a whole. As regards foreign samples the trade doing continues very limited. The inactivity of the present time presents a great contrast to the excitement of last autumn; just now, in fact, there seems hardly any desire either to sell or buy. Holders both in France and America appear not only indifferent about making sales at current rates, but also quite resolved not to further reduce their prices; and the trade here, having been so bitten last year, are disinclined to operate unless at currencies which scarcely allow the possibility of loss. It is, of course, impossible to predict the future of the Clover trade, but perhaps those are most right who think that values have about seen their lowest. Letters from the United States describe the Illinois seed this year as superior to that of Indiana, Ohio, and some of the Eastern States. White Clovers tend upwards: with a disappointing crop in Germany, and light stocks everywhere, holders exhibit increased firmness. There is no change in either Alsike or Trefoil. The prospects of Trifolium for next year are said to be bad. For winter Vetches there is scarcely any inquiry. Canary seed meets with a small sale on former terms. Hemp seed, on account of its scarcity, is again dearer. For Linseed, both English and foreign, buyers are found at Monday's figures. A moderate business has been doing in Mustard and Rape seed. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday showed no improvement on that of last week, indeed prices were even weaker in some cases, the importations of produce continuing on a liberal scale. English and foreign Wheat was from 1s. to 2s. per quarter cheaper than on Monday se nnight, at which reduction there was little or no better demand. Barley was very quiet, and prices were not altogether so good. Malt was unchanged. Oats were a trifle easier in some instances. Maize was steady on former terms. Beans and Peas were cheaper where pressed for sale. Flour was heavy at a reduction of about 1s. per sack and barrel.—On Wednesday trade was very dull, while every attempt to force sales was accompanied by a further reduction in price. Holders, however, were not over anxious sellers, the statistical position of the trade being opposed to continued depression. The supplies were liberal of foreign Wheat, and moderate of other classes of grain. The condition of the produce was hardly so good, owing to the inclement weather of the last few days.—Averages prices of corn for the week ending November 3:—Wheat, 53s. 8d.; Barley, 42s. 4d.; Oats, 24s. 2d. For the corresponding period last year:—Wheat, 48s. 2d.; Barley, 39s. 4d.; Oats, 25s. 5d.

CATTLE.

At the Metropolitan market on Monday choice English beasts were scarce, and readily made top quotations. Trade was cheerful for all kinds, and a fair clearance was effected. The supply of sheep was short, and prices on the average advanced. A good clearance was effected. Calves, especially choicest qualities, were scarce, and prices better. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 6d. to 6s.; calves, 4s. 8d. to 6s. 2d.; sheep, 5s. 4d. to 6s., and 6s. 4d. to 7s.; pigs, 4s. to 5s.—On Thursday trade was generally quiet. Choice beasts sold at full prices, otherwise quotations rule d somewhat irregular. As regards sheep, there was a fair inquiry for choice breeds at the full prices of Monday. Other qualities sold rather slowly. Calves and pigs were much the same in value.

HAY.

The Whitechapel report for Tuesday states that the demand for fodder was slow, and prices, although unaltered, were hardly so good as on the previous market day. Prime old clover, 100s. to 134s.; inferior, 85s. to 95s.; good new clover, 100s. to 130s.; prime meadow hay, 90s. to 107s.; inferior, 75s. to 85s.; and straw, 44s. to 53s. per load. — There was a moderate supply of fodder at Thursday's market, with a good trade. Prices were firm. — Cumberland Market quotations:—Superior meadow hay, 98s. to 110s.; inferior, 80s. to 90s.; superior Clover, 126s. to 135s.; inferior, 95s. to 110s.; and straw, 52s. to 57s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that sound Potatos continue in moderate request, while there is a dull trade for inferior kinds. The arrivals are liberal of all sorts. Kent Regents, 140s. to 160s.; Essex ditto, 120s. to 150s.; Rocks, 100s. to 120s.; Victorias, 140s. to 170s.; and kidneys, 120s. to 170s. per cwt.—The imports into London last week included 58,485 bags from Hamburg, 5535 Stettin, 4196 Antwerp, 1482 Dunkirk, 868 Boulogne, 783 bags 151 casks and 36 sacks Rotterdam, 518 bags Harlingen, 3000 bags Danzig, 150 tons Brussels, 541 sacks 137 bags Rouen, 10 sacks Amsterdam, and 13 Caen.

COALS.

There was a large supply of house coals on offer at Monday's market, and the prices of last week were current. On Wednesday house coals were steady at Monday's figures, but Hartleys gave way 1s. per ton. Quotations:—Bowers West Hartley, 16s. 3d.; Bebside West Hartley, 16s. 3d.; Hastings Hartley, 16s. 3d.; Walls End—Hawthorns, 17s. 9d.; Lambton, 19s. 6d.; Original Hartlepool, 20s.; Newbottle, 17s.; South Hetton, 20s.; Tunstall, 17s. 9d.; Vanes, 17s. 9d.; East Hartlepool, 19s. 9d.; Tees, 19s. 9d.; Thorpe, 17s.

NEAPOLITAN ONION SEED.

NEAPOLITAN GIANT ROCCA
NEAPOLITAN GIANT EARLY WHITE TRIPOLI
NEAPOLITAN GIANT LATER WHITE TRIPOLI
NEAPOLITAN GIANT FLAT RED TRIPOLI
NEAPOLITAN MARZAJOLA WHITE
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The Rev. W. P. Bennett.—"It gives me great pleasure to say the collection of bulbs you sent last year gave great satisfaction."

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200 CROCUS, Assorted	100 SNOWDROPS
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12 JONQUILS, Assorted	12 HYACINTHS, for Beds
6 HYACINTHS, for Pots, Assorted	6 SCILLAS
6 TRITELEIAS, Assorted	4 IXIAS.

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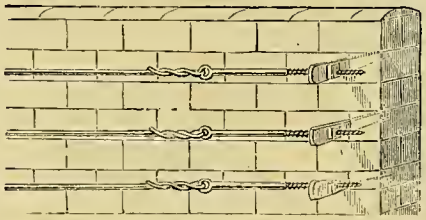

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Length of Wall:	20 yds.		40 yds.		60 yds.		80 yds.		100 yds	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
No. 14 Gauge Wire	1	0	1	7	2	1	2	7	3	1
No. 13 ,, ,,	1	3	1	10	2	5	3	0	3	7

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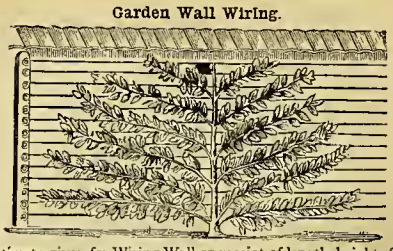

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Iron and Wire Work—Garden Fencing (Rabbit proof),
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Iron and Wire Work—Trainers,
Iron and Wire Work—Verandahs,
Iron and Wire Work—Flower Stands,
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GLASSHOUSES—perfect ventilation,
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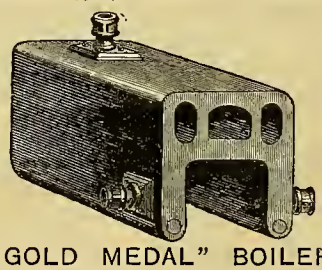

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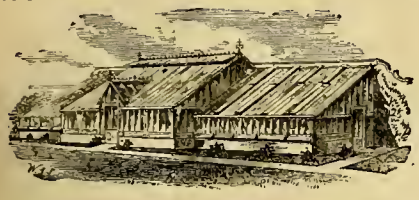

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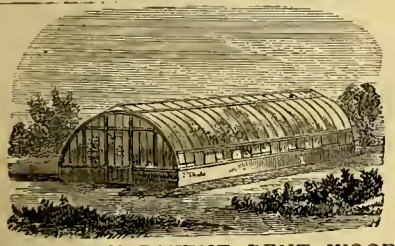

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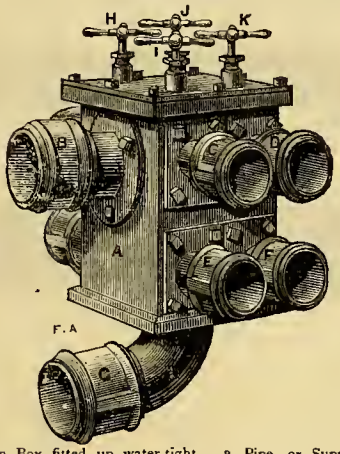

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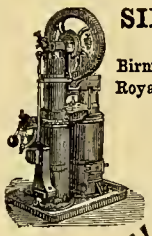

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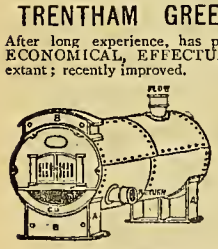

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5 A	2 0	1 6	3 2	6	31	1,240	..	16 0 0
6 A	2 0	1 6	3 6	7	35½	1,420	..	17 10 0
1 B	2 6	2 0	2 4	2	20	800	650	14 10 0
2 B	2 6	2 0	2 9	3	27½	1,100	750	17 0 0
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0 C	3 0	2 0	1 11	1	18	720	700	16 10 0
1 C	3 0	2 0	2 4	2	27	1,080	1,000	20 0 0
2 C	3 0	2 0	2 9	3	36	1,440	1,300	23 10 0
3 C	3 0	2 0	3 2	4	45	1,800	1,600	27 0 0
4 C	3 0	2 0	3 7	5	54	2,160	1,900	30 10 0
5 C	3 0	2 0	4 0	6	63	2,620	..	34 0 0
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0 D	3 6	2 6	1 11	1	24½	980	850	20 0 0
1 D	3 6	2 6	2 4	2	37½	1,500	1,500	25 0 0
2 D	3 6	2 6	2 9	3	50½	2,200	2,200	30 0 0
3 D	3 6	2 6	3 2	4	63½	2,540	2,540	35 0 0
4 D	3 6	2 6	3 7	5	76½	3,000	3,000	40 0 0
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6 D	3 6	2 6	4 5	7	102½	4,100	..	50 0 0
0 E	4 0	3 0	1 11	1	30	1,200	1,100	27 10 0
1 E	4 0	3 0	2 4	2	48	1,920	1,900	35 0 0
2 E	4 0	3 0	2 9	3	66	2,640	2,600	42 10 0
3 E	4 0	3 0	3 2	4	83½	3,340	3,300	50 0 0
4 E	4 0	3 0	3 7	5	101½	4,060	4,000	57 10 0
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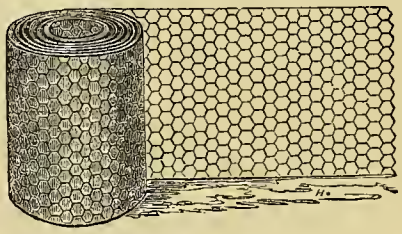

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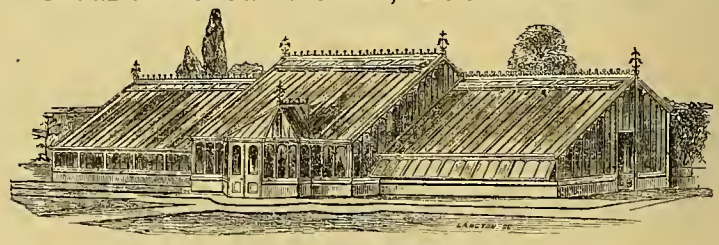

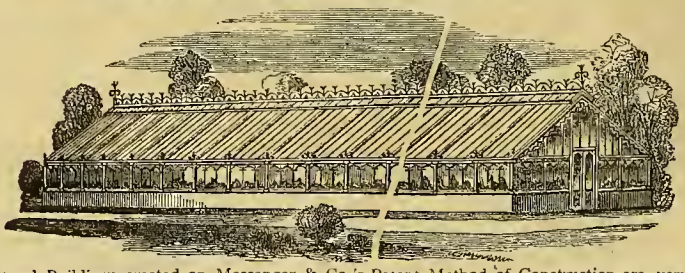

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 203.—Vol. VIII. { New Series. } SATURDAY, NOVEMBER 17, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, 5½d.

With this Number is presented a Supplement, illustrating the general arrangement of the Boilers for Heating the Palm Stove in the Royal Gardens, Kew.

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TO SECRETARIES of HORTICULTURAL SOCIETIES.—The Editors will be greatly obliged for early information respecting the Dates Selected for Holding Horticultural Exhibitions in 1878.

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WANTED, 500 strong Canes of CARTER'S PROLIFIC RASPBERRY. Send sample and price to G. W. PIPER, The Nursery, Uckfield, Sussex.

A Specially Cheap Offer.

PICEA NORDMANNIANA, perfect symmetrical specimens, 3, 4, 5, to 6 feet, at 3s., 4s., 5s., and 6s. each; less per dozen. Quotations to the Trade on application to
GEORGE JACKMAN AND SON, Woking Nursery, Surrey.

English Yews, English Yews.

ENGLISH YEWS, 3½ to 4 feet, 12s. per doz., 80s. per 100; 4 to 4½ feet, 18s. per doz., 100s. per 100. All recently transplanted. Every plant a perfect specimen.
JOHN PERKINS AND SON, 52, Market Square, Northampton.

Spruce Fir.

STUART, MEIN AND ALLAN offer the above to the Trade, finely rooted, 12 to 18 inches. Price on application. Kelso, N.B.

SPECIMEN and FINE FOLIAGED TREES and SHRUBS for immediate effect, FRUIT TREES, ROSES, &c. An inspection solicited.
CATALOGUES on application.
H. LANE AND SON, The Nurseries, Berkhamsted, Herts.

SPRUCE FIR, extra fine, from 4 ft. to 7 ft., will remove with safety, well grown plants. Special low prices on application.
ELCOMBE AND SON, The Nurseries, Romsey, Hants.

PINES.—For Sale, from fifty to sixty succession Pines, consisting of Queens, Smooth Cayenne, and Black Jamaica. Clean healthy plants. Apply to
D. DOIG, The Gardens, Rossie Priory, Inchture, Perthshire.

Laurels, Laurels.

G. M. DARBYSHIRE offers a few hundreds, 2 to 2½ feet, bushy, transplanted, very cheap, to clear the ground.
The Nurseries, Enderby, near Leicester.

Planting Season, 1877-78.

JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks, invite the attention of Intending Planters to their large and varied STOCK, which, having been recently transplanted, is in the finest possible condition for removal. Liberal terms to large buyers.

Choice named Rhododendrons of all Colours.

W. H. ROGERS, Red Lodge Nursery, Southampton, offers the above, very fine, in any quantities, at £5 and £7 10s. per 100.

80,000 Ponticum Rhododendrons.

JOHN STANDISH AND CO. have an immense stock of PONTICUMS to offer, suitable for Cover Planting. Prices on application.
Royal Nurseries, Ascot, Berks.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium, CATALOGUES free on application.
Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

SEEDLING PLANTS. — HOLLYHOCKS, fine strong seedlings, 2s. 6d. per dozen; PANSIES, 1d. each from 1 to 10,000; CARNATIONS, 1d. each from 1 to 10,000. Bulb CATALOGUE on application.
BIDDLES AND CO., Loughborough.

Forest and Ornamental Trees and Shrubs.

LITTLE AND BALLANTYNE, NURSERYMEN and SEEDSMEN to the Queen, Carlisle, have issued their Autumn Priced LIST of FOREST and ORNAMENTAL TREES and SHRUBS, which will be sent free by post on application.

Chrysanthemums.

CHARLES TURNER invites an Inspection of his large Collection, now in fine bloom.
The Royal Nurseries, Slough.

DAFFODILS, &c., for Naturalisation in floral walks, parks, pleasure-grounds, flower borders, shrubberies and woodland walks, 10s., 20s. and 30s. per 1000; 2s. 6d., 3s. 6d. and 5s. 6d. per 100. SNOWFLAKES, 7s. 6d. per 100. SCILLAS, 5s. 6d. per 100 LILIES, 20s. per 100.
BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

LILY OF THE VALLEY. — Buds for Forcing, without exception the finest in London, price 7s. 6d. per 100. Plenty for the Trade. Wholesale price on application.
HOOPER AND CO., Covent Garden, London, W.C.

Dutch Bulbs, Extra Picked.

J. SCOTT has to offer a large quantity of BULBS, exceedingly cheap. Priced descriptive CATALOGUE free on application to
JOHN SCOTT, The Royal Seed Stores, Veovil.

DUTCH BULBS, &c.—The most complete Catalogue in the Trade, post-free for 3d., returned to purchasers.—GIBBS AND COMPANY, Seedsmen and Importers of Bulbs, Woodbridge, Suffolk.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING

GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

SALES BY AUCTION.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during November, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Hardy Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 21, at half-past 12 o'Clock precisely, 1000 Choice Standard and Dwarf ROSES from an English Nursery; also from Holland splendid specimen variegated Green HOLLIES, Rare CONIFERS, FRUIT TREES, &c., from a well-known Dutch Nursery. Also a great variety of DUTCH BULBS, &c.

On view the morning of Sale, and Catalogues had.

Rare Dendrobiums from New South Wales.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 22, at half-past 12 o'Clock precisely, 150 Plants of the rare DENDROBIUM JOHANNIS, several of them very fine, with from ten to sixteen stems; and about 400 Plants of DENDROBIUM BIGIBBUM, many of them splendid strong plants, with from ten to fifteen stems: among these will probably be found several varieties, and doubtless the beautiful D. BIGIBBUM SUPERBUM, for some of the plants have stout, strong stems, upwards of 2 feet in length.

On view the morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 22, at half-past 12 o'Clock precisely, an importation, in extra fine condition, of ONCIDIUM KRAMERIANUM, ODONTOGLOSSUM ROEZLII, ONCIDIUM UNGUICULATUM (Lindley), twenty-five large masses of the pure white MAXILLARIA GRANDIFLORA (Reich.), and a quantity of COOL ORCHIDS, by order of Messrs. F. Sander & Co., St. Albans.

On view the morning of Sale, and Catalogues had.

Lapageria alba.

MR. J. C. STEVENS will include in his SALE on THURSDAY, November 29, Thirty-six Plants of various sizes of the beautiful LAPAGERIA ALBA, some of which are in flower, the property of Mr. Howard, Florist, 29, King Street, Covent Garden, W.C.

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

Dendrobium bigibbum superbum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 29, at half-past 12 o'Clock precisely, a splendid consignment of DENDROBIUM BIGIBBUM SUPERBUM, by order of Mr. B. S. Williams, who has much pleasure in offering this hitherto rare and expensive Dendrobe, received from his collector in Torres Straits. It will be seen from the Plants in flower that there is no question about its being the true variety, producing, as it does, bulbs averaging from 12 to 24 inches in length, and flower-spikes producing as many as ten highly-coloured flowers. All the plants here offered are starting freely into growth, and many of them are throwing up spikes from the old bulbs, which it is expected will attain maturity, as some of the plants exhibited in flower are from the same importation. At the same time will be offered sixty fine imported trunks of TODEA SUBERBA, a collection of STOVE and GREENHOUSE PLANTS, &c.

On view the morning of Sale, and Catalogues had.

Unreserved Sale of a Large Consignment of Selected HYACINTHS for Pots, Glasses, or Borders, fine named CROCUS and TULIPS, also POLYANTHUS NARCISSUS, JONQUILS, GLADIOLI, choice LILIES, ANEMONES, and other BULBS from Holland, together with about 400 English-grown ACHIMENE BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Auction Mart, Tokenhouse Yard, E.C., near the Bank, London, on MONDAY NEXT, half-past 11 o'Clock punctually.

Catalogues had of the Auctioneers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

Norwood Road, S.E.

(Near Tulse Hill Station.)

SALE of NURSERY STOCK, choice established ORCHIDS, STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. G. Peed to SELL by AUCTION on the Premises, the Roupell Park Nursery, Norwood Road, Brixton, S.E., on TUESDAY, November 20, at 11 for 12 o'Clock precisely, a quantity of well grown Nursery Stock, consisting of TREES and EVERGREENS in variety, a selected assortment of FRUIT TREES, a collection of choice STOVE and GREENHOUSE PLANTS, new and valuable PALMS, several fine established ORCHIDS, together with a large TUBULAR BOILER by Rhodes, and two smaller ones. There will also be included 24 Specimen and other fine LAPAGERIA ALBA and RUBRA SUPERBA.

May be viewed the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Thames Ditton, Surrey.

CLEARANCE SALE of a large quantity of very useful and well rooted NURSERY STOCK. By order of the Executors of the late Mr. J. Lewis.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Ember Nurseries, Thames Ditton, on TUESDAY, Nov. 20, and following days, at 11 for 12 o'Clock precisely each day, the whole of the valuable NURSERY STOCK, consisting of a large and varied assortment of choice Evergreen and Coniferæ shrubs, ranging all sizes, and adapted for immediate effect; also 8000 Common Laurels, 3 to 7 feet; 1500 Cupressus Lawsoniana, 2 to 10 feet; 500 Thujopsis borealis, 2200 Thuja Lobbii, 2 to 10 feet; 1000 Gold and Silver variegated Hollies, 1 to 3 feet; 1000 Standard Ornamental Trees, and a great variety of Fruit Trees.

May be viewed prior to the Sale. Catalogues may be had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Important to Amateur Tulip Growers.

MESSRS. PROTHEROE AND MORRIS will include in their SALE of DUTCH FLOWER ROOTS, at the Mart, Tokenhouse Yard, E.C., on MONDAY, November 26, the entire stock of BULBS of an AMATEUR TULIP GROWER, probably the finest and most unique collection extant; also the MAHOGANY CABINETS and FITTINGS. No reserve.

MESSRS. TAYLOR AND FORGE are instructed to SELL by AUCTION, without reserve, on TUESDAY, November 20, at 12 for 1 o'Clock, the LEASE of POUND NURSERY, New Hampton (unless disposed by private contract), 17½ years to run, 2 Houses, 50 by 10½ feet; 1 House, 26 by 16 feet; 3 Seven-light Ranges, Three-light Box, 2 Carts, 2 Sows, 11 Store Pigs, 7 Iron Pig Troughs, a quantity of Tools; a Collection of Plants, consisting of Geraniums, Lycopodiums, Begonias, Azaleas, Ferns, &c.; an 8-room Dwelling House, Stable, Cart Shed, Potting Shed, Cow Shed, and Pigeries, &c. Water laid on.

Garston, near Liverpool.

GREAT CLEARANCE SALE of NURSERY STOCK.

MESSRS. BRANCH AND LEETE will SELL by AUCTION, on the Premises, The Vineyard, Garston, near Liverpool, on MONDAY, November 26, at 11 o'Clock, by order of Mr. J. Cowan, in consequence of important alterations in his Nursery, the following NURSERY STOCK:—200 Pyramid Apple, Pear, Plum, and Cherry Trees, in full bearing condition; Evergreen and Deciduous Shrubs, comprising Green Holly, Portugal Laurel, Rhododendron, Conifer, &c.; 500 strong well-grown Vines, suitable for Fruiting in Pots and Planting Vineries; 500 well-grown Strawberry Plants, in Pots, for Early Forcing; a large assortment of Greenhouse Plants for Winter Blooming, viz., Camellia, Azalea indica, Heaths, Bouvardia, Genista, Solanum, Cineraria and Spiræa japonica, also Hybrid Perpetual Roses, in pots, &c.; a choice collection of Dutch Bulbs, in pots, for Conservatory Decoration; and a variety of other useful plants.

May be viewed one week prior to the Sale. Catalogues may be had on the Premises, and at 16 and 17, St. John's Market, Liverpool, and of the Auctioneers, Hanover Street, Liverpool.

Wonersh Nursery, near Guildford, Surrey.

To NOBLEMEN, GENTLEMEN, CONTRACTORS, and OTHERS.

MR. JOHN BULLEN will SELL by AUCTION, on the Premises as above described, on WEDNESDAY and THURSDAY, November 28 and 29, commencing each day punctually at 1 o'Clock, by order of Messrs. Virgo & Son, the extensive and well-known Nurserymen and Florists, a well-grown Stock of TREES and SHRUBS, consisting of about 800 Pinus austriaca, 1½ to 8 feet; 40,000 Spanish Chestnuts, 2-yr. seedlings; 40,000 Hazel, 20,000 each of Ash, Alder, and Withy; 20,000 Birch, 4000 Maple, 7 feet; quantity of Scarlet Oak, 400 strong Filberts, 4 feet 6 inches; 400 English Yews, 500 Green Holly, 2000 Hornbeam, 2½ to 3½ feet; a good collection of Ornamental Trees of various heights, Mountain Ash, Laburnum, Wych Elm, Hornbeam, Sycamore; double white, pink and scarlet Thorns; Limes, Poplar, Horse Chestnut, Common Laurels, Portugal Laurels, Green Box, Weymouth Pine, Spruce and Silver Fir, 50,000 strong transplanted Quicks, black and red Currants, variety of trained and standard Apple, Pear and Plum Trees in sorts; quantity of Walnut Trees; several dozen of choice Rose Trees, standards and half-standards.

NOTE.—The whole of the stock is in good condition for removing. Wonersh Nursery is a short distance from Bramley Station, on the Horsham Line, where a conveyance will each day meet the 12 o'clock train.

May be viewed two days prior to the Sale, and Catalogues obtained of Messrs. VIRGO AND SON, Wonersh Nursery; "Grantley Arms," Wonersh; "Jolly Farmer," Bramley; "Albion Hotel," Woking Station; "Red House Hotel," Woking Station; "King's Arms," Godalming; "Bush Hotel," Farnham; "Queen Hotel," Farnborough; "Talbot Hotel," Ripley; and of the Auctioneer, 50, High Street, Guildford, Surrey.

SPANISH CHESTNUT, ASH, LARCH, BIRCH, and ALDER; stout, well rooted, transplanted. GEORGE CHORLEY, Midhurst.

To Nurserymen and the Trade.

SEAKALE and ASPARAGUS, for Forcing.—Finest in the trade; also Planting, &c. Price on application to C. PAGE, St. John's Nursery, Fulham, S.W.

DWARF ROSES, on the cultivated Seedling Brier, of all the leading Exhibition varieties, 9s. per dozen, package free. Cash to accompany order. JOHN HOUSE, F.R.H.S., Eastgate Nurseries, Peterborough.

Tea Rose, Madame Francois Janin.

H. BENNETT has a few good Specimen Plants, in from 8 to 12-inch pots, some 4 feet high, by 2 to 3 feet through, of this magnificent winter flowering Rose. Price on application. Manor Farm Nursery, Stapleford, Salisbury.

SEAKALE for FORCING.—Largest roots in the Trade, 90s. per 1000; any number under 500, 10s. per 100; many acres for sale. Remittances to accompany all orders. ALFRED ATWOOD, Market Gardener, 3, Althorpe Road, Upper Tooting, Surrey (late of 5, Simpson Street, Battersea).

YEWS, about 2000, from 3½ to 4½ feet, 90s. per 100; 4½ to 5 feet, £5 per 100. All in fine condition for making Hedges, &c., well rooted and furnished. In good condition for planthg now. JOSEPH SPOONER, Goldworth, Woking.

FOR SALE, Two PANDANUS UTILIS, Two MARANTA ZEBRINA, Two LATANIA BORBONICA. Large plants, sold for the want of room. W. PEPPER, The Gardens, Bromley Common, Kent.

ORCHIDS.—Just imported, a case from the Brazils, containing about 40 Sophronites, 2 Cattleyas, 65 Oncidiums; will be Sold extremely cheap. Having agents in Brazil, am prepared to send out orders for any quantity, and any description required. L., 382, Henry Greenwood, Advertising Agent, Liverpool.

Epacris and Ericas.

WM. CUTBUSH AND SON have an enormous quantity of the above, beautifully set with bloom, in 48-size pots. Special prices on application. Highgate, N., and Barnet, Herts.

SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16s. per 100, £7 per 1000, or £60 per 10,000. J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

CHRISTMAS ROSES, 20,000. HEPATICA CŒRULEA, 8,000. May be had from J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPIGELIA MARYLANDICA.—Beautiful perennial, of gay appearance. Strong flowering plants, with many crowns, at 64s. per 100. J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

PANDANUS UTILIS.—Extensive stock of this splendid ornamental plant, at 20s. per 100, 180s. per 1000. Extremely healthy, 6, 8 and 10 inches high and upwards. J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium N.B. English CATALOGUE post-free.

Camellias and Azaleas, well Set for Bloom, of VARIOUS SIZES.

CHARLES TURNER has a fine healthy stock to offer of the above. The Royal Nurseries, Slough.

Planting Season.

E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet; Spruce FIRS. Prices on application. The Nurseries, London Road, Cheltenham.

STONE'S APPLE.—As Certificated by the Royal Horticultural Society, and shown at the Crystal Palace. A very handsome Kitchen Apple, of large size and a great bearer. True to name. Fine 2-yr. trees, 42s. per dozen. Trade price on application. THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed. JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

Fastolf Raspberries, extra strong.—Dwarf Box EDGING.

W. WISEMAN AND SON have a very large quantity of the above to Dispose of, cheap. Prices on application. Black Friars and Grove Terrace Nurseries, Elgin, N.B.

Gold, Silver and Green Hollies.

J. J. MARRIOTT has a choice assortment of Hollies, in various sizes, and begs to offer them in Collections of Twenty distinct kinds, including Perry's Silver Variegated Weeping, at 25s. to 45s. each, according to size of plants. Mellish Road, Walsall.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, intimates that his New General CATALOGUE of NURSERY STOCK, of fifty pages, will be forwarded on application for three stamps, free to Purchasers, consisting of one of the best grown stocks in Europe. Specialties—Roses, Fruit Trees, and Rhododendrons.

First-class Nursery Stock.

WITTY AND SON have to offer dwarf-trained PEACHES and NECTARINES. Also pyramid and standard APPLES, PEARS, PLUMS, and CHERRIES. An immense stock of EVERGREEN SHRUBS of first-class quality. The Nurseries, Cottingham, near Hull.

CHEAP OFFER.—Ozothamnus rosmarinifolius, white, useful for cut flowers; Escallonia macrantha, very fine for potting; Cotoneaster microphylla; Pyracantha, red-berried; Aristotelia Maqui, fine evergreen, with Laurel-like foliage, seldom offered; Santolina chamæcyparissus, white foliaged evergreen; Lonicera aurea reticulata, Sambucus aurea variegata, admirable for town gardens; Ribes sanguinea. All the above at 2s. per dozen, 15s. per 100. Laurustinus, common, shining and black-leaved, 7s. 6d. per 100, 60s. per 1000. WILLIAM ABRAHAM, Nurseryman, Limerick.

B. WHITHAM, The Nurseries, Reddish, near Stockport, has for Sale:—50,000 ENGLISH YEWS, extra fine, many times transplanted, 1 to 2 feet, 20s. per 100; 2 to 3 feet, 40s. per 100; 3 to 4 feet, 60s. per 100. Great reduction to purchasers of 1000 and upwards.

Also to be sold cheap many Thousands of HORSE CHESTNUTS and LIMES, 8 to 10 feet, fine for avenues.

To the Trade.

SEEDLING TREES.—2,000,000, consisting of 1-yr. Larch, 1-yr. Alder, 1-yr. Scotch Fir, 1-yr. Thorn Quick, 1-yr. Sycamore, all grown from home-saved native Irish seed. Samples and Prices on application to Mr. WILLIAM ALLEN, Dangan, Summerhill, Enfield, Co. Meath, Ireland.

TUBEROUS BEGONIA SEED.—Saved from our unrivalled collection, fresh harvested, and only a very small quantity to offer. In sealed packets at 2s. 6d. and 5s. each. RODGER McCLELLAND AND CO., Nurseries, Warrenpoint Road, Newry. P.S.—Our NEW CATALOGUE of New and Old Varieties will shortly be issued, and will be sent on application.

CUPRESSUS LAWSONIANA DENSA. RETINOSPORA PLUMOSA AUREA. The above CONIFERS are singularly beautiful; the Cupressus having a rich dark glaucous green foliage, and the Retinospora a perpetual bright golden-yellow. They are of very compact growth, perfectly hardy, and admirably adapted for lawns, winter bedding, and small window balconies. Nice specimens are offered singly or in any quantity. 1 foot, 2s. 6d.; 1½ foot, 3s. 6d., and 2 feet, 5s. each. W. H. ROGERS, Red Lodge Nursery, Southampton.

Cabbage Plants, Cabbage Plants.

W. VIRGO AND SON can now supply in any quantity good strong, healthy plants, viz., Early Battersea, Early Enfield Market, Early Nouparlel, and Sugar-loaf Cabbages, all at 3s. per 1000; Robinson's Drumhead, 3s. per 1000; Red Drumhead, 5s. per 1000; delivered free on rail. Post-office Orders must accompany all orders from unknown correspondents.

W. VIRGO AND SON, Woonersh Nursery, near Guildford.

KENTISH FRUIT TREES.—One of the largest and cheapest stocks in the county, consisting of tall Standard CHERRIES, Standard, Pyramid, and Espalier APPLES, PEARS, and PLUMS, from 70s. per 100; GOOSEBERRIES, CURRANTS, &c.

CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers.

T. EVES, Gravesend Nurseries. Established 1810.

NEW HARDY RHODODENDRONS.—
MRS. MENDEL.
SIGISMUND RUCKER.
MARCHIONESS OF LANSDOWNE.

The above beautiful and distinct hardy Rhododendrons will be supplied for Three Guineas.

ANTHONY WATERER, Knap Hill, Woking, Surrey.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to

EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

Cabbage Plants, Cabbage Plants.

S. BIDE can supply, for Cash, good strong plants of Enfield Market, Imperial, Improved Nonpareil, and Drumhead or Cattle CABBAGE, at 3s. per 1000, free on rail and package free: Red or Pickling CABBAGE, 5s. per 1000. All the above are grown on light land, and are beautifully rooted. Send orders early to

S. BIDE, Alma Nursery, Farnham, Surrey.

Fruit Trees, Deciduous and Evergreen Shrubs, CONIFERÆ, &c.

CHARLES TURNER'S New CATALOGUE of the above is now ready, and can be had post-free on application.

The Royal Nurseries, Slough.

GIANT LILY OF THE VALLEY.—Strong blooming Roots, 2s. per dozen, 12s. 6d. per 100, package free.

ROSES, Dwarf, the "Mile Ash dozen," twelve best varieties, extra strong plants, for 10s. 6d., package free.

EDWIN COOLING, Mile Ash Nurseries, Derby.

Special Offer.

SEEDLING MEZEREONS, HOLLIES, RHODODENDRONS, and LOMBARDY POPLARS.—1-yr. Seedling Mezereons, 20s. per 1000; 2-yr. ditto, 30s. per 1000. Common Green Hollies, 1 to 1½ foot, 15s. per 100; ditto, 2 feet, 30s. to 40s. per 100—grown on heavy clayed land, and well rooted. Rhododendrons, Cunningham's White, 1 foot, 9s. per dozen; ditto, 2 to 2½ feet by 2 feet, 30s. to 35s. per dozen; caucasicum pictum, 2 to 3 feet, 30s. to 35s. per dozen—full of bloom-buds, for forcing, bushy plants. Lombardy Poplars, 6 to 8 feet, 10s. per 100; ditto, strong, 10 to 12 feet, 10s. per dozen. New Musk, Harrisoni, 4s. per dozen. Also other Nursery Stock. Samples on application.—PETER LEIGH, Nurseryman, Scholeses Nurseries, Elton, near Bury, Lancashire.

Queen of Lilies, Lilium auratum.

As this year's shipments will be shortly arriving from Japan,

WILLIAM GORDON begs to call attention to the following low prices:—sizes: No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; No. 4, 2s. each. Sampling orders are supplied only in the following quantities, and are carefully packed in tin boxes to contain only the following number of bulbs, the prices quoted including carriage to any part of the United Kingdom:—2 bulbs, 6d. extra; 4 bulbs, 1s. 6d.; 8 bulbs, 2s.; 12 bulbs, 2s. 6d., added to the foregoing prices. Quantities of 18 bulbs and over package and carriage free, less 10 per cent. discount. LILY LIST on application.

WILLIAM GORDON, Lily, Bulb, and Plant Importer, 10, Cullum Street, London, E.C.

SPRING FLOWERING PLANTS.

ANEMONE FULGENS, strong plants, established in pots, 1s. each, 10s. per dozen, 75s. per 100. This is the most dazzling scarlet, and commences to open its flowers in January and continues until May. Most invaluable for the spring garden, and also for cutting, as it opens its flowers just as well under artificial as real light.
CARDAMINE PRATENSIS, fl. pl., Double Lilac, flowers most profuse, first-rate spring flower, 25s. per 100.
PRIMROSE, Double Crimson (true), 18s. per dozen, 140s. per 100.
" Double Crimson Purple, fine variety, often throwing up its flowers in scapes, and continuing long in bloom, 6s. per dozen, 45s. per 100.
" Double Yellow, 4s. per dozen, 25s. per 100.
" Double Lilac, 3s. per dozen, 16s. per 100.
" Double White, 3s. per dozen, 20s. per 100.
" Single Yellow, flowering in scapes, most continuous, 6s. per dozen, 40s. per 100.
POLYANTHUS, strong fine strain, 3s. per dozen, 12s. 6d per 100.
PHLOX, verna, 4s. per dozen, 20s. per 100.
" setacea, 4s. per dozen, 20s. per 100.
WALLFLOWERS, Single, Harbinger, Tom Thumb, yellow and early dark brown, 1s. 6d. per dozen, 8s. per 100.
" Double Germans, eight distinct colours, separate, very strong, 1s. 6d. per dozen, 8s. per dozen.
" Double, Golden Drop (pots), 3s. 6d. per doz., 25s. per 100.
" Double, black and striped (pots), 4s. per dozen.
DAISY, Double Crown, very large, 3s. 6d. per 100.
" Snowball, fine, 3s. 6d. per 100.
" Crimson, 5s. per 100.
" Aucubæfolia, 10s. per 100.
" Small White French and Carmine French, two very pretty sorts, 7s. 6d. per 100.
" Cærulea (Blue Daisy), 4s. per dozen.
IRIS, pumila, 3s. per dozen.
MYOSOTIS, rupicola (pots), grows 3 inches high, a gem, 6s. per dozen.

RODGER McCLELLAND AND CO., Nurserymen, &c., Newry.

Florists' Flowers, and Roses.
Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.

Hale Farm Nurseries, Tottenham, London.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Tree Ferns, Tree Ferns, Tree Ferns.

DICKSONIA ANTARCTICA.—The Advertiser continues to offer the above at greatly reduced prices. All trunks carefully selected by an English gardener from the coolest districts of Tasmania, from 1 foot upwards. They are carefully dressed and packed, and put on board ships sailing direct to London. Special terms to large buyers. For particulars apply to

Mr. WALKER, 9, Mount Pleasant, Tunbridge Wells.

FINE STANDARD ORNAMENTAL TREES, &c., for Immediate Effect.

ASH, Mountain, 8 to 10 feet, fine, 10s. to 12s. per dozen.
BEECH, Green, 10 to 12 feet, fine, 18s. to 24s. per dozen.
BIRCH, Silver Weeping, 12 to 15 feet, fine, 18s. to 24s. p. doz.
CHESTNUT, Horse, 8 to 10 feet, fine, 10s. to 12s. per dozen.
" Scarlet, 8 to 10 feet, fine, 12s. to 15s. per dozen.
ELMS, Giant Canadian, 15 to 20 feet, fine, 25s. to 30s. per doz.
" English grafted, 10 to 12 feet, fine, 18s. to 24s. per dozen.
LAURELS, well furnished, 4 to 6 feet, fine, 20s. per 100.
LIMES, 8 to 9 inches in circumference, 12 to 14 feet, fine, 28s. to 30s. per dozen; 10 to 12 feet, 10s. per dozen.
LABURNUMS, 10 to 12 feet, fine, 9s. to 12s. per dozen.
OAK, English, 10 to 12 feet, fine, 18s. to 24s. per dozen.
POPLAR, Silver, 12 to 15 feet, fine, 18s. to 24s. per dozen.
" Black Italian, 12 to 15 feet, fine, 9s. to 12s. per dozen.
" Lombardy, 10 to 12 feet, fine, 9s. to 12s. per dozen.
PRIVET, Evergreen, 3 to 3½ feet, fine, 14s. per 1000.
SYCAMORE, 15 to 20 feet, fine, 18s. to 25s. per dozen.

Descriptive CATALOGUE of General Nursery Stock post-free on application.

W. BALL AND CO., The Nurseries, Bedford Road, Northampton.

Orchard Planting, &c.

H. F. SMITH AND SONS, SEED MERCHANTS, Selby, being about to give up their Nurseries, will offer the whole of their spleodid stock of FRUIT TREES, &c., at about half the usual price. It comprises about 10,000 Apples, Pears, and Plums; 10,000 Gooseberries, of best sorts; 5000 Black Naples Currants; 6000 Northumberland Fillbasket Rasps (extra strong canes), &c., as well as fine stocks of FOREST and ORNAMENTAL TREES, SHRUBS, CONIFERS, &c., all clean and healthy. A dozen or 100 sent as sample if required.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING."—This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of Clive House Seedling, a name the Committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet black in colour, with a thick skin. The flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter. It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the Black Alicante." This has been awarded a First-class Certificate. The stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited. Price 21s. and 42s. each. For Detailed List see BULB CATALOGUE.

NEW FIG, "HARDY PROLIFIC."—The fruit of this hardy Fig is about the medium size, Pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer, either in pots or in a cold house, as well as on an open wall. It also ripens earlier than any other variety we know of. Price 10s. 6d. each. Extra sized fruiting plants, 21s. each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

MAGNOLIA GRANDIFLORA (Exmouth).—Splendid plants from open ground, 2 to 3 and 4 feet, 18s., 24s., and 30s. per dozen; fine, in pots, 24s. and 30s. per dozen.

A large and excellent stock to select from.

WALTER CHARLES SLOCOCK (late Robert Donald & Son), Goldworth Old Nursery, Woking, Surrey.

RHODODENDRONS of the finest named varieties of Hardy Scarlet, White, Rose, and others, in variety. Healthy bushy plants, 1½ to 2 feet, £5 5s. per 100; 2 to 3 feet £7 7s. per 100; selected, covered with bloom-buds, 18s., 24s., and 30s. per dozen.

HYBRID SEEDLING RHODODENDRONS, raised from the best named kinds, and may be relied on to produce a variety of colour, many equal to named varieties. Good stuff, 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 50s. per 100; 2 to 3 feet, 75s. per 100; well set with bloom-buds, 50s. to 100s. per 100.

PONTICUM RHODODENDRON, 1 foot, bushy, 15s. per 100; 1½ to 2 feet, bushy, 20s. and 30s. per 100; 2 to 3 feet, bushy, 40s. to 50s. per 100.

WALTER CHARLES SLOCOCK (late Robert Donald & Son), Goldworth Old Nursery, Woking, Surrey.

CLEMATIS.—Strong plants, in leading kinds, 75s. per 100.
AMPELOPSIS VEITCHII, 50s. per 100.
VARIEGATED IVIES, of best sorts, strong, 75s. per 100.
TRADE LIST of General Nursery Stock on application.

WALTER CHARLES SLOCOCK (late Robert Donald & Son), Goldworth Old Nursery, near the Woking Station, Surrey.

W. BALL AND CO. beg to offer the undermentioned PLANTS, all of which are strong and well established:—
AURICULAS, finest mixed Alpine, in 54-pots, 4s. per dozen, 30s. per 100.
ALYSSUM SAXATILE COMPACTA, 6s. per 100.
CARNATIONS, CLOVES, and PICOTEES, strong, in 60-pots, twelve varieties, 25s. per 100.
" The Bride, Miss Jolliffe, and La Belle, 18s. per dozen.
DAISY, The Bride, the finest of all Whites, 7s. 6d. per 100.
" Rob Roy, 6s. per 100.
" Giant Variegated, 6s. per 100.
" aucubæfolia, fine, 7s. 6d. per 100.
MYOSOTIS DISSITIFLORA, 6s. per 100.
ŒNOTHERA MACROCARPA, 1s. 6d. per dozen, 10s. 6d.
PAMPAS GRASS, extra strong, 4s. per dozen. [per 100.
PANSY, Blue King, 8s. per 100.
" Cliveden Blue, 8s. per 100.
" Cliveden Purple, 8s. per 100.
" Cliveden Yellow, 6s. per 100.
" Dean's White, 6s. per 100.
PINKS, in twenty-five named varieties, in 60-pots, 25s. per 100.
PRIMROSES, double Yellow, 20s. per 100.
" single Lilac, 12s. per 100.
ROCKETS, double Purple, 2s. 6d. per dozen, 18s. per 100.
" double White, 2s. per dozen, 15s. per 100.
SILENE PENDULA COMPACTA, 2s. 6d. per dozen.
STOCKS, Scarlet Queen, 2s per 100.
TRITOMA UVARIA, 4s. per dozen, 28s. per 100.
WALLFLOWERS, finest dark, 2s. 6d. per 100.

All the above cheaper by the 1000. Orders amounting to 20s. boxes and packing free.

The Nurseries, Bedford Road, Northampton.

Vines and Strawberries,
"Plant now to ensure a full crop of fruit next season."

FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3s. 6d. to 5s. each; strong Fruiting ditto, 7s. 6d. to 10s. 6d. each.

Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16s. to 20s. per 100; from the open ground, 3s. to 5s. per 100.

Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.

Sheen Nursery, Richmond, Surrey.

Gladioli!—New Roses!—Gladioli!

EUGÈNE VERDIER, Horticulturist, 37, Rue Clisson, Gare d'Ivry, Paris.

New varieties of ROSES obtained in this Establishment, and to be offered for sale for the first time in November:—

HYBRID PERPETUALS.—Charles Baltet, Charles Duval, Comtesse de Flanders, Docteur Auguste Krell, Mdme. Albani, Mdlle. Maria Castel, Mdlle. Maria Verdier, President Schlachter, Princesse Blanche d'Orléans, Souvenir d'Auguste Rivière.

New varieties of GLADIOLI to be offered for sale for the first time in November:—Caprice, Conquête, Crésus, Eglée, Eugène Ramey, Lactea, La France, La Perle, Leviathan, Madadam Platz, Parmentier, Pasquin, Séduction, Tour du Monde.

New varieties already on sale, magnificent, very recommendable, and much recommended:—Madame Krelage, Lord Hawke, Madame de Cazes, Roi des Jaunes, &c.

CATALOGUES are now ready, and will be sent gratis, on demand, post-paid.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.

The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to

R. AND G. NEAL, Chief Office, Wandsworth Common.

The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

HOTEIA (SPIRÆA) JAPONICA.—100,000, in very strong and sound condition.

SPIRÆA JAPONICA, 16s. to 20s. per 100; have been awarded several First Prizes, and always considered best shown.
DIELYTRA SPECTABILIS, very strong, 20s. to 26s. per 100.
LILIUM LANCIFOLIUM ALBUM MONSTROSUM, 30s. to 40s. per 100; very free flowering.
" " ROSEUM, strong, 20s. to 26s. per 100.
" " RUBRUM, strong, 20s. to 26s. per 100.
" CHINENSIS TIGRINUM, 5s. to 7s. per 100.

Trade Catalogues on application. Post-office Order or good reference from unknown correspondents.

BUDDENBORG BROS., Nurserymen, Hillegom, near Haarlem, Holland.

The Cirencester Nurseries.

ROBERT F. DARBY begs to offer the following TREES for immediate effect, all straight, handsome, well-rooted, and cheap; price, according to quantity, on application:—

ELM, Chichester, 16 to 20 feet.
HORNBEAM, 5 to 6 feet.
BEECH, 6 to 8 feet.
LIMES, 10 to 12 feet.
NORWAY MAPLES, 10 to 12 feet.
SYCAMORES, 12 to 16 feet.

Also dwarf Bush APPLES, of best sorts, in good bearing, an excellent lot for Market Gardeners.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANNI.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

A B C Descriptive Bulb Guide.

THOMAS S. WARE has pleasure in announcing that the above for the present season is now ready, containing complete Lists of Liliums, Narcissus, &c.; also a selection of Terrestrial Orchids, Bamboos and Ornamental Grasses, Climbing Plants and Herbs; to which is added an abridged List of Hardy Perennials adapted for autumn planting. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

HYDRANGEA PANICULATA GRANDIFLORA.—We can offer extra strong, bushy plants of this really fine, hardy shrub, 2 to 3 feet high, at 18s. and 24s. per dozen. It should be known that this is quite deciduous, and (unlike the commonly known Hydrangeas, which only bloom on the tops of the ripened shoots of the preceeding year), flowers on the young shoots of the current one, and so is sure to flower where the others do not.
RODGER McCLELLAND AND CO., Nurserymen, Newry.

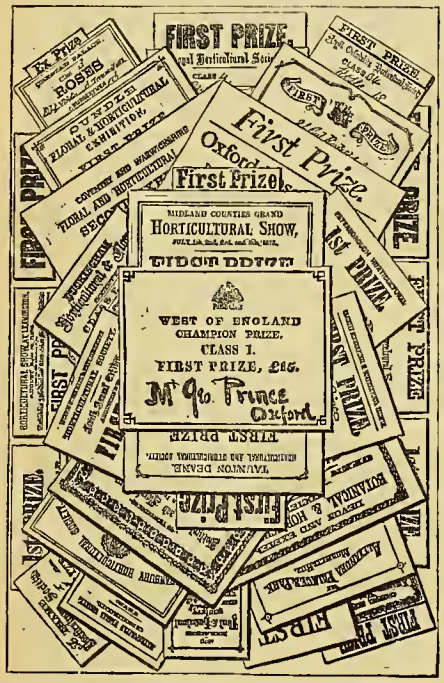
STOTT'S MONARCH RHUBARB.—The stems grow to an enormous size, and are of a fine Gooseberry flavour.

From the Canadian "Weekly Globe."—"Shirley Hibberd says that any one who wants a Rhubarb that makes leaves as big as a dining table, or stems as thick as a Cedar Tree, that rise as high as a tall human dwarf, should order Stott's Monarch at once. After being at sea for three years as to the whereabouts of this wonderful Rhubarb, he has at last discovered that it is to obtained from Stuart & Mein, Kelso."

Roots 1s. 6d. each.

STUART, MEIN AND ALLAN, Nurserymen and Seedsmen, Kelso.

DWARF ROSES
ON THE
CULTIVATED SEEDLING BRIER.



The only establishment where this stock is used exclusively for Roses.

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GEORGE PRINCE,
14, MARKET STREET, OXFORD.

PLANTING SEASON.
FOR IMMEDIATE EFFECT.
JAMES IVERY & SON
Beg to offer well-grown stuff of the following, at very low prices, being overstocked with them :—

LAURELS, fine bushy plants, 6, 7, and 8 feet.
YEWS, fine bushy plants, 6, 8, and 10 feet.
GREEN HOLLIES, fine bushy plants, 5, 7, and 9 feet.
TREE BOX, fine bushy plants, 5 to 6 feet.
IRISH YEW, fine bushy plants, 6, 7, and 9 feet.
CUPRESSUS LAWSONIANA, fine bushy plants, 10 to 12 feet.
LARCH FIR, 8 to 10 feet.
PINUS AUSTRIACA, 6 to 10 feet.
,, STROBUS (Weymouth Pine), 6 to 10 feet.
ARAUCARIA IMBRICATA, splendid specimens, 8, 10, and 20 feet.
PINUS EXCELSA, splendid specimens, 10, 15, and 20 feet.
SPRUCE FIR, splendid specimens, 8, 10, and 12 feet.
SILVER FIR, splendid specimens, 10 to 12 feet.
SYCAMORE, 10 to 15 feet.
BIRCH, 10 to 12 feet.
AILANTUS GLANDULOSA, 8 to 10 feet.
POPLARS, in variety, 6, 8, and 9 feet.
LIMES, very fine, straight stems, 10, 15, and 20 feet.
NUTS, various, large quantities, including many of Webb's new kinds, 4, 6, and 8 feet.
WALNUTS, standards, fine heads, stems 5 to 6 feet.
MULBERRIES, Standards, fine heads, stems 5 to 6 feet; probably the largest and best stock in the kingdom.

Also a large collection of GENERAL NURSERY STOCK too numerous to mention.

Prices on application at
THE NURSERIES, DORKING, SURREY.

DICK RADCLYFFE & CO.
Supply the Trade with

ALL SEEDSMEN'S SUNDRIES and HORTICULTURAL REQUISITES, DRIED FLOWERS, CAPE FLOWERS, GNAPHALIUMS, ALL CHRISTMAS GOODS, THE NEW HYACINTH GLASS, FLOWER STICKS & LABELS, BOUQUET PAPERS, FERN CASES, AQUARIUMS, &c.

List on application.—Special Prices for Large Buyers.

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WM. PAUL & SON,
(Successors to the late A. Paul & Son, Established 1806.)
ROSE GROWERS,
TREE, PLANT, BULB, AND SEED MERCHANTS,
WALTHAM CROSS,
HERTS,
Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

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DAISIES, best red and white varieties in cultivation, and POLYANTHUS, 1s. per dozen, 5s. per 100.
SEDUMS, acre aurea, acre elegans, glaucum, lividum; SEMPERVIVUM tectorum and californicum; ANTENNARIA tomentosa; MENTHA gibraltaricum, 1s. 6d. per dozen, 8s. per 100.
ALYSSUM saxatile, ARABIS alpina and caucasica fol. var.; IBERIS coriifolia and Tenoreana; PHLOX frondosa and verna; SILENE pendula compacta; SAPONARIA ocymoides; STELLARIA graminea aurea; MYOSOTIS dissitiflora, sylvatica, and alba or rosea, 1s. 6d. per dozen, 10s. per 100.
SWEET WILLIAMS, 1s. 6d. per dozen, 8s. per 100.
WALLFLOWERS, 1s. per dozen, 6s. per 100.
PRIMROSES, double white or lilac; HEPATICAS, double red or single blue; GENTIANA ACAULIS, 4s. per dozen, 30s. per 100.
PRIMROSE, Double Sulphur, 3s. per dozen.
Choice named exhibition varieties of PANSIES, PINKS, PHLOXES, and PENTSTEMONS, 4s. per dozen, or 12 of each for 14s.
DELPHINIUMS, POTENTILLAS, PYRETHRUMS, PÆONIAS, fine named sorts, 6s. per dozen, or 12 of each for 21s.
CARNATIONS and PICOTEES, fine exhibition sorts, 7s. per dozen plants.
Bedding PANSIES and VIOLAS, in distinct colours, white, yellow, blue, purple, &c., named sorts, 1s. 6d. and 2s. per dozen, 12s. and 16s. per 100.
TULIPS, 1s. to 2s. 6d. per dozen.
CROCUS, 1s. 6d. to 3s. per 100.
Border HYACINTHS, 3s. per dozen, 20s. per 100.
Collections of 100 HERBACEOUS PLANTS, in 20 to 50 varieties, 16s., 20s., and 25s.
Collections of 100 CARPET BEDDING PLANTS, in variety, 8s., 12s., and 15s.
Collections of 100 SPRING FLOWERING PLANTS, in variety, 8s., 12s., and 15s.
Collections of 100 SPRING FLOWERING BULBS, in variety, 6s., 9s., and 12s.
Collections of 500 SPRING FLOWERING BULBS, in variety, 21s., 30s., and 50s.
Collections of BULBS for conservatory decoration, 21s. and 42s.
Collections of FLORISTS' FLOWERS for exhibition, 50 plants in 50 sorts, 15s., 21s., and 30s.; 100 plants in 100 sorts, 25s., 35s., and 50s.

CATALOGUE of Bulbs, Roses, Fruit Trees, Spring-flowering and Herbaceous Plants, &c., post-free.

WILLIAM CLIBRAN & SON,
THE OLDFIELD NURSERIES, ALTRINCHAM.

AERIDES ODORATUM,
Four fine Specimens, one with 10 growths.
Price on application.

PELARGONIUMS.
Strong Plants, in large 60's, of—
BEAUTY OF OXTON, | QUEEN VICTORIA,
CAPTAIN RAIKES, | ELEGANTISSIMA,
PRINCE OF NOVELTIES,
and other good varieties, at 12s. per dozen.

Mentha pulegium gibraltaricum,
in pots, 1s. 6d. per dozen.

TELEGRAPH CUCUMBER SEED (true).
No other variety grown.
In packets, post-free 1s. per packet.

Price to the Trade on application.

A. WATKINS, Nursery, BISHOP STORTFORD.

THE QUEEN'S SEEDSMEN,
HIGH HOLBORN LONDON, W.C.

VIOLETS, SWEET VIOLETS.

MARIE LOUISE, double, light blue, white centre, flowers very free and continuous from September to May.
VICTORIA REGINA, large single Violet, very fine.
WHITE CZAR, the best white.
BLANDYANUM, large double Violet.
KING of VIOLETS, large double Violet.
REINE DES VIOLETS, large double white.
NEAPOLITAN, double lavender.
,, single lavender.
Strong clumps of the above 6s. per dozen, 42s. per 100, suitable for potting in 48-inch pots, or forming beds and masses in flower gardens. Now is the time to plant to ensure flowers all winter and spring.
BELLE DE CHATENAY, new double white, 1s. 6d. each.
PATRIE, new double blue, very free flowering, 1s. each.
One small plant of the ten varieties free by post 5s. 6d.
Trade price on application.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Fruit and Forest Trees, Ornamental Shrubs, SEEDS, &c.

J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.

The "ORCHARDIST," price 3s. 6d. The best work on Fruit Trees and their cultivation in the English language.

Kent—The Garden of England.

THOS. BUNYARD AND SONS offer the finest Stock in the Trade of
10,000 Standard CHERRIES,
15,000 Standard PEARS,
1,000 Standard MULBERRIES,
KENT COB NUTS, and other FRUIT TREES.

Prices of which may be found in their Trade LIST, just published.

Also cheap and fine AUCUBAS, 2 to 6 feet; trained PLUMS and PEARS, RHODODENDRON PONTICUM, SPRUCE, large; YUCCAS, ELMS, LIMES, and other FOREST TREES, CLIMBERS, &c.

THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

New Fuchsias of 1877.

H. CANNELL has now a fine stock of the above, and will send a dozen distinct varieties post-free for 5s.; in 60's, 6s.

Winter Flowering Tropæolums.

H. CANNELL has all the best varieties, and will send six most distinct for 4s., post-free; or established in 60's, 5s. These planted at once will give an innumerable quantity of flowers all the winter.

Ripe Fruit of

STRAWBERRY GARIBALDI now commands a high price. See the awards made at the two last Committee Meetings of the Royal Horticultural Society. Any quantity of fine plants of this most wonderful Strawberry, warranted true, 5s. per 100.

See CATALOGUE, sent post-free, of all the approved Kent varieties.

Special prices quoted for Sir J. Paxton, President, and Eleanor. H. CANNELL, Swanley, Kent.

To the Trade Only, for Cash on Delivery.

HELLEBORUS NIGER.—A few hundreds of blooming plants, £5 per 100
DIELYTRA SPECTABILIS, strong, 20s. per 100.
VESUVIUS GERANIUM, bloom splendid trusses, 10s. per gross.
THOMAS KITLEY, Oldfield Nursery, Bath.

AMERICAN BLACKBERRY CUTTINGS, of the Kittatinny variety.—A few hundred specimen cuttings of this celebrated American Berry have been imported by the subscribers from New England, and will be sold at 15s. per dozen. Post-office order to accompany. They will be carefully packed and delivered at any railway station in Liverpool. An Illustrated Descriptive CIRCULAR sent on application with postage stamps.
D. C. LOWBER, 35, Chapel Walks, Liverpool.

Seedling Forest Trees, &c.

THE SUBSCRIBERS' NURSERY TRADE LIST will be forwarded to any address on receipt of Business Card.
W. P. LAIRD AND SINCLAIR, Dundee.—November 12.

Pansies, Pansies.

WILLIAM PAUL, Paisley, N.B., has upwards of 20,000 Show and Fancy PANSIES, in splendid condition, 4s., 6s., to 12s. per dozen.

W. P. was awarded Silver Medal and six First Prizes at Scottish Pansy Show, June, 1877. First Prize of £6 for 24 Show Pansies (open to all) at Paisley, July, 1877. First Prize for 24 Pansies, at Newtownards, Ireland, July, 1877, &c.

Orders carefully forwarded by Post or Rail. The Trade supplied.

To Large Planters and the Trade.

LIMES, Red-twigged, from 6 to 7, 7 to 8, 8 to 10, and 10 to 12 feet.
YEWS, English, well furnished, 2½ to 3, 3 to 4, and 4 to 5 feet.
CHESTNUT, Horse, 6 to 12 feet.
LAURELS, 2½ to 3, and 3 to 4 feet.
OAKS, Hedge-row, and Standard ROSES, &c.
Prices and sample dozens on application.
A. GODWIN AND SON, Ashbourne, Derby.

Seakale, Asparagus and Rhubarb.

ROOTS FOR FORCING.

EXCEPTIONALLY FINE, VERY LOW PRICES

For Special Quotations apply to
H. THORNTON,
12, MAXWELL ROAD, FULHAM, S.W.

DUTCH ROOTS.

CHARLES LEE & SON

Have received a large Consignment of

HYACINTHS AND OTHER DUTCH ROOTS,

FOR WHICH THEY HOPE TO BE FAVOURED WITH EARLY ORDERS.

Catalogues post-free.

ROYAL VINEYARD NURSERY AND SEED ESTABLISHMENT,
HAMMERSMITH, LONDON, W.

NEAPOLITAN ONION SEED.

NEAPOLITAN GIANT ROCCA
NEAPOLITAN GIANT EARLY WHITE TRIPOLI
NEAPOLITAN GIANT LATER WHITE TRIPOLI
NEAPOLITAN GIANT FLAT RED TRIPOLI
NEAPOLITAN MARZAJOLA WHITE
NEAPOLITAN NEW QUEEN.

G. V. DE LUCA

Has all the above well-known varieties of these deservedly esteemed Onions now in Stock and ready for immediate delivery.

Price 2s. 6d. per lb. Special Quotations for Quantities.

See *Gardeners' Chronicle*, January 20, 1877.

G. V. DE LUCA, 5, GUILDHALL CHAMBERS, BASINGHALL STREET, LONDON, E.C.

IMPORTANT.

We, the undersigned, certify that all the above varieties of Onion Seed have been carefully tried by us, with a good result, especially the Giant Rocca, which proved excellent growths.

(Signed), W. ROLLISSON AND SONS, The Nurseries, Tooting, S.W.

RARE DENDROBIUMS,

FROM NEW SOUTH WALES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 22, at half-past 12 o'Clock precisely, 150 plants of the rare DENDROBIUM JOHANNIS, several of them very fine, with from ten to fifteen stems; and about 400 plants of DENDROBIUM BIGIBBUM, many of them splendid strong plants, with from ten to fifteen stems; among these will probably be found several varieties, and, doubtless, the beautiful DENDROBIUM BIGIBBUM SUPERBUM, for some of the plants have stout strong stems, upwards of 2 feet in length.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

Pseudo-Larix Kæmpferii (Chinese Golden Pine).

ROVELLI BROTHERS, Horticultural Establishment for the Introduction of New Plants, &c., Pallanza, Italy, can supply a large quantity of fresh Seed of the above, of their own growing (sure to germinate, first quality), at the following prices:—100 seed, 20 francs; 1000 seeds, 175 francs; 10,000 seeds, 1500 francs. All orders to be addressed
FRATELLI ROVELLI, Pallanza, Italy.

Grape Vines.

MESSRS. OSBORN AND SONS possess this season an unusually fine stock of thoroughly healthy, stout, well-ripened Fruiting and Planting Canes of the best varieties in cultivation, including Novelties of established good repute; also a fine collection of FIGS, in pots.

A Descriptive Priced CATALOGUE (inclusive of Fruits generally), free on application.
The Nurseries, Fulham, London, S.W.

MR. A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine Plants of Budded CAMELLIAS, Indian AZALEAS, Ghent AZALEAS, LATANIAS, CHAMÆROPS, PHŒNIX and other PALMS, table sizes; also SPIRÆA JAPONICA, fine clumps. Prices on application.
The New CATALOGUE, just issued, sent to applicants.

JOHN LUFF, St. Helen's Nursery, Hastings, offers as under, at low prices for Cash, to clear ground for other Stock; the plants have been twice and thrice transplanted, and are growing on high and exposed ground, and will move well. Samples at same rates:—
LIMES, 4 to 6 feet, 4s. per dozen; 6 to 8 feet, 9s. per dozen.
ELMS, 4 to 6, 40s. per 100; 6 to 8 feet, 50s. per 100.
SYCAMORE, 5 to 7 feet, 30s. per 100; 8 to 9 feet, 50s. per 100.
HORNBEAM, 4 to 6 feet, 10s. per 100.
NORWAY MAPLE, 4 to 6 feet, 15s. per 100; 6 to 9 feet, 30s. per 100.
FIR, Silver, 3 to 4 feet, 3s. per dozen; 4 to 5 feet, 6s. per dozen; 5 to 6 feet, 9s. per dozen.
,, Spruce, 3 to 4 feet, 6s. per dozen; 4 to 5 feet, 9s. per dozen; 5 to 6 feet, 12s. per dozen.
,, Scotch, 2 to 4 feet, 12s. per 100; 4 to 6 feet, 15s. per 100; 6 to 8 feet, 25s. per 100.
ARBOR-VITÆ, American, 2 to 3 feet, 4s. per dozen; 3 to 4 feet, 6s. per dozen.
THUJA GIGANTEA, 3 to 4 feet, 6s. per dozen; 4 to 5 feet, 9s. per dozen.
YEWS, English, 2 to 3 feet, 8s. per dozen; 3 to 4 feet, 12s. per dozen; 4 to 5 feet, 18s. per dozen.
ASH, 2 to 4 feet, 25s. per 1000.
HOLLIES, Green, 1½ to 2½ feet, 5s. per dozen; 2½ to 3 feet, 6s. per dozen.
ASPARAGUS, 20,000 Grayson's Giant, 2-yr., 2s. per 100.
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GENERAL NURSERY STOCK.

WOOD & INGRAM'S
GENERAL DESCRIPTIVE
CATALOGUE of NURSERY STOCK,
INCLUDING:—
FRUIT TREES, FOREST TREES,
HARDY CONIFEROUS and TAXACEOUS PLANTS, EVERGREENS,
DECIDUOUS ORNAMENTAL TREES and SHRUBS,
HARDY CLIMBERS,
ROSES, &c.,
Is now ready, and will be sent free on application.

The Nurseries, Huntingdon.

BEAUTY OF HEBRON POTATO.—This new American sort is now offered for the first time. This valuable Potato originated in 1874 from seed bulbs of the Chili Red. The vines and leaves strongly resemble those of the Early Rose, only more vigorous. The plants appear above-ground very shortly after planting, and from that time continue to grow with great rapidity, outstripping all other varieties in strength of growth and luxuriance of foliage. On this account it will be understood they withstand better the ravages of the Colorado Potato Beetle than any other Potato yet brought before the public. The tubers, shaped like those of the Early Rose, are very smooth, slightly tinged with pink around the eyes, but attain a pure white colour during the winter. Their yield is really enormous. The tubers lying closely together in the hills, the labour of digging them is but slight. In point of earliness it may be ranked as ripening at least twelve days earlier than the Snowflake, and no less than three or four days ahead of the Early Rose. For culinary purposes its mealy qualities and richness and delicacy of flavour give it a precedence before all other varieties. Contrary to what is usually the case in all large specimens of Potatos the Beauty of Hebron almost invariably prove sound and solid to the core.

May be obtained of the principal Seedsmen of England.
J. M. THORBURN AND CO., 15, John Street, New York, U.S.A.

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SUTTON'S FRESH IMPORTED FLOWER ROOTS,

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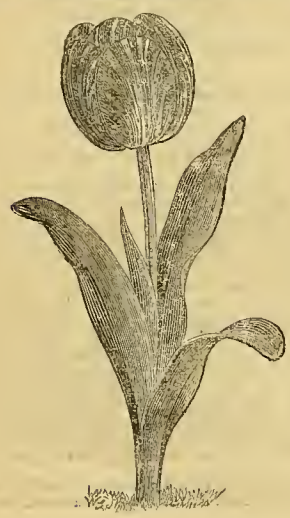

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11.	A Beautiful Collection for Conservatory and Window Decoration	*1	1	0
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HYACINTHS,

For Pots and Glasses.

	£	s.	d.
Very choice sorts			
100 in 100	4	4	0
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12 in 12	0	12	0
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SUTTON'S
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25 splendid varieties .. 42*s.*
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For Beds or Open Borders.

3*s.* 6*d.* per dozen, 27*s.* 6*d.* per 100.

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Fine Named Varieties,

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1000 in 25 named sorts ..	35	0
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For Open Ground.		
1000 in 5 varieties	18	0
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Large Blue } 2*s.* per 100
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Largest Yellow, 2*s.* 6*d.* per 100.

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DOUBLE FLOWERING, 2*s.* 9*d.* per 100.
Do., do., extra large, 3*s.* 6*d.* per 100.
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POLYANTHUS NARCISSUS,
100 fine mixed, 15*s.*

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DOUBLE WHITE, 1*s.* 6*d.* per dozen, 10*s.* per 100.
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BICOLOR, 3*s.* 6*d.* each.
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CAMPERNELLE JONQUILS,
1*s.* per dozen.

SUTTON'S CHOICE TULIPS.

SINGLE EARLY.

FINEST MIXED, 1*s.* per dozen, 7*s.* 6*d.* per 100.
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LARGE DOUBLE.

FINEST MIXED, 1*s.* per dozen, 7*s.* 6*d.* per 100.
REX RUBRORUM, 1*s.* per dozen.

LATE SINGLE.

100 in 100 choice varieties, 30*s.*
FINEST MIXED, 1*s.* 6*d.* per dozen, 10*s.* 6*d.* per 100.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

Send for a PRICE LIST of

BLAKE'S SELF-ACTING

HYDRAULIC RAMS,

For Raising Water for the Supply of Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

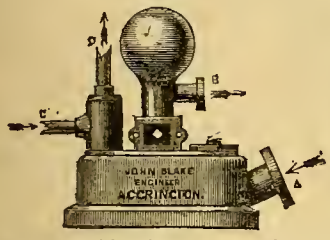
No Cost for Motive Power, which is obtained from the Stream of Water passing through the Rams.

NO OILING OR PACKING REQUIRED.

Made in sizes to raise from 300 to 100,000 Gallons per day.

WILL FORCE TO A HEIGHT OF 1,500 FEET.

This advertisement will appear again in three weeks.



This Ram will raise a part of the same water that works it, or will raise pure water from a well whilst it is worked by a stream of impure water.

TESTIMONIALS.

From the Right Hon. T. SOTHERN ESTCOURT, *Estcourt Park, Gloucestershire. September 6,* 1875.

"You will be glad to hear, as I am to tell you, that your Self-actiog Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful."

(The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

From Captain TOWNSHEND, *Wineham, February* 10, 1877.

"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000."

From JOHN BARNES, Esq., *Contractor, Chatburn and Helliefield Railway, Contractor's Office, March,* 1877.

"Dear Sir,—I have the pleasure to inform you that the three Hydraulic Rams you erected for me on this contract about two years ago, have continued to work very satisfactorily, without requiring any repairing. With a fall of 5 feet sufficient water has been raised daily by each Ram to supply two of my locomotive engines: they have fully answered my expectations and all that has been said of them."

Deanwater, Wilmslow, November 20, 1873.

"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house aboout 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required, namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—I am, yours truly, L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.

"Sir,—Your self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seeo once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours to a height of 194 feet."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.

"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

JOHN BLAKE,
ENGINEER, ACCRINGTON.

SATURDAY, NOVEMBER 17, 1877.

PLANT NAMES:

THEIR PRONUNCIATION.*

I. IN classical words, and in botanical names, and terms constructed upon classical models, there are usually as many syllables as there are vowels. So far, they are represented in the English names and words Anna, Phœbe, society, panorama, pictorial. The exceptions to this rule are as follows:—

(*a.*) When *u*, with any other vowel, follows *g*, or *q*, or *s*, the two vowels are run together, as in Guarea, Quisqualis, Suecicus.

(*b.*) The diphthongs *a e*=*æ*, and *o e*=*œ*, are sounded as a single letter, as in Æthusa, Hæmanthus, Dracæna, Œnanthe, Anæctochilus.

(*c.*) So also are the digraphs *e i* = *ei*, sounded like *i*, as in Geissois; and *e u* = *eu*, sounded like *u*, as in Eugenia. Single syllables are also constituted of the diagraphs *ai*, *au*, *oi*, *ou*, with their contiguous consonant, as in Ailantus, Laurus, Redoutea, and in the adjective dioicus, a, um. Such words as bromoides and festucoides constitute a distinct set. In these the *o* and *i* do not form a digraph, but are sounded separately, for reasons which will be spoken of presently. Some other proper digraphs, sounded as single syllables, will also be spoken of presently.

II. Names consist of only one syllable, as Glaux, Rhus, Phlox. Of two syllables, as Crocus, Bidens, Cornus. Of three, as Primula, Narcissus, Solanum. Of four, as Aralia, Polyanthus, Dendrobium, Rhododendron; of five, as Anæctochilus, Didymochlæna, Eriophorum; or of six, as Tetragonolobus. Names of Natural Orders sometimes run to seven, as in Chamælauciaceæ. Adjective terms, employed to distinguish species, run from two to seven, as albus, arvensis, poeticus, depauperatus, angustifolius, caryophyllaceus.

When a word consists of more than one syllable, the constituent members are not called the first, second, third, fourth, &c., but are reckoned backwards from the concluding one. The syllable which immediately precedes the last is called the *penult;* and when there are more than two, the syllable preceding the penult is called the *antepenult.*

In Nymphæa, Phaseolus, and Didymochlæna, the *phœ*, the *o*, and the *chlœ*, are the respective penults; while the antepenults are the *Nym*, the *se*, and the *mo*.

If a word consists of only two syllables, the name of penult is still employed, in this case denoting what would popularly be called the first. In Bidens and Pinus, the *Bi* and the *Pi* are the respective penults.

In order that an antepenult shall exist, of course the word must consist of at least three syllables.

Observe particularly, that it is either upon the penult or the antepenult that the accent invariably falls.

III. In words of only two syllables it falls, necessarily, upon the penult, as in Crocus, Bidens, Cornus, Pinus, Iris, Bromus; albus, ruber, nutans, major, minor.

IV. When there are three or more syllables, the place of the accent is chiefly ruled by the measure of the vowel contained in the penult. (See V.)

(*a.*) When the vowel of the penult is long, the accent stays upon it, as in Sola'num, Albu'ca, Papa'ver, Lapsa'na, Eri'ca, Anemo'ne, Cyathe'a, Didymochlæ'na, Metroside'ros, Luzuria'ga; crista'tus, macula'tus, officina'lis.

(*b.*) But if the vowel of the penult be short, then the accent shifts to the antepenult, as in Bet'ulus, Tor'tula, Til'ia, Trib'ulus, Mandrag'ora, Monot'ropa, Ornithog'alum, Caprifo'lium, Siphocam'pylus, Spermadic'tyon, Aristolo'chia, ele'gans, grave'olens, auranti'acus.

(*c.*) Unless the penult ends with a consonant, and the ultimate begins with another consonant, in which case the penult again keeps the accent to itself, as in Narcis'sus, Napel'lus, Rhododen'dron, Agrostem'ma, Chærophyl'lum, Podophyl'lum, Anigozan'thus, Amorphophal'lus, Myriococ'cum arven'sis, flaves'cens, Havanen'sis, Canarien'sis, pulverulen'tus.

(*d.*) In diminutives, such as Gladiolus, the vowel of the penult is short; therefore, the accent falls on the antepenult, and we say Gladi'olus, Lute'ola, Rhodi'ola.

(*e.*) When the vowel of the antepenult is long by nature, it takes the accent as a matter of course, as in Cle'matis, Ne'rium, Pro'tea, Œnothe'ra, Jasio'ne, Stratio'tes, and other names, which in the original Greek have η or ω in the place indicated.

V. To ascertain whether the vowel of the penult be long or short, we refer, in the first instance, to the dictionary or the lexicon. When these fail to tell, we fall back upon comparison, the laws of euphony, and common-sense. Names, it must be remembered, are of various derivation, and to some extent the pronunciation is determined by their origin. Most of the old-fashioned generic names, to the number of about 300, Viola, Narcissus, Anemone, Clematis, Gladiolus, Asparagus, &c., with most of the old-fashioned specific appellations, such as arvensis, maritimus, auricomus, exist pure and simple, in either the lexicon or the dictionary, in their proper places, and with the proper accentual marks. With these, accordingly, all is straightforward.

The second class of names consists of those which have been framed in modern times, upon the models supplied in the above cited Viola, Narcissus, Anemone, &c., viz., by taking some such root-word as γερανος, πελαργος, stella, cinerea, arena, and adding to it an ornamental Latin termination, the products being Geranium, Pelargonium, Stellaria, Cineraria, Arenaria, &c. These names are all simple, as opposed to compound, and when they end like those which have been quoted, invariably take the accent on the antepenult, Gera'nium, Pelargo'nium, Stella'ria, and so forth.

But when they end in *ēa or ēum*, the accent falls on the penult, as in Pimele'a, Calathe'a, Phle'um, Rhe'um.

Adjectives formed upon original Latin bases, of the kind illustrated in arena'ceus, a, um, also have the accent upon the antepenult.

The names belonging to this section never need be mispronounced.

VI. The third and largest class of names, including both generic and specific, consists of the compounds contrived in modern times, still from classical bases, and upon the models supplied by the ancients in their Trifolium, Rhododendron, Acanthus, &c. To this class belong all such as Tragopogon, Polypogon, Polyanthus, Anæctochilus; diandrus, leucophyllus, sessilifolius. To find the pronunciation of the penult in these, we must look up the piece of the word in which the penult is contained. A very small amount of practice soon enables an attentive observer to distinguish a compound word from a simple one; to distinguish, for

* Great difficulty is often experienced by the uninitiated in the pronunciation of the names of plants. In many cases a set rule can be laid down, in other instances it is a mere matter of euphony or of custom, and sometimes it is quite arbitrary. Mr. Grindon's notes will, we hope, be found useful to gardeners and others perplexed by the difficulties of the subject. It must, however, be borne in mind that the Continental pronunciation of classical names is often very different from our own. Mr. Grindon's notes refer to the old rules of pronunciation till lately followed by all our classical scholars. It will be long ere the new system comes into general use. EDS.

example, between Geranium and Pelargonium, on the one hand, and Tragopogon and Polyanthus on the other. Nothing, at all events, is lost, and much is certainly gained, by being called upon to consider the matter intelligently and for one's self. To fail in finding Tragopogon in its entirety is a useful lesson, since we are then led to the presumption that the word is one of the compound class; the very shape of Tragopogon suggests its nature, and we look next, accordingly, for pogon, and are rewarded. So with the second portions of Poly-anthus, Anæcto-chilus, leuco-phyllus. Compound names, with long and rolling terminations of Latin fabric, such as Polypo'dium, Anictan'gium, Omphalo'bium, Polysipho'nia, invariably have the accent upon the antepenult. In hunting up the derivation and the signification of a word, of course, as with everything else that is worth doing, we are not to expect that, easy as the process soon becomes, it is to be accomplished without some effort, and the use of one's head; intelligently considering what is the object in view, the occupation soon becomes as facile as it is instructive.

If it be asked upon what authority the dictionary and the lexicon declare particular syllables to be long or short, the reply is that such is the teaching of the ancient Greek and Latin poets. Sometimes the authority sufficiently consists in the absolute or intrinsic nature of the vowel. *Leo. H. Grindon.*

(*To be continued.*)

New Garden Plants.

MASDEVALLIA FLORIBUNDA, *Lindl.; Masdevallia floribunda*, Lindl., Bot. Reg. 1843, Misc. 112, M. Galeottiana, A. Rich. Gal. Ann. Sc. Nat., 1845, Janv., p. 17, and tab. ined. 3, f. 1! *Masdevallia myriosigma*, E. Morr., Belg. Hort. 1873, pp. 359, 361, 384, cum icone; *M. floribunda var. myriosigma*, E. Morr., l.c. 380.

This is a free growing plant with densely cæspitose stems bearing spatulate shining leaves of a rather thick substance. The very thin capillary peduncles are usually shorter in the wild specimens, but are longer in such cases when the leaves have been badly developed in Europe. The flowers have an abrupt chin, and the inferior sepals are rounded at the top and suddenly extended into a short tail, when the very small free part of the upper sepal is triangular, tapering by-the-bye into a tail. The tails are altogether of a pretty yellow, as is the back of the superior sepal, where the lateral sepals are much more pallid, whitish. Very numerous little brown spots are scattered over the lateral sepals and the back of the so-called dorsal one, lighter outside, darker inside, vanishing as the flower fades, when it appears simply yellowish. This was, of course, the state in which Dr. Lindley saw it, put in a box. Petals white, with a triangular or a square production on the inferior side, and a keel on the blade, retuse at its top, with three teeth. The unguiculate lip is nearly heart-shaped at its base, constricted before the middle, and with a blunt apiculus at its tip, whitish with numerous brownish purplish spots, now with a green crescent-shaped spot before its apex. The column is unguiculate at each side of the top, and has a dark brown border.

This plant would seem, so far as our knowledge reaches, to be absolutely Mexican. It appeared in 1843 in the collection of John Rogers, Esq., of Sevenoaks, Perhaps it came from M. Galeotti, who gathered it 1840 near Vera Cruz. It is No. 5075 of his collection, and the M. Galeottiana of Achille Richard himself. He says "*fleurs lilas sur les chênes.*" This epithet "lilas" may be correct if we consider the numerous various colours of Masdevallia infracta, but it may well be a mistake from the flowers having been observed faded. I also had it from Galeotti in alcohol. Then it was collected by Liebold, from whom nine dried plants with numerous flowers are at hand. I also obtained it from the late M. Sartorius. Finally it was introduced by M. Makoy, of Liège, who informed me it was Professor E. Morren's Masdevallia myriosigma —and the celebrated Bromeliologist, indeed, quotes M. Makoy for the introduction of his new plant. It appears that this *savant* has a very narrow conception of what is a species among Orchids, so that he believes in very many species. Now as to the name (printed six times), myriosigma, it was the meaning of the Belgian *savant* to write myriostigma, I hope, since he says "myriosigma, which signifies with points." Now sigma signifies the letter *s* in Greek, while stigma is a little spot or point. But this, indeed, is quite as unimportant in comparison to the incorrect representation. It gives us pretty well a rosette of leaves with a terminal umbel or corymb

FIG. 121.—COLLETIA SPINOSA—NATURAL SIZE; FRUIT MAGNIFIED.

of flowers. A strict morphologist would get a fever at the sight. And as to the flowers, they are at all events absolutely unlike those of floribunda, the sepals altogether tapering into the long tails. Analyses unintelligible. And yet our living plant, that flowered in profusion, comes from the same source; and the last evidence (which caused my note for *Gardeners' Chronicle*) is furnished by fresh flowers received from Mr. H. Veitch, who received them as Masdevallia myriosigma from M. Lamarche. *H. G. Rchb. f.*

interesting they should not be overlooked by planters who like variety and love plants. The Colletias, named after a French botanist, Collet, constitute a genus of dry spiney shrubs of the Rhamnus family, natives of Chile and other parts of South America. In habit some resemble Gorse, others Spanish Broom, others the little Rest-Harrow of our fields. Their branches are evergreen, mostly spiney, and bear small inconspicuous leaves and pretty little white

The degree of vigour, and therefore the size and to some extent the form of the branches, is thus subject to variation, as is also the pubescence, some forms being pubescent others glabrous. Great as the variation from seed doubtless is, we do not think there is any good evidence to show that the species next to be named is a variation from C. spinosa—at least within what we may term the historic period, though there is nothing very improbable in the idea.

Fig. 122.—Colletia cruciata—natural size, with floral details magnified.

COLLETIAS.

A plant which, to use a familiar expression, created some sensation nearly thirty years ago, but which seems to have fallen from the recollection of all but a few, is Colletia cruciata. Some remarkably vigorous branches of it were shown at one of the recent meetings of the Linnean Society, where they attracted much attention, and as several specimens have reached us lately to be named, we think it may be serviceable to recal briefly what is known about it. We avail ourselves of the opportunity of mentioning some other species, for as they are all hardy and all bell-shaped flowers, sometimes in great profusion. As we have said, they are hardy, and would make excellent fences, their spiney habit making them useful to "stop a gap" in a hedge. The best known species in gardens is probably the following:—

Colletia spinosa.—A formidable fellow enough, as will be seen by the figure (fig. 121), which is so characteristic that we need say no more about it, save to remind the reader that it has several aliases, *e.g.*, C. spinosissima, C. horrida, C. polyacantha, C. armata, of Miers; C. ferox, of Gillies; C. valdiviana, of Philippi. These are, in our opinion, either synonyms, or trifling varieties of the originally described form.

C. cruciata.—This is indeed a striking plant. Our figure (fig. 122) shows a branch of moderate size, but the specimens shown at the Linnean Society were much larger—larger indeed than any native specimens we have seen. The branches here form stout flattened triangular sharply-pointed outgrowths arranged in pairs, the pairs crossing each other at right angles. The texture is woody, the colour deep green. The little waxy-white bell-shaped flowers hang from tiny little stalks beneath the formidable spines. They have no corolla, and five short stamens attached to the throat of the white calyx. At the bottom of the flower tube there is, as in all the other species, a

little process, technically a "disc," rolled up like a volute, which secretes honey and indirectly serves in the fertilisation of the flower. This curious little disc is precisely similar to that met with in the bottom of the flower-tube of some Passion-flowers, and affords a good instance of close similarity of structure in two plants of widely different botanical kinship. The truth is, the end to be obtained is the same in both cases. The characteristics which are peculiar to or distinctive of plants are congenital and hereditary, but an organ devised to secrete honey and attract insects is often a secondary or adaptive character, which does not make its appearance at birth, so to speak, but subsequently, when the requirements of the plant demand its appearance. However, this is a little bit of botanical philosophy which planters will not care for. Let us, for their behoof, state that to our knowledge the plant is quite hardy near London, that its white flowers are now in full bloom, and that its striking appearance never fails to excite curiosity. One drawback it has, for which we can offer no good reason, and that is a tendency for some of its branches to die off—how or why we know not—we only know that the dead branches thrust into a gap in a hedge, formerly much traversed by suburban cats, have proved very effectual in barring access by that route to such undesirable visitors. The plant is a native of Maldonado, Monte Video, &c., and was originally described from wild specimens by the late Sir William, then Dr. Hooker, in the *Botanical Miscellany*, vol. i., t. 43, p. 172.

By oversight or forgetfulness, the late Dr. Lindley, nearly twenty years later, described the plant in vol. v. of the *Journal* of the Horticultural Society of London, (1850) as Colletia hictonensis. According to the account there given, Sir Philip Egerton noticed the plant at Bicton, and asking the gardener, the late Mr. James Barnes, as to its history, received for answer that it was a seedling variety raised by himself from C. horrida (spinosa). At first Mr. Barnes did not remember the history of the plant, but on being reminded by his foreman he made the just quoted statement. As we have said, the natural variation of plants is so great that there is no absolute impossibility in Mr. Barnes' statement, but when we consider that the wild plant was well known and figured twenty years before, that plenty of wild specimens are in the herbaria, and that Mr. Barnes' recollection was at first not very clear on the matter, and that, lastly, though Colletia spinosa ripens its seeds pretty freely, the variation has not been reproduced, there is, we think, ample ground for considering the plant to be a truly wild plant and not a seedling from C. spinosa. The fruits of the two species are very much alike, and might readily be confounded.

C. SPARTIOIDES, of Bertero, is a native of Juan Fernandez, and if not already introduced should be. Its long, slender, flattened, virgate branches render it desirable. We only know it in a dry state.

C. EXSERTA, of Klotsch, is a Brazilian species, very similar to C. cruciata, but with more slender lanceolate branches. This would probably be too tender for outdoor culture.

C. ULICINA, Hook., is a charming little plant for those who like curiosities. It is a low growing, dense, intricately branched little shrub, the smaller branches very slender, stiff, and spiney, exactly like the dwarf Gorse, Ulex nanus, but densely pubescent. It is a native of Chile.

C. DUMOSA, of Miers, also a native of Chile, is very like C. spinosa, but denser and more pubescent.

C. FEROX, of Gillies, is we believe the same as C. spinosa.

C. PARVIFLORA, gathered in the Galapagos by Darwin, is a very curious species, in the way of C. spinosa, but with more elongate curved branches. It would probably succeed in the conservatory or winter garden, but is not, so far as we know, in cultivation.

C. VALDIVIANA, of Philippi, is probably only a form of spinosa.

C. NANA, of Clos, the Ochetophila prostrata of Miers, is a very curious species, very desirable for rockwork. It is a dwarf, compact, rugged, woody little shrub, the branches grey and rough, spreading on the soil or scarcely raised above it, and densely covered above with minute rather thick leaves. A little gem for the connoisseur, but we fear not in the country.

Lastly we may mention C. SERRATIFOLIA, sometimes called Discaria serratifolia, figured by us on a previous occasion (see p. 619), and which in some seasons at Kew is a perfect sheet of bloom—very beautiful, but we never saw it out of Kew, though it is in a frequented part of the pleasure-grounds, where in the season it must be seen by thousands of the public, and probably hundreds of gardeners and landscape gardeners.

Other plants of near alliance are Retanella ephedra, sometimes called Colletia ephedra; Trevoa trinervis, and Talguenea costata, of Miers, which to the general habit of those before-mentioned add the charms of silvery leaves. We trust we have given a few hints alike to planters and to our enterprising nurserymen, who have not yet got all the good plants.

CALANTHES.

THE season of flowering of the Calanthes in the stoves is again at hand. In this dull weather, when every flower outside is washed out or broken by storm, these indoor subjects repay the labour upon them, as they are clean, and decidedly of the first class. Even when the Chrysanthemums are in flower—and a fine show they make from their variety of colours—for purity it may be said they do not equal the Calanthes, nor do they last so long; still, the Chrysanthemums are plants which every one can grow, while the Calanthes are truly stove subjects, and cannot with any great degree of success be treated out of their own fixed quarters. The flower-spikes of the Calanthes are well adapted for cutting, as they last well; but when the whole flowering plants are set in a cool place, they invariably soon suffer; so that if flower-spikes are so good for decoration, or single flowers lasting fairly compared with other flowers, the plants themselves when in flower are best not much removed out of their flowering quarters. Winter-flowering things, such as Eucharis amazonica, when in bloom, do well removed to the conservatory; but if fine pots of Calanthes are taken there in a similar way, the result may be that before long the flowers get spotted as a result of the cold or damp, and if they remain too long there the same effects may reach the bulbs, and the consequence may prove a loss in every way.

A very pleasant show of colour can be made in the plant-stove with the three varieties—Calanthe vestita-rubra, C. Veitchii, and C. vestita luteo-oculata. The first-mentioned was introduced some time before the others, and may be considered an old plant, but still in point of merit it stands at the top of the list. Calanthe Veitchii, being of such a beautiful pink, is well adapted for showing off the others, but generally it may scarcely prove so fine as C. rubra. It is a more upright grower, and lasts a longer time in flower, which is an additional advantage in its favour. To cultivate these Orchids fairly well, and even what might be termed very successfully, no Orchid-house, strictly speaking, is required—the ordinary treatment, as far as atmospheric conditions is concerned, that is given to stove plants, is quite sufficient. When grown amongst stove and ornamental plants largely, perhaps the only objection to them is, that when they are not in flower they are very ordinary looking subjects.

Perhaps as good a plan as any of treating these Orchids is to plant from six to eight good bulbs in a 12-inch pot, when, if the variety be C. vestita-rubra, and the plants do well, they will throw about a dozen spikes of flowers, and these being nicely curved gives a good proportion to the whole. In some cases when the plants are in flower a good deal of the foliage has died away, but if the leaves and bulbs have been kept clean of brown-scale, which they are subject to, and the bulbs not dried off too soon, a fair coating of leaves can be had on the plants when they are at their best.

As might be expected these plants in summer do best under liberal treatment as far as water and sunlight are concerned, and aswell as this a good rich compost for them to grow in tends to insure a good display of flowers. As is the case with all plants that require copious watering in the growing season, the drainage should be made thorough. If, for example, a 12-inch pot be used for Calanthes, about half may be filled with crocks, so as to make the operation good. A compost of turfy loam and peat, and lumps of dry cow-dung mixed together suits very well. When the compost is being put in the pots it is best made higher than usual—rounded up towards the centre. When the bulbs are set on the surface a sprinkling of sand may be put over the soil, which by the after watering will be washed down. Assuming that bulbs have just been planted when they are starting, they will not require so much water till the foliage is fully on, when as a matter of course they are in full vigour and require it liberally. Towards the end of the year they require much less, still it is best when their season of rest is approaching—their time of flowering — not to withhold the water too soon but gradually, according to the foliage; as it naturally dies away the natural season of rest asserts itself. By the time every bit of green foliage is about off the flower-spikes will be getting well spent, and when they are off a period of thorough rest from apparent growth will be the result. While in that state they require no water, and may be set all together in some corner of the stove. By the time they have had their allotted time of rest they will show in due course that they are in keeping with the season, ready to start when spring returns. *R. Mackellar.* [Our correspondent has favoured us with very fine spikes of the varieties he mentions. EDS.]

THE BARNET AND HIGHGATE NURSERIES.

THE Barnet Nursery, established by the late Mr. William Cutbush, had a good reputation under his management for its stocks of stove and greenhouse plants, and New Holland plants especially, which were grown, and well grown, in considerable numbers; and we were pleased to learn, when we paid a visit to the nursery a short time ago, that since it came into the possession of his brother, Mr. James Cutbush (Messrs. William Cutbush & Son) it has lost none of its former reputation, but has, on the contrary, we think, somewhat enhanced it. The nursery is situated about half a mile from the High Barnet Station, and a mile and a-half from Barnet, on the main line of the Great Northern Railway, and is especially interesting at this season both to planters and those who are getting in their annual supplies of winter and spring flowering hard-wooded plants. Heaths and Epacrises are largely and especially well done, the number of the former annually grown into a saleable size, in the regulation 48-sized pot, being no less than 30,000. The species and varieties cultivated are about 130, but the sorts grown to the largest extent are the popular E. hyemalis, E. Wilmoreana, and E. Sindryana. The last named is not usually considered one of the easiest plants to grow, but as seen here it is as free a grower and bloomer as E. hyemalis. It is a circumstance worthy of remark that all the Heaths here are better set with flower-buds this season than they have been for several years [Is this general?], and certainly a more cleanly and vigorously grown lot could not be desired. Amongst the winter flowering sorts now in bloom we noted the pretty small-flowered E. gracilis and E. caffra, and E. arbuscula, a species not much grown by the trade, but a nice growing and free flowering subject. That certain plants naturally do better in some places than others is a truism which we allude to only as it applies to certain Heaths which do especially well in this nursery, and amongst which we may note the spring flowering variety of E. gracilis, the dark flowered E. hybrida—a good thing, E. assurgens, E. persoluta alba, E. pyramidalis, &c. The Epacrises looked as well as the Heaths, and we need say no more of this genus than that the collection includes all the best species and varieties, some sixty in number.

The collection of Camellias is a very complete one —over eighty sorts, and the plants range in size from well-furnished pyramids 9 feet high to small stocky little specimens in 48's, the sorts most favoured being the old double white, C. imbricata, C. fimbriata, and C. Matthotiana, and these are grown in quantity. Next to the Camellias a grand lot of Solanums came under notice. These solely consisted of S. pseudo-capsicastrum, of which about a thousand are grown from cuttings into a size suitable for decorative purposes, and handsome they are with their full crop of scarlet berries. For table decoration a nice lot of half standard specimens in pots of Aucuba japonica vera are annually prepared, and to judge from their neat habit and excellent crop of coral-red berries, we should think they would have a decidedly good effect on the table. Nothing could be more cheerful or pleasing during the dull winter months, and if table plants must be provided, it is well to know that hardy plants of this character can be had for the purpose.

In several of the houses we noticed quantities of handsome young specimens of the graceful narrow-leaved Dracæna australis, and a fine lot of young

plants of the old and favourite Ardisia crenulata, beautifully set with berries. This and Darwinia (Hedaroma) tulipifera may almost be said to be specialities, so well are they done in quantity. The last-named are in sizes from the half specimen downwards, and a particularly healthy well-furnished lot they are, as a result of a system of treatment directly opposed to coddling of any kind. Phœnocomas are also represented in a first-rate style; and the same remark applies with equal force to the examples of Dracophyllum gracile, which are noticeable on account of the numbers grown and their strong robust appearance; and of Boronias pinnata and serrulata, beautifully furnished samples. The true Gompholobium polymorphum splendens, Leschenaultia formosa, Witsenia corymbosa, Statice profusa and S. Holfordii, Eriostemons scabrum and pulchellum, Aphelexis, Tetrathecas, Chorozemas, Pimeleas, Corræas, Acacias, and Bouvardias are also largely and well done. So, too, amongst stove plants are Eucharis amazonica and Epiphyllums, of which latter the collection includes some fourteen sorts. E. tricolor is the most extensively grown of any. Azaleas in small sizes also claim a considerable share of attention, and so do such useful fine-foliaged decorative plants as Dracænas.

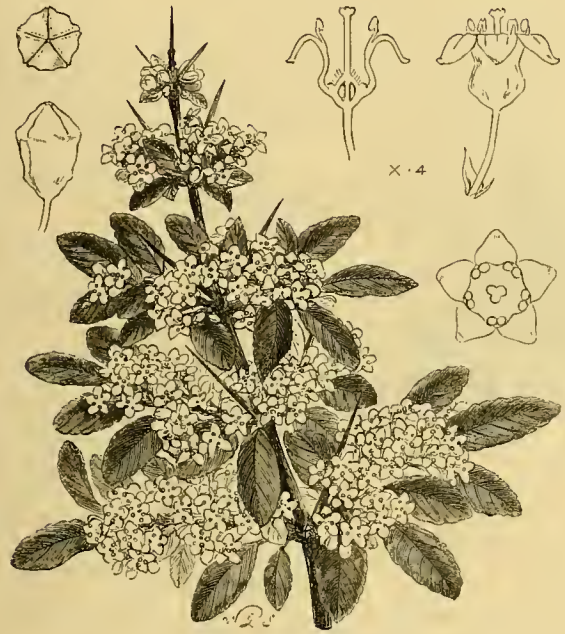


Fig. 123.—Colletia (Discaria) serratifolia. (see p. 618.)

Another subject grown in quantity in small pots for table decoration is the handsome Grevillea robusta, and for early forcing Daphne indica rubra.

While the hard-wooded plants are in their summer quarters in pits and frames, the houses are employed in the culture of pot Vines, of which a goodly number are annually grown to meet a ready sale.

In the outdoor department we noted a nice collection of Ivies, which is being rapidly worked up; and various breaks of neatly-trained fruit trees, especially Apricots, Peaches, and Nectarines and Pears, but these subjects are only grown in limited numbers here—this department being better done along with Roses and various hardy shrubs at the branch nursery at Finchley, where some seven acres are devoted to them. Violets do well here on the cool soil, and the staple sorts are The Giant, Neapolitan, and Russian, coming into flower very freely. The leading speciality amongst hardy plants is, however, the variegated Hollies, of which there is here a larger collection than we have seen anywhere in the neighbourhood of London. The plants are of all sizes, and good in quality. Golden Queen is the most largely grown of all, and next perhaps in importance is Waterer's golden variety, another one named marginata argentea, and the variegated Handsworth. Green-leaved kinds are also to be seen in great numbers, and the stock is large of plants from 4 to 5 feet high, and especially good in the case of Ilex Hodginsii. The Hollies are succeeded by Cedrus Deodara, a fine lot, from 4 to 5 feet in height; a good quarter of Platanus orientalis, and a grand lot of young Limes, clean standards, from 8 to 9 feet in height. Weeping Willows also claim some notice by reason of the fine quality of specimens of S. americana and the well-known Kilmarnock variety. Excellent stocks of Yews, Pinus Cembra, Tamarix gallica, Ghent Azaleas, standard Portugal Laurels, common Laurels, and the Caucasian, Colchic, and round-leaved varieties; together with Irish Ivies, of which the stock of plants consists of about 8000, from 8 feet to 9 feet high. Space forbids our mentioning all the subjects grown here, and we think we have said enough to convince any one that a visit to the nursery would not be time ill-spent.

The Highgate Nursery, which has been made famous by the lead which it took some years ago in the cultivation of the Hyacinth and other spring-flowering bulbous plants, has been in the possession of the Messrs. William Cutbush & Son since 1820, and it was a nursery then. Amongst hardy subjects that have always been done well here is the Bay Laurel, which grows to surprising dimensions in the neighbourhood; and it is a remarkable fact that all the plants that have been sold from this nursery have been propagated from one set of "stools," and that set has occupied the same position in the nursery as it did when the late Mr. William Cutbush bought the place in the year before mentioned. Evergreen Oaks form another speciality, and the stock of these, we need scarcely say, is a good one. It is a difficult subject to transplant, but this difficulty is got over by growing them in large pots; and specimens may be seen in such pots, up to 7 and 8 feet high. We also noticed a nice lot of standard Bays with close filled heads; a varied and interesting assortment of wall climbers, Tree Ivies—very useful subjects insomuch that they are very ornamental and stand smoke well. Of Weeping Elms and Weeping Poplars we also noted some fine examples; together with a good batch of standard Mulberries from 7 to 8 feet high, and the like of which are not to be found everywhere. A large trade is done in small hardy plants, for potting up for window decoration in winter, and for planting in town gardens. These include various Conifers such as Thuja aurea, Laurustinus, various sorts of Euonymus, of which it is difficult to get enough to meet the ever increasing demand. Many subjects are also grown to a large size for planting; most noticeable amongst which are tall handsome furnished pyramidal specimens of the Colchic, Caucasian and round-leaved Laurels. Aucubas are also done in quantities, and amongst these we may note A. rotundifolia as a distinct and ornamental subject.

The present is not a particularly good time of year to see the houses, as everything requiring protection has been got into winter quarters; but we noted a very useful selection of the various stove and greenhouse plants for which there is a demand, and particularly a fine lot of half-specimen Azaleas, and a grand stock of Bouvardias in all the leading kinds. Double white Primulas we also saw were done well, and we may fittingly conclude this notice, imperfect as it is, with a reference to the stock of Mignonette, which is well grown, and has been sown for the fifty-seventh year in succession, in the same frame, and on September 1. The Highgate Nursery is one of the neatest kept that it is our pleasure to visit, and its management is much to the credit of its present proprietor.

PROTECTING WINTER BROCCOLI.

The dry weather that set in during August, and continued for some time after, caused a severe check to the growth of all winter and spring Broccoli, but the heavy rains we have since had, together with an exceptionally close, warm state of the atmosphere, have set them growing almost as freely as if it were spring. Although at first sight this would appear to give promise of an abundant supply the reverse is likely to be the case, for unfortunately this increase in size and the extraordinary push they have recently made is anything but favourable to their standing the winter in safety. Those who have had much experience in growing Broccoli must have observed the great difference there is in the hardiness of the different kinds, much of which is due to their habit of growth, as it is only such as have close compact leaves and hard woody stems that can endure a continuance of severe frost. The expansive force of this is so great that, as is well known, it will even burst strong iron pipes when left full of water where they can be acted on, and it has the same effect on the gorged sap-vessels of Broccoli when caught in the soft succulent state they now are.

Although the large growers for the London markets, who are considered the best vegetable gardeners, do not as a rule go to the trouble of heeling theirs in, there can be no question that the practice is a good one and has much to commend it, especially in seasons like the present, when the growth they should have made early in the autumn has been deferred until now. The heeling-in, by the salutary check it affords through breaking numbers of the feeders, in a measure cuts off the supply of moisture, and thus causes the tissues to become more hardened, so that when frost occurs they are in every way in a better condition to meet it. In severe winters I have frequently noticed that starvelings near trees have stood quite uninjured when all of the same kinds grown in richer ground close by have been totally destroyed, thus proving conclusively that the firmer and more woody texture they had was the cause of their immunity. Like most other important operations connected with gardening that have beneficial effects under certain conditions, there is a reverse side to the heeling-in of Broccoli, and that is that it reduces the size of the heads, but this to those whose business it is to keep up a supply for their employer's table is not so much a matter of consideration, as it often becomes a question of these or none at all, which is more than ever likely to be the case next year. Those therefore who would insure what they have should lose no time in adopting measures to secure their safety.

The best way to proceed is to dig out a trench close along one side of the outer row and then to thrust in the spade and heel them over on their side, digging the soil from between to cover their stems, when the next row can be laid over in like manner, and so on to the end. Broccoli so treated are proof against almost any amount of frost as the leaves fall flat over on the ground, on which they lay close when frozen or flaccid and so protect the hearts in the most effectual way, whereas when the plants are standing they droop down the stems and leave the crowns quite at the mercy of the weather. I have been much struck by the snug appearance of the one compared with the

other, especially after a slight fall of snow, when those not heeled in have stood like scarecrows, while the others bespoke comfort and safety under their covering. With such early sorts as Snow's, Osborne's & Backhouse's the best plan is to dry them entirely up with good balls and to lay them in in some warm, sheltered, sunny border where they can be covered with long litter or Fern, otherwise the tender white flowers are sure to become sufficiently touched to cause discoloration or spoil their flavour.

For late work there is nothing like growing well tried hardy kinds, such as Catteli's Eclipse, which is short on the leg, and has a stem almost as hard as a stick, of a sturdy habit, and bears nice close compact heads, and is altogether a most valuable variety, and one that is deserving of extensive cultivation. In a general way, Broccoli are grown much too close together for them to acquire that solidity of stem and power of endurance they would attain were they allowed more room so as to let in plenty of light and air between them. If this could be afforded, and instead of being planted in loose heavily manured land they were made to follow some exhausting crop without any digging or other preparation beyond the necessary cleaning, the growth they make would be built up firmly, and if such large heads as might be obtained under a more liberal regimen were not produced, there would be no loss through the shattering effects of frost, which after a time like the present is much to be dreaded amongst the vegetable crops, as most of these are just now in a soft succulent condition and as tender as they can well be. *J. S.*

THE GENUS AGAVE.

(*Continued from p.* 558.)

SERIES II.—CARNOSO-CORIACEÆ. — Texture of the leaf more fleshy and flexible than in the Coriaceo-carnosæ. End-spine small and scarcely pungent. Teeth small or absent.

Group VII. GEMINIFLORÆ.—Edge of the leaf splitting off with threads.

This group represents the Filiferæ of the Coriaceo-carnose series, and contains a single species only.

61. *A.* (*Littæa*) *geminiflora*, Gawler, in Brandes' Journ. iii., t. 1; Bot. Reg., t. 1145; Spin, in Suppl. Cat. Hort. Sebast. (1823), p. 8, with a figure; Reich., Ic. Exot., t. 209—210; Kunth, Enum., vol. v., p. 831; Jacobi, Monogr., p. 160; *Littæa geminiflora*, Tagliabue, in Bibl. Ital., i., 100.—Acaulescent. Leaves 200—300 in a very dense rosette, narrow linear, $1\frac{1}{2}$—2 feet long, $\frac{1}{8}$—$\frac{1}{4}$ inch broad at the middle, bright green, both faces convex, not striated, the centre $\frac{1}{8}$ inch thick, the base dilated to a breadth of $\frac{1}{2}$ inch and a thickness of $\frac{3}{4}$ inch, the pale edge splitting off into thin threads, the tip not pungent, the leaves narrowed gradually to the point, all except the innermost curving over. Scape reaching a height of 18—24 feet, 3 inches thick at the base. Flowers in a dense spike, which is 6—8 inches in diameter when expanded; bracts as long as the flowers, subulate from a deltoid base. Perianth $1\frac{1}{2}$—2 inches long including the ovary, reddish brown, the lanceolate spreading segments as long as the tube. Filaments twice as long as the segments, inserted at the throat of the tube; anthers $\frac{1}{2}$—$\frac{3}{4}$ inch long; style exserted. Capsule oblong-trigonous; seeds discoid, black.

A native of Mexico, said to have been introduced at the end of the last century. It first flowered in the year 1815 in the garden of Count Von Litta at Mailand, in honour of whom the genus Littæa was constituted by Tagliabue. The figure and description given by Spin in 1823 are so full and accurate that they leave nothing to be desired. As a species it stands far apart from any other. There are varieties with pale green and dark green leaves, and the filæ are variable in length and quantity, and rarely nearly or quite suppressed. *Agave Taylori*, Hort. Williams, of which we give a figure (fig. 125), is stated to be a hybrid between geminiflora and densiflora, but in character it comes very much nearer the former. It was exhibited at the Royal Botanic Society in March, 1874, and will be found noticed in our first volume for 1874, p. 418.

Group VIII. ALOIDEÆ.—Edge of the leaf furnished with distinct deltoid teeth $\frac{1}{12}$—$\frac{1}{8}$ inch long. This is by far the largest group of the Carnoso-coriaceous series. The only group of the Coriaceo-carnosæ with which there is any danger of confusing its members is No. V., Rigidæ. From these Rigidæ the Aloideæ differ by their softer more pliable texture and by the end-spine being so weak as to yield readily to pressure, but some of the species are so intermediate in character that their position between the two is doubtful.

* Leaves oblong-spathulate.

62. *A. regia*, Hort. Saunders; fig. 124. — Acaulescent. Leaves 12—15 in a rosette, oblong-spathulate, 14—15 inches long, 4 inches broad at the middle, narrowed to 2 inches above the base, bright greeo, with a non-pungent brown tip $\frac{1}{2}$ inch long, the centre $\frac{1}{8}$ inch, the base $\frac{3}{4}$ inch thick; the face flat, the prickles moderately close, deltoid, brown, and horny, the central ones spreading, one line long, the upper ones ascending, the lower ones deflexed. Inflorescence unknowo.

Native country and history not known to me. I have seen it in the Reigate collection, and there is now a plant at Kew which was received from Linden in 1872.

63. *A. melanacantha*, Lemaire; Jacobi, Monogr., p. 117.—Acaulescent. Leaves about 1 foot long, 4 inches broad at the middle, narrowed to 2 inches above the base, oblong-spathulate, a light opaque greeo, the outer ones reflexing, the end-spine short and brown, the teeth somewhat distant, minute, deltoid-cuspidate, brown, deflexed. Inflorescence unknown.

Country probably Mexico. Described by Jacobi from a plant exhibited by De Smet at the Ghent exhibition of 1863. I have never seen it in any of the English collections.

64. *A. rudis*, Lemaire; Jacobi, Monogr., p. 118; *A. Malinezii*, K. Koch.—Shortly caulescent. Leaves oblong-spathulate, reachiog a length of 15 inches, 5—6 inches broad at the middle, narrowed to 2 inches above the base, a light opaque green, the end-spine short, chestnut-brown, the face concave, the margin repand, the teeth moderately distact, horny, chestnut-brown, recurved. Inflorescence unknown.

FIG. 124.—AGAVE REGIA.

A native probably of Mexico. Described by Jacobi in 1864, from a specimen in the collection of Herr Tonel, of Ghent. I have never seen it in England.

65. *A. Laurentiana*, Jacobi, Monogr., 254.—Acaulescent. Leaves moderately numerous, oblong-spathulate, $1\frac{1}{2}$—2 feet long, 5—6 inches broad above the middle, narrowed to 3 inches above the dilated base, the face opaque green and deeply concave, the end-spine short, stout, and brown, the margin slightly repand, the teeth minute, crowded, deltoid, straight, horny and chestnut-brown. Inflorescence unknown.

A native probably of Mexico. Described by Jacobi in 1865, from a plant in the collection of Herr Laurentius at Leipsic. I have not seen it in England.

66. *A. Ofloyana*, Hort. Belg.; Jacobi, Monogr., 116. —Acaulescent. Leaves 25—30 in a rosette, oblong-spathulate, bright green, $1\frac{1}{2}$—2 feet long, 4—5 inches broad above the middle, narrowed to 3 inches above the base, the base 1 inch, the centre $\frac{1}{8}$ inch thick, the face deeply concave, the end-spine $\frac{1}{2}$ inch long and sub-pungent, the teeth moderately close, deltoid, chestnut-brown, $\frac{1}{8}$—$\frac{1}{12}$ inch long. Inflorescence unknown.

A native of Havana. Described by Jacobi, in 1862, from a specimen in the collection of Madame Legrelle d'Hanis at Antwerp. It is included in Mr. Saunders' series of photographs, and my notes were taken from a specimen in his collection in 1872.

67. *A.* (*Littæa*) *Celsiana*, Hook., in Bot. Mag., t. 4934; Jacobi, Monogr., p. 165. — Acaulescent. Leaves 20—30 in a rosette, oblong-spathulate, $1\frac{1}{2}$—2 feet long, 4—5 inches broad at the middle, narrowed to $2\frac{1}{2}$—3 inches above the base, persistently glaucous, the point hardly at all pungent, the face flat in the middle, the base $\frac{3}{4}$ inch, the centre $\frac{1}{8}$ inch thick, the crowded lanceolate spines very unequal in size and shape, sometimes two confluent, only the largest brown and horny at the top, the rest all green, those of the lower two-thirds of the leaf deflexed, the border of the lower part of the leaf undulated. Scape 4 feet long, the lower bract leaves lanceolate, the upper ones subulate. Flowers in a dense spike, 1 foot or more long, and 6—8 inches in diameter when expanded. Perianth 2 inches long, including the ovary, the limb tinged purplish brown on the outside, the ovary $\frac{3}{4}$ inch long, the oblong lanceolate-spreading segments exceeding the tube. Filaments 2 inches long, inserted at the throat of the perianth-tube. Anthers $\frac{1}{2}$—$\frac{3}{8}$ inch long. Style reaching to the top of the stamens. Capsule oblong.

A native of Mexico. Described by Sir W. Hooker from a specimen that flowered at Kew in May, 1856, received from Monsieur Cels, of Paris, after whom it was named. In the English collections it is the commonest and best known of all the broad-leaved Aloideæ.

68. *A.* (*Littæa*) *Ehrhenbergii*, Jacobi, Monogr., p. 136; Nachtrage, i., p. 43.—Acaulescent. Leaves moderately numerous, oblong-spathulate, $1\frac{1}{2}$—2 feet long, 5 inches broad above the middle, narrowed to $2\frac{1}{2}$ inches above the base, an opaque rather glaucous green, the face concave, the base very thick, the end spine short and brown, the prickles crowded, minute, deltoid, brown at the tip. Scape 4—5 feet high. Perianth, including the ovary, $1\frac{1}{2}$ inch long; ovary oblong, $\frac{1}{2}$ inch long; segments linear-oblong, above $\frac{1}{2}$ inch long. Filaments above 2 inches long; anthers $\frac{3}{4}$ inch long. Style $2\frac{1}{2}$ inches long.

A native of Mexico, described by Jacobi from collections at Berlin and Erfurt in 1864, and exhibited by Verschaffelt at Amsterdam in 1865. It flowered with Herr Allardt at Berlin in 1867. I have not seen it in England. Judging from the description, *A. Legrelliana*, Jacobi, Mon., p. 253, may be a variety with a broader (6—7 inches) leaf.

69. *A. Lindleyi*, Jacobi, Nachtrage, i., p. 37.—Stem $1\frac{1}{2}$ foot long below the tuft of leaves. Leaves numerous, oblong-spathulate, 6—7 inches broad at the middle, narrowed to 3—$3\frac{1}{2}$ inches above the base, very thick, flat in the middle, glaucous, the end-spine dark brown, the margin scarcely repand, the close deltoid teeth with a horny black tip. Inflorescence unknown.

History unknown. Described by Jacobi from a specimen seen in the collection of Mr. Saunders about 1867. I fear the plant is now lost, as I have not met with it either at Reigate or in any other English collection. *J. G. Baker.*

THE EARTHWORM IN RELATION TO THE FERTILITY OF THE GROUND.

FROM observations extending over a number of years, M. Hensen has been led to the conclusion that infertile undersoil is rendered valuable by the action of worms in two ways, viz., by the opening of passages for the roots into the deeper parts, and by the lining of these passages with humus. This will be more fully understood from the following facts regarding the life-habits of the worm (Lumbricus terrestris) given in M. Hensen's paper in the *Zeitschrift für Wissenschaftliche Zoologie.*

It is known that the adult animals in wet weather come up to the surface by night, and, with their hinder end in their tube, search the ground round about. They then draw whatever vegetable material they can find into their tubes—falling stems and leaves and small branches. In the morning one then finds little heaps of plant-fragments projecting at various parts of the surface, and each of them penetrating the tube of a worm. On closer examination it is found that the leaves have each been rolled together by the worm, and then drawn into the tube in such a way that the leaf-stalk projects. The portion of the leaf in the tube is moist and softened, and only in this state are plants consumed by the worm. There are distinct indications that the worm gnaws them, and after some days the meal is ended. The food is never

drawn deeper down into the ground. In digging the ground at various seasons it was only very rarely that plant remains were found in the subsoil, and probably they got there by accident.

With reference to the structure of the worm-tubes, some interesting facts were established in these researches. In humus their character is difficult to make out, owing to the looseness of the mass. In sand they proceed almost vertically downwards 3, 4, or even 6 feet, whereupon they often extend some distance horizontally; more frequently, however, they terminate without bending. At the end of the tube the worm is found with his head upwards, while round about him the tube is lined with small stones. On the sandy wall of the tube one observes more or less numerous black protuberances which make the sand fertile. These are the secretions of the worm, which, after being removed out of a tenanted tube, are found next morning replaced by fresh matter. They are observed after a few days, when a worm is put in a vessel with clean sand, and allowed to make a tube for itself. Older abandoned tubes are pretty regularly lined with the earth formed by the worm, and some passages are densely filled with black earth. This black substance appears to diffuse somewhat into the sand.

In about half of the tubes, not quite newly made, M. Hensen found roots of the plants growing at the surface, in the most vigorous development, running to the end of the tube and giving off fine root-hairs to the walls, especially beautiful in the case of cereals. Indeed such tubes must be very favourable to the growth of the roots. Once a root-fibre has reached such a tube it can, following the direction of gravity, grow on in the moist air of the passage, without meeting with the least resistance, and it finds moist, loose, fertile earth in abundance.

The question whether all roots found in the under-soil have originally grown in the tubes made by the worms, cannot be answered with certainty. It is certain that the roots of some plants penetrate themselves the sand, but not to great depths. M. Hensen is of opinion that the tap-roots, and in general such root-forms as grow with a thick point, can force a path for themselves, while the fine and flexible suction-roots have difficulty in obtaining a path into the depths other than what has been previously made for them. Roots of one year's growth especially can penetrate deep into the subsoil only where there are earth-worms.

A microscopical comparison of the earth deposited by the worm shows that it is like the two-year leaf-mould prepared by gardeners for the filling of flower-pots. Most of the plant-cells are destroyed; still there are present some cells and shreds of tissue, browned and friable, mixed with many sand grains and brown organic fragments. The chemical composition of the worm-earth shows much similarity to that of fertile humus ground. Its fertility, therefore, cannot be doubted, though direct experiments with it are wanting.

With regard to the numerical value of this action of the earthworm, the following observations by M. Hensen afford some information.

Two worms were put into a glass pot 1½ foot in diameter, which was filled with sand to the height of 1½ foot, and the surface covered with a layer of fallen leaves. The worms were quickly at work, and after 1½ month many leaves were down 3 inches deep in the tubes; the surface was completely covered with humus, 1 cm. in height (rather less than ½ inch), and in the sand were numerous worm-tubes partly fresh, partly with a humus wall 3 mm. thick, partly quite filled with humus.

Counting, when an opportunity offered, the open worm-tubes in his garden, M. Henson found at least nine in the square foot. In 0.15 square metre two or three worms were found in the deeper parts each weighing 3 grammes (1 gramme = 15 grains); thus in the hectare (1 hectare = 2½ acres nearly) there would be 133,000 worms with 400 kilos. weight. The weight of the secretions of a worm in twenty-four hours was 0.5 gramme. While these numbers are valid only for the locality referred to, they yet give an idea of the action of this worm in all places where it occurs.

The assertion that the earthworms gnaw roots is not proved by any fact; roots gnawed by worms were never met with, and the contents of the intestine of the worms never included fresh pieces of plants.

The experience of gardeners that the earth-worm injures pot plants may be based on the uncovering or mechanical tearing of the roots.

"Let us take a retrospective glance," concludes the author, "over the action of the worm in relation to the fertility of the ground. It is clear that no new manure material can be produced by it, but it utilises that which is present in various ways. 1. It tends to effect a regular distribution of the natural manure material of fields, inasmuch as it removes leaves and loose plants from the force of the wind and fixes them. 2. It accelerates the transformation of this material. 3. It distributes it through the ground. 4. It opens up the undersoil for the plant roots. 5. It makes this fertile. *Nature.*

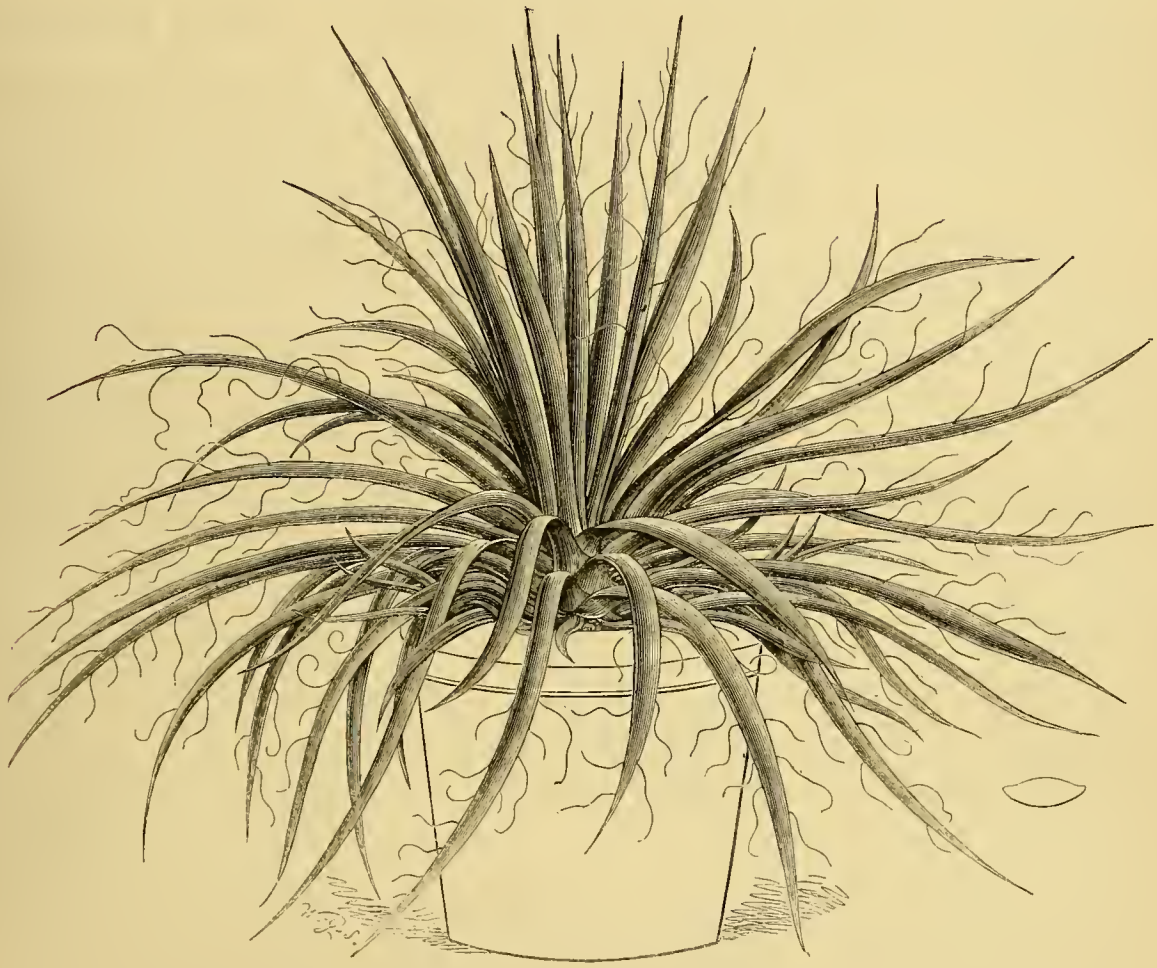


Fig. 125.—Agave taylori, hort. williams. A garden hybrid between A. geminiflora and A. densiflora.

Notices of Books.

The Rose Annual for 1877-8. By William Paul (Waltham Cross).

This opens with a review of the season from a rosy point of view: then follows a notice of the new Roses of the new year, and some useful hints on Roses for garden and house decoration, in which the author gives a much-needed hint to those well-meaning enthusiasts who look to "Rose shows" as the *summum bonum.* It is well to remind the devotees that the pleasure of exhibiting or of visiting exhibitions is shared by tens, while that of growing Roses in the garden for the mere pleasure and *délassement* they yield is the valued privilege of thousands. We would not undervalue exhibitions, but there is a tendency to over-rate their importance, and an unconscious tendency on the part of their promoters to depreciate the simpler tastes of those who love flowers for their own sakes, and to pass over as of little worth anything that does not conform to the rigid standard necessary for exhibition purposes. A review of the principal Rose shows of the season follows, and last, under the head of Correspondence, a variety of interesting details, especially with reference to the newer seedlings. Prefixed to the pamphlet are coloured figures of Red Dragon (H.P.), Rosy Morn (H.P.), Perle des Jardins (Tea), and Magna Charta.

The Diet Cure. By T. L. Nichols, M.D. 429, Oxford Street.

There is a good deal of sound common-sense in this little pamphlet, inculcating pure air, pure water, strict personal cleanliness, moderate diet of bread, fruit, vegetables, without meat or fermented liquors, sufficient clothing, occupation for mind and body, alternating with periods of rest and recreation. There is, however, too much advertisement of Dr. Nichols, his books, his "food," and his doings generally, to command confidence; and while his teaching is generally sound, he sometimes runs into extremes, as in his denunciation of meat as food, and in his exaggerated statements as to the effect of his system of dietary in various diseases, not even excluding cancer. Such statements can only do harm. Once certain main principles well grasped—a man, as it is said, is as regards himself either a fool or a physician at forty—and he is in general wise enough to see that what may suit him may not suit his neighbour. "What is one man's meat is another man's poison."

PUBLICATIONS RECEIVED.—On a New Species of Parasitic Green Algæ, &c., by E. P. Wright, M.D., Trans. R. Irish Acad.—Quarterly Report on Meteorology of England for Quarter ending September 30, 1877, by James Glaisher, F.R.S. — Correspondence Botanique, par E. Morren; fifth edition. — Journal des Roses—Bulletin de la Société Royale de Botanique de Belgique. — The Water Supply of South Africa, &c., compiled by J. C. Brown, LL.D.; Oliver & Boyd. — Indian Forester. — Agricultural Student's Gazette.—Revue de l'Horticulture Belge. — Descriptive Notes of Papuan Plants, by Baron Ferd. von Mueller: Appendix. — Nuovo Giornale Botanico Italiano. — Annales Agronomiques. — The Natural History Journal. —Journal of Forestry.—Wiener Obst und Garten Zeitung. — Pharmaceutical Journal. — Westnik. — English Rule in India.

The Villa Garden.

WINTERING DAHLIA ROOTS.—"What shall I do with my Dahlia roots during winter?" asked a Villa gardener a few days ago. He had grown a few during the summer in a side border, and, being previously somewhat imperfectly acquainted with the flower, was much pleased with the result. The plants were put out in some rich soil the second week in June, they were well attended to in the way of mulching, watering, and tying; and the moist season helped the plants wonderfully, and a capital head of bloom resulted in the case of each plant. Up till quite lately the plants were loaded with these flowers, then came a bright starlight night, accompanied by a sharp frost, and the next day all were a blackened rotting mass. Soon after the stalks were cut away within 2 feet of the ground, a fork inserted under the roots and lifted 2 or 3 inches; the result was that the fibres were loosened in the soil, and a space was created under the roots into which the drenching rains could pass, leaving the soil about the tubers comparatively dry.

HOW TO STORE.—A fortnight ago the roots were lifted with some soil adhering to them and put into an outhouse to dry a little; the remaining stalk was cut down to within 6 inches of the roots. When they were sufficiently dry the question arose, where best to store them away for the winter? This has puzzled many a gardener whose love for certain flowers was far greater than the means at his disposal for storing away certain pet subjects during winter. Therefore we have heard of many expedients being resorted to for wintering Dahlia roots, even to that of putting the roots into paper bags, with a little soil about them, and hanging them up in the kitchen or living-room. A Dahlia root will bear a good deal of drying, at the same time it is best to keep the tubers as plump as possible. A hot dry position is hardly to be commended; it should be dry and cool at the same time, and if exposed to the action of frost, why it is a simple matter to apply some covering when the weather is severe. Hundreds of shifts have to be resorted to by amateur gardeners in order to preserve their treasures alive and unharmed during the winter.

One Villa gardener has constructed a rude kind of shelf in his outhouse, on one of the side walls near the roof. On this he has spread some soft hay, and there he has placed his roots. Light and air are given by day, and should it happen that sharp weather sets in some more hay will be placed snugly about the roots and tucked in well about them, and the additional protection of a piece of old carpet or a garden mat afforded. No harm will be permitted to come to them, they are too highly prized to needlessly expose them to any risk. During the winter the roots will be looked over to prevent decay, or to arrest its progress if it appears.

HOW TO WINTER THE PLANTS.—This expedient, and it can lay no claim to novelty, suggests how many plants of a semi-hardy character may be kept through the winter where there is an entire absence of glass. Supposing any one has grown a few favourite Fuchsias, Lobelias, Calceolarias, Pelargoniums, Lantanas, succulents, and such other plants as are employed in the summer garden which they may be desirous of preserving through the winter, the expedient of a shelf in an outhouse suggests the means by which it may be done. Last winter some succulent plants were lifted from the flower-beds in October, and planted in shallow wooden boxes with some cocoa-nut fibre about the balls of soil, and put on a shelf in a warm outhouse where some light could fall upon them. As Echeverias, Sempervivums, Pachyphytums, Kleinias, and such-like are slow-growing plants, it is all the more important to save them through the winter, especially on the part of any one who makes a little speciality in the way of a succulent bed: for while Pelargoniums, Calceolarias, Verbenas, Lobelias, &c., are plants of quick growth, succulent plants require time to grow into size.

Our experience teaches us that any specimen plants lifted from the open ground winter best in soil rather than cocoa-nut fibre or any such substitute. Our advice to Villa gardeners is to put all such plants in a soil similar to that obtained from a potting bench, having the pots well drained, and not lifting too much soil with the roots. The method recommended by some of trimming the roots is right enough when the plants are to be put into some warmth in order to excite them to growth; but when they are to have cold treament we have found it best to leave the long roots intact, and to place them as far as possible immediately round and in contact with the pots; for they put forth spongioles at their points, which has a valuable rallying effect on the plants. If the soil be used nicely moist, but not to the degree of stickiness, potting is a pleasant process, and it will not require water for some time unless brought into contact with drying influences.

TREATMENT DURING FROSTY WEATHER.—When there is the appearance of frosty weather setting in, the plants should be allowed to become quite dry, and then danger from that cause is much lessened. If the enthusiasm of an amateur gardener who is just feeling his way in the matter of cultivating plants may be said to overflow in any one direction it is that of use of the watering-pot. He is ever asking for signs when a plant is dry, and it is very difficult indeed to educate him up to this point. If some newspapers be placed over and below the plants, placing thicker folds as the frosty weather to be guarded against increases in intensity, its insidious advances will be checked and harm kept at a distance.

Directly the spell of frost has broken up let the plants be uncovered and examined. They should not be kept in total darkness a moment longer than is necessary. Cut away any decaying parts of the soft points of the branches, remove any withering leaves, for they are so many avenues by which damp may find its way to the stems; and if the weather happens to be soft and balmy, as it is sometimes after a thaw, the plants may be stood out in the sun during the day and a little water be given to them. It is a little attention that saves so many plants; a constant alertness and supervision override many difficulties, and the way to substantial reward is never reached through the byeways of careless inactivity.

Garden Operations.

PLANT HOUSES.

Spring and summer-blooming hard-wooded stove plants, if treated as from time to time advised, will now be in a state of rest, especially such as are of a deciduous nature. Where there is only one stove in which to have the plants in this condition, along with others that require through the winter to be kept slightly moving, as well as the numerous things that are wanted to be pushed along for present and successional blooming, it becomes a somewhat difficult matter to treat all according to their requirements; but much may be effected towards the end required by regulating the water supply to the roots for the deciduous or partially deciduous section here, such as Allamandas, Dipladenias, and others of similar habit, can be kept from making growth, even when the temperature is sufficiently high to excite it through keeping quite dry, which will have no injurious effects upon plants of this description, to still further assist which they should occupy the end furthest away from the boiler, which will generally be several degrees cooler than the opposite; and to further increase the difference in temperature, all the air that is admitted should be given at the coolest end. Such plants as the above will, by gradually withholding water as advised until the leaves have flagged, have got into a dormant condition, first, through the cessation of root growth, with accompanying little or no extension of shoots, and be in a condition to well bear the soil getting so dry as above recommended. I have found this treatment much better than drying up the atmosphere of the stove by withholding water from the evaporating troughs altogether, or ceasing to throw any upon the floor and side stages, as where the latter is resorted to it has a most injurious effect not only upon the winter blooming subjects, but also on all evergreen plants, such as Ixoras, Gardenias, and the like. When the atmosphere is as dry as it used at one time to be almost general to submit stove plants to through the winter, the leaves of evergreen subjects always suffered to an extent that brought about a stagnant condition, which it was difficult to get them out of in spring. If not already done, one or two Dipladenias should be cut back. This is necessary where the plants are required either for the production of early flowers for cut purposes or for exhibition; in the case of full-sized specimens the knife may be used freely, shortening the shoots to within a foot or 15 inches of where they were cut back the preceding year. This is much better than allowing an unnecessary length of old shoots, as, however long they are left, there is seldom a disposition to break more than two or three to each. As to potting I have followed different courses, either letting the plants break before the partial shaking-out, which it is necessary to subject them to after cutting-in, or to repot immediately they are cut back, and I find the latter method much preferable, for although they break somewhat weaker consequent upon the disturbance and considerable breakage of the smaller roots, still there is no after-check, such as occurs when the potting is deferred until the plants have broke, and which generally stops a portion of the young growths from extending further at all. To grow Dipladenias, which are amongst the most useful of all stove plants, in a satisfactory manner, they must have the soil renewed once a year, no matter how fit for lasting longer the old material may appear at the present time, or the chances are that before the next season is over it becomes too far decomposed and sodden for the roots to move freely in. Peat I find much better than loam for these plants, where it can be had of a thoroughly fibrous description. If this is not obtainable I should advise the use of turfy loam, working all the earthy particles out through a sieve, and employing little besides the roots of the grass and herb-

age which good loam contains; it is essential to add plenty of sand to whichever is used, peat or loam. Clerodendrons that bloomed late will now be making growth, and must be encouraged by a sufficient supply of moisture at the roots, keeping the shoots regularly trained as near the roof-glass as possible without absolutely touching it. Shrubby Clerodendrons, such as fallax, Kæmpferii, and the finely-scented C. fragrans, may now be cut-back and allowed to break slowly. So treated they will bloom a month or six weeks earlier than when the operation is deferred eight or ten weeks later. Where these shrubby Clerodendrons are grown from seed sown in the summer, they make fine decorative subjects grown on single stems, kept on moving freely all through the winter. Plants from seed sown about the above time will, if all has gone well, be now in 6-inch pots, and if these are well filled with roots they should be moved into others a couple of inches larger, using good open soil and keeping the plants close to the glass, otherwise they are liable to get too tall. The earliest portion of the winter blooming stock of Euphorbia jacquiniflora, Poinsettias, Plumbago rosea, Thyrsacanthus rutilans, Eranthemum pulchellum, Sericographis Ghiesbreghtii, and the ever blooming Scutellaria Mocciniana, must be kept tolerably warm—from 65° to 70° in the night, with a corresponding rise in the day-time; and the plants with their heads close to the glass will bring them on in a way that will give enough substance and solidity to the flowers to make them stand well when cut. *T. Baines.*

Orchids.—The natural cessation of growth now observable among many of these plants, which is perhaps more decided and noticeable in the Dendrobium section and those that are of a deciduous nature, coupled also with the fact that the small amount of sun-heat that is now obtainable, makes it necessary to adopt means and methods of treatment so that the natural tendencies of the plants may fall in with such a course and be benefited by it. The state and condition of the atmosphere in the houses as regards moisture must now be very different to that which we required during the summer season. Then, during parts of the day intense humidity had to be maintained. Now, however, the moisture must be considerably less, therefore all damping-round should be done after the temperature has commenced to rise in the morning, and if further damping is required it should be done not later than 2 o'clock in the afternoon, so that any excess of moisture may have been partly dried up or absorbed, and no fear of damp or heavy drip likely to occur during the night. On this point it must be borne in mind that a paved or tile-covered floor will require more water being thrown about it than one where the paths are made of wooden lattice-work, and where also the spaces under the side stages are all of an earthy nature, Ferns and moss being probably planted in them. In this case the evaporation is so much slower, on account of the quantity of water held by or contained in the soil, that a good damping in the morning at this time of the year will in many cases be found to be sufficient, yet, since all houses are not built alike, it will be necessary to work according to the means and circumstances that are at command. Lower the night temperatures to the following numbers, using, however, a little latitude as the temperature outside is higher or lower. When much fire-heat is necessary keep as near as possible to the lower numbers, when the air out-of-doors is mild and genial the higher ones may be reached occasionally without injury. East India-house, 60° to 65°; Dendrobium-house, 55° to 60°; Cattleya-house, 55° to 58°; Odontoglossum-house, 50° to 53°. Plants on blocks, more especially those that are hung over the stages, should now be taken down and dipped, and the water be allowed to drain away from them before they are hung again in their places; only dip those that really require watering. Some of the most forward plants of Dendrobium nobile must now be brought from the cooler structures in which they have been kept at rest, and placed in the Dendrobium-house; here at first they will not need any water, but as the buds push out and the flowers are perfected, a regular supply will have to be given, but then only enough to support the blooms and keep the bulbs from shrivelling. The later and larger plants of this old favourite, as the growths are formed and ripened, must be stood for a couple of months at least, and longer if necessary, in a cooler division, so that by this rest and absence of exciting inducements to start into growth they too may set their flower-buds for the coming spring. As the Calanthes come into flower they should be stood among the other plants, the loss of leaves, in which condition they flower as a rule, is not so apparent as when flowering a lot together; keep the flowers free from damp, and let no syringings fall upon them, otherwise the beauty and freshness of the blooms quickly disappear, causing much disappointment and regret. C. Veitchii and its varieties will now be very showy and doubtless very plentiful, for it grows and increases very freely. Amongst the vestita section the yellow eyed variety and rich bronze cupreum are two that should be more generally grown than would appear to be the case. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

Since the gales of wind and heavy fall of rain which we have lately had the trees are now nearly stripped of their foliage, only a few remaining on some of the Oaks. A general cleaning of the shrubberies and pleasure-grounds may be commenced as soon as the weather is somewhat settled, removing dead branches from any of the trees or shrubs as the work proceeds. Any transplanted trees that are likely to be exposed to the influence of the wind had better have supports to keep them steady in their places. This is favourable weather for lifting and planting trees and shrubs of all kinds, and if the planting is carried out with due care, and the plants that are removed not over large, and a little water given to settle the earth about the roots, very few failures will follow the operation. I have no faith in saturating the soil as I have sometimes seen done. Where planting is required for immediate effect and future satisfaction, the ground should be trenched or double dug. This causes a little more labour at the commencement in preparing the ground, but the planting is easier and better performed, and the plants do not require so much attention afterwards, but in a great measure are able to take care of themselves. The lawns, after so much rain, begin to get soft and spongy, worms are also getting troublesome, but sweeping and frequent rolling will soon restore them to their desired form, and leave them clean and enjoyable. Plants and trees in exposed places will require looking to, that the ties and fastenings may be secured where they have become loose. Wherever weeds show themselves on walks they should be handpicked or get a sprinkling of salt, which will soon stop their further progress for the season. The flower-beds are now all cleared of their summer occupants, and where not wanted for a display of spring flowers will be much improved by a good dressing from the reserve heap, and if a little fresh loam can be added it will further assist them. Trenching the beds will bring fresh soil to the surface, and enable the plants to stand the dry weather of summer without requiring much water, which is better for the plants and a saving of much unnecessary labour. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Vines.—Where the earliest Grapes are obtained from pot Vines, those which were introduced about the first of the month will now be on the move, and sufficiently advanced for the introduction of fermenting materials, which will greatly facilitate forcing, while it reduces the necessity for continuous firing. If the pots have to be raised any distance from the bottom of the pit they should be placed on solid pedestals, or, what is better, in long troughs formed by nailing three boards together. After enlarging the holes at the bottoms of the pots tilt them on a thin layer of drainage, and place a small quantity of rich turf and bones round them for the reception of the roots which will soon begin to emerge from their confinement in search of food. Gradually increase the supply of compost as the roots advance, and feed when the proper time arrives. By the adoption of this plan the fermenting material may be turned and renovated at will without disturbing the pots or roots. Assuming that all border work in the way of additions, lifting, and top-dressing has been brought to a close, as in every case it ought to be before the leaves fall, the pruning of mid-season and autumn houses may be proceeded with as soon as the foliage parts freely from the young wood. If all Vines were divested of lateral and extension growths as soon as the last bunch is cut and pruned in November, styptics would not be required, wounds would heal thoroughly, and plump buds at the base of every shoot would produce close handsome clusters, instead of loose bunches, which never give pleasure to practical gardeners although they sometimes captivate the theorist. If not already done go carefully over the latest houses. Remove all laterals and extension growths, as they do positive harm by keeping the Vines excited when they ought to be at rest. Clear away all ripe foliage as it falls, and cover the inside borders with some dry nonconducting material, which will keep down ground moisture and prevent the surface-roots from getting too dry as the winter advances. Clean dry bracken is suitable, looks well, and improves the appearance of black Grapes. The heavy rain of the past week having thoroughly saturated the earth and atmosphere, bunches of Hamburghs and other thin-skinned Grapes will now keep better in the dry equable temperature of the Grape-room than on the Vines. Cover up outside borders, early and late houses with shutters or lights, and mid-season houses with Fern or litter, for keeping out frost. Have a good supply of thoroughly worked and sweetened Oak leaves and short stable manure always in readiness for inside, and for covering up outside borders of early houses after, but not before, the Vines are started. *W. Coleman, Eastnor.*

HARDY FRUIT GARDEN.

The severe frost that occurred on the night of the 18th of last month and the strong winds that followed have stripped trees of their leaves much earlier than usual, but owing to the wood being so thoroughly mature there is fortunately some advantage in this, as it affords an opportunity that should not be lost for pushing forward planting operations while the soil is still warm and in excellent condition for carrying out the work. As many may be at a loss, from the vast numbers of varieties there are of most kinds of fruits, which to choose, it may be well to enumerate a few of the best sorts of each that will keep up a regular succession so long as they last in season, and are of that hardy nature that they will be found satisfactory in most districts. To begin with Pears, there are any quantity of these that ripen early, and more particularly is this the case from October to Christmas, a season when most of the best are in use, and from which those named below are the cream. The first and most luscious of what ripen in July is the old Jargonelle, a Pear that when grown in an open sunny position is still unrivalled, but in order to enjoy its full flavour it should be eaten almost as soon as it is plucked from the tree. The next in merit to come in about the same time is Beurré Giffard, a handsome fruit, and one that bears well on the Pear stock if planted in good soil in a fully exposed situation. To come in at the end of August, Williams' Bon Chrétien is the handsomest and best, but as they ripen quickly after being gathered a portion only of the crop should be got at one time, and the picking continued at intervals of a few days. During September there are so many good sorts that it is difficult to confine one's selection to the limited number of two or three, but excellent as the several varieties are that are then fit for table, the following are decidedly the richest and best. Beurré d'Amanlis is not only large and handsome but is exceedingly rich and buttery, a strong grower and a good bearer, although a little too straggling in its habit to form a fine pyramid. Another Pear of quite equal merit to the foregoing is Beurré Superfin, which on the Pear stock grows vigorously, and is very hardy and productive and suitable for almost any soil or situation. To succeed these there are none equal to Louise Bonne, a pear that should not be omitted even in the most limited collection, and if only one can be grown this will be found the most useful as it rarely fails to bear good crops, and the fruit is always delicious. For October, the Pear of all others is the Marie Louise, which from the long straggling nature of its spurs does best as an espalier or on a south-west wall where it can have support and not be too closely pruned. In warm favourable districts, and on a south wall, Duchesse d'Angoulême will be found a grand Pear, but unless it can be so accommodated it is useless attempting it, as it comes gritty and without that rich perfume and good quality they possess when ripened in a good climate. To the Marie Louise, however, should be added Doyenné du Comice, a Pear that cannot fail to give satisfaction. To come in from October to Christmas, Pitmaston Duchess, Passe Colmar, and Glou Morceau, are the best, that should be afforded a wall having a south-west or south-east aspect. After Christmas, Josephine de Malines and Bergamotte Esperen will continue the season as long as Pears will keep, and are the only two late kinds that can be depended on to finish off well. For cooking purposes there are none to equal Catillac and the Brown Worcester, except perhaps Uvedale's St. Germain, which is worth growing, owing to its fine size and productiveness. Space will only permit of me just naming the best Apples, the first of which to come in use for dessert is the Kerry Pippin, and for culinary purposes Keswick Codlin and Lord Suffield. To succeed these, Ribston Pippin, Blenheim Orange, and Cox's Orange Pippin are the best both for dessert and kitchen use, as the flavour is richer than any of the others, and they require but little if any sugar. For late use there are none better than Herefordshire Pearmain, Court Pendu-plat, Claygate Pearmain, Dumelow's Seedling, Winter Majetin, Yorkshire Greening, and Sturmer Pippin. The best and most distinct Plums for dessert to grow on walls are the Green Gage, Kirke's, Jefferson, Reine Claude Violette, Reine Claude de Bavay, and Coe's Golden Drop, which ripen in the order they are placed. For culinary purposes, to grow as standards, Prince Engelbert, Prince of Wales, and Victoria are the best and most productive, the latter so much so that the branches frequently get broken off by the great weight of fruit unless they are thinned or have some support afforded them. In Cherries the Black Eagle is the earliest and best, to be followed by Frogmore Bigarreau, Tartarian, and Elton, for dessert; and for cooking there is none equal to the old May Duke, the subacid flavour of which is highly esteemed. Although it may be desirable in some gardens to add to the above list of fruits, as regards Apples and Pears it is sufficiently complete for the majority of places, and it will be found more satisfactory to grow several trees of one kind than to greatly increase the number of varieties. *J. Sheppard.*

THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 17, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Nov. 19	South London Chrysanthemum Society's Show. Sale of Dutch Bulbs, at Stevens' Rooms.
TUESDAY,	Nov. 20	Northampton Flower Show. Hackney Chrysanthemum Society's Show (two days).
WEDNESDAY,	Nov. 21	Kingston and Surbiton Chrysanthemum Society's Show (two days). Bristol Chrysanthemum Society's Exhibition (two days). Sale of Roses and Bulbs, at Stevens' Rooms.
THURSDAY,	Nov. 22	Royal Horticultural Society of Ireland: Show. Sale of Imported Orchids, at Stevens' Rooms.
FRIDAY,	Nov. 23	Leeds Chrysanthemum and Winter Flower Show (two days).
SATURDAY,	Nov. 24	Cheetham Hill and Crumpsall Floral and Horticultural Society's Show. Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

THE rearrangement of the HEATING APPARATUS in the PALM-HOUSE of the Royal Gardens, KEW, is a work of such magnitude and importance that we are glad to have the opportunity of laying some account of it, together with a plan of the boilers, before our readers. For the opportunity of doing this we must express our acknowledgments to Mr. E. G. RIVERS, C.E., the patentee of the new boilers, and to Mr. SMITH, the Curator, who allowed us to inspect the apparatus when in action. Last winter and spring Mr. SMITH had to contend, as our columns showed at the time, with unusual difficulties from the filling of the stokeholes and the basement generally with water. For months two steam fire-engines, supplemented by manual labour, were engaged in pumping out the water. From the first the stokeholes had been ill-constructed dens, difficult of access, and something worse than inconvenient when entered. The heating arrangements, moreover, were such that peace of mind for the Curator and his assistants in a hard frost was not to be had. The old boilers, eleven in number, each 5 feet in length, had a total fire-grate area of 79 square feet. Eight of these boilers were ordinarily in use in moderately severe winters, the whole eleven whenever the weather was rigorous. But one main cause for the uneasiness we have alluded to was that the boilers were separate and distinct, with no means of intercommunication, so that if one failed, the section of the stove dependent on that one suffered, or was liable to suffer, accordingly. To remedy this state of things a new system of heating has been adopted; the stokeholes have, under the direction of Mr. JOHN LESSELS (District Surveyor to Her Majesty's Office of Works), been made light, convenient, we had almost said luxurious. Impervious floors of puddled clay and concrete, extending partly along the tunnels which communicate with the smoke-shaft, coke-yards, &c., have been constructed, so that in conjunction with other arrangements which need not here be mentioned, it is to be confidently expected that the plague of waters will no longer harass the Curator. These stokeholes suggest the idea of some vast cathedral crypt, with the difference that these are light, warm and clean—qualities not always observable in ecclesiastical substructures. The opportunity has also been seized of conveying pipes round the gallery, with a view to check the condensation and drip, which was so detrimental to the foliage of the Palms.

The boiler devised by Mr. RIVERS may briefly be described as a tubular saddle, the tubes being 7 feet in length, of this shape ⊃, the upper portion forming the flow, the lower the return. The tubes, which can readily be removed for repairs, are constructed of wrought-iron, and arranged horizontally in horse-shoe shape. They pass through a cast-iron case or chamber, the communication with which is established by means of slots. There is now one universal flow and return system, the main pipes being 10 inches in diameter. All the boilers can be used if necessary simultaneously, though as a rule three, or at most four, will be all that will be required in severe winters, the others being available in case of accident. When we saw the apparatus in action on a mild autumn day, somewhere about $3\frac{3}{4}$ miles of piping were in use heated by three boilers, the main pipes being arranged across the house, the smaller ones branching from it lengthwise. The return tubes of the boilers, though next the fire, were perceptibly the coolest, although all, or at least the lower ones, were so near the fire that the first impression created was that after a time the circulation would cease, but a perusal of the following details will show how this is obviated, and thorough circulation ensured.

The new boilers are six in number (each 7 feet in length), with a total fire-grate area of 54 square feet. It is evident, therefore, that the saving in fuel will be considerable, as the maximum fire-grate area in use at one time will be 36 square feet as against 79 square feet of the old system.

The total quantity of pipe in the Palm-house is, we learn, equal to 19,510 feet of 4-inch pipe, or 4877 feet to each boiler (supposing four to be used), and by the improvements recently effected the whole system is, as we have said, united by the main flow and return pipes into which all the boilers work. The whole of the engineering works have been executed in a most satisfactory manner by Messrs. SIMPSON & CO., of Pimlico.

As regards improvement in the construction of hot-water boilers, but little progress has been made during the last few years; in fact, it would seem that the designers of some of the boilers recently introduced have not acted in accordance with the principles which govern the circulation of hot water, and also of the conditions under which boilers of this description are worked.

One serious defect is the large capacity which is given to many of the patterns. The object in view is to heat the incoming water as rapidly as possible, and to pass it away to its work with equal rapidity. The inlet is generally a 4-inch or a 6-inch pipe, and the outlet the same; therefore, any increase in the capacity of the boiler beyond the size necessary for the supply of a 4-inch or a 6-inch pipe at the maximum rate of flow (with due regard to adequate heating surface), results in waste of fuel uselessly expended in heating the contents. The important fact to be borne in mind is, that the whole apparatus forms the boiler, and we only have to deal with that portion of it which is exposed to the fire when we use the term "boiler."

The next point to which we would invite attention is the fictitious value given to flue-heat. In some of the recent patterns of boilers we find an extremely small area exposed to the direct action of the fire, and a complex series of ramifications beyond, through which the products of combustion are made to pass, and are supposed to impart to the surfaces of the boiler a heat which in reality they themselves do not possess.

The result of frequently testing the temperature in the flues of various patterns of boilers shows that except during very rapid firing the heat from the first return of the fire (which is, of course, the most effective) has an average value of only one-fourth as compared with the direct heat of the furnace.

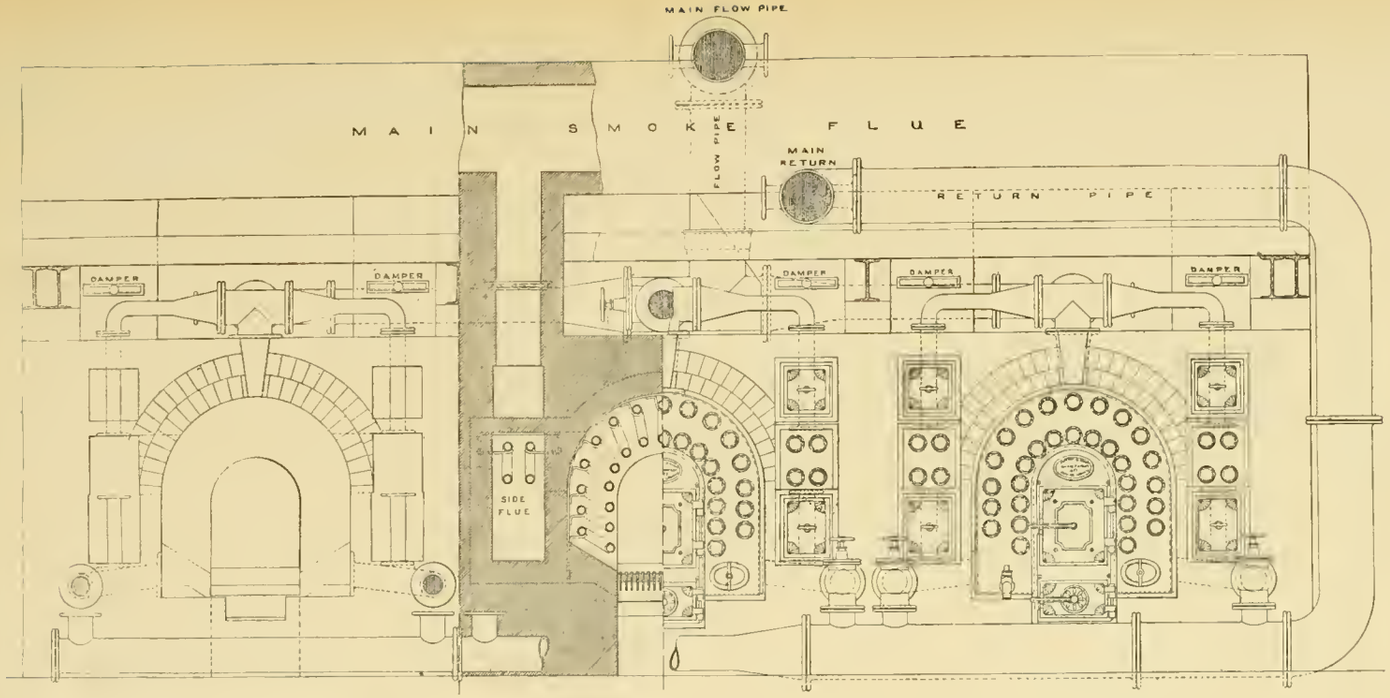
Hot-water boilers are generally worked with a slow draught, and in the majority of cases get comparatively little attention, hence it is important to secure a large surface exposed to direct heat, and as coke is the fuel most generally used, little or no flame passes into the flues. Unless frequently swept the value of flue-heat is further decreased by the deposit of soot which rapidly forms a coating upon the surfaces of the boiler, and acts as a non-conductor.

We now come to the last, but not least, important defect, *i.e.*, the difficulty and in many cases the impossibility of effecting repairs. A boiler capable of heating 3000 or 4000 feet of pipe is an expensive article, and as the parts liable to be burnt through are those in close proximity to the fire, it will readily be seen that any improvement in construction which enables the most exposed parts to be repaired or removed without sacrificing the entire boiler must be a great boon. It is also important that the repairs should be effected without removing the brickwork or disconnecting the boiler from the pipes, the delay consequent upon these operations being very serious if, as generally happens, the boiler fails during active work and in cold weather.

The proposed rearrangement of the heating apparatus in the great Palm-house induced Mr. RIVERS to conduct some experiments with a view to designing a boiler possessing great power and rapidity combined with facility of repair, and the result of these convinced him that if the defects which had hitherto been associated with the tubular system could be removed, the large surface exposed to the direct and reverberated heat of the fire by boilers of this description present special advantages. One of the principal defects of the tubular system was the choking of the tubes from deposit of sediment and the generation of steam consequent upon defective circulation. This is obviated in the new boiler by dividing the collecting chamber by a diaphragm, so that the communication between the flow and return tube of each pair necessitates a rapid passage of their contents through the furnace. The particles of deposit will be carried through the tubes, and in returning to the boiler will sink to the lower part of the chamber below the return inlet, and therefore out of the circulation. Proper means are provided for the removal of the deposit when necessary. When, from long use, any tube should leak, it can at once be seen, and after shutting off the valves and emptying the boiler, it can readily be removed by unscrewing the nuts in the front of the case, slipping the tubes back, and removing them through the fire-door. A spare tube can then be substituted, or the apertures in the collecting-chamber can be closed by a plug provided for the purpose, and the boiler set to work, minus the tube, without any appreciable diminution of power. The collecting chamber is not exposed to the action of the fire, and being constructed of metal of unusual thickness, is practically indestructible. The tubes can be as readily renewed as a set of fire-bars, and at a small expense. Supplementary pipes are also placed in the flues, but these are accessories which, as it seems to us, are of very minor importance.

Such are the main features of the improved tubular boiler now in use at Kew. Up to the present time Mr. SMITH has been well satisfied with its performance, and its action during the coming winter will be carefully tested with a view to ascertain its efficiency and the expense in working.

—— THE illustration of a portion of the grounds of PIERREMONT PARK SOUTH, DARLINGTON, the residence of HENRY PEASE, Esq., now given (fig. 126), will recall to the attention of our readers the notice of this charming place given by Mr. J. DOWNIE on p. 394 of the *Gardeners' Chronicle* for March 25, 1876. What particularly strikes the visitor is the great amount of detail displayed in such a comparatively small space; and so well has this been accom-



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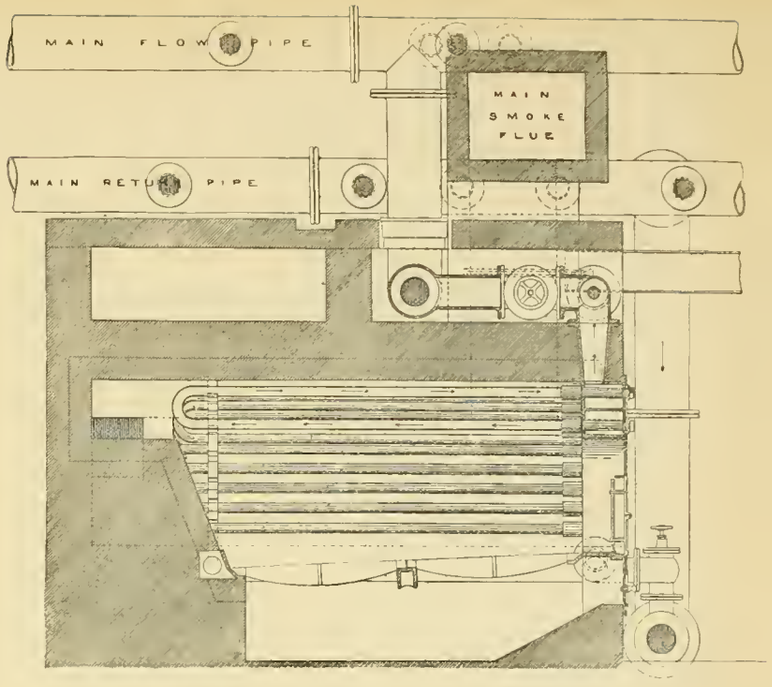

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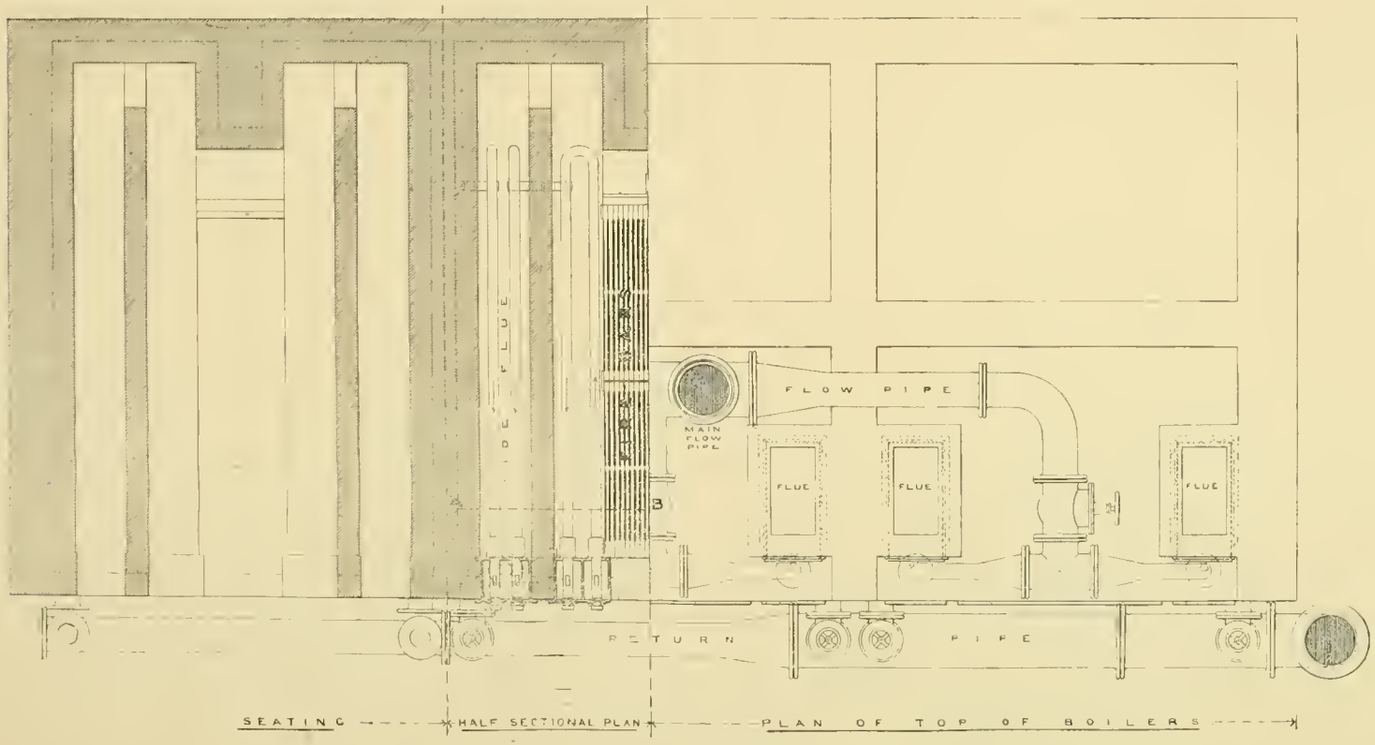
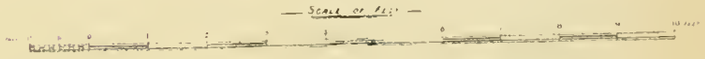


PALM HOUSE

KEW GARDENS

General arrangement of hot water boilers

SOUTH STOKE HOLE



plished, so much artistic skill has been brought to bear on the work, that the grace of natural beauty has never been lost sight of; and, indeed, as time throws its mellowing influence over the gardener's art, the traces of artificial handiwork are gradually melting away into that expression of natural grace to which all art should tend. The foreground of our illustration is from the lower part of the pleasure-grounds. In the distance is Pierremont House, with the Pinetum coming between it and the handsome fountain and basin, with its choice collection of aquatics and circle of handsome Pierremont vases. The lake and its surroundings do much credit to the skill of Mr. Barclay, the gardener at Pierremont, who had the execution of the work. The place is admirably kept, and at no season of the year can a visit be paid without seeing much to interest one. During the past summer Mr. Barclay introduced some illustrations of carpet-bedding, and notwithstanding the cold and sunless character of the summer tender plants, such as Alternantheras, have done remarkably well, while succulents have flourished amazingly. This is nearly, if not quite one of the first attempts to introduce into this particular district that particular style of gardening which has made Heckfield and other places so famous; it has excited much interest among neighbouring gardeners, and there is reason to believe it will be much followed in the North of England in the coming time. Violas of different shades have also been employed in the flower garden, and with the best results. At the end of the lake, on a piece of rising ground, Mr. Pease has had a charming Swiss cottage erected, which contains an ample and handsome room, of which tourists who come to see Pierremont can avail themselves. One pleasing custom at Pierremont is that respectable persons are permitted to roam about the grounds, and this kind privilege is never abused. In addition to many features of special interest in the grounds, Mr. Barclay is in course of forming a collection of the choicer kinds of hardy perennials. A new Peach-house has recently been constructed, and other improvements are to be made as opportunity serves. Horticulturists visiting Darlington find a cordial welcome from Mr. Barclay, and the liberal proprietor of Pierremont is desirous that the charms of his garden should be appreciated as widely as possible.

Fig. 126.—View in the grounds, Pierremont Park South, Darlington.

—— We note in the *Bulletin of the Royal Botanic Society of Belgium* an announcement of the death of Mdlle. Henrietta Cerf, who was born in Jamaica in 1810, and died in Brussels on the 22d ult. Mdlle. Cerf, who for some years resided near Dinant, communicated various articles on the botany of Kent and Belgium to the *Phytologist*.

—— If any one special lesson has been taught in connection with horticultural exhibitions during the past season, it is the great beauty of Croton Weismanni as an exhibition plant. It is a variety of free and vigorous growth, and with handsomely variegated leaves displayed to the best advantage by reason of its peculiar habit. Many large-sized examples have been exhibited, and the general rule has been for them to be finely coloured. It is a distinctly habited form, and will always take high rank for show purposes.

—— Messrs. Harrison & Sons announce that their eighth annual exhibition of farm roots, &c., will take place on November 21 and 22, in the Market Place, Leicester, and the prize roots will be exhibited in the seed warehouse on Saturday, November 24.

—— A few days before the close of his year of office, Mr. John Keynes, late mayor of Salisbury, following the custom usually observed in the city, entertained at dinner the town council, the city members, and a large circle of personal friends, including several members of the horticultural profession, among them Mr. Charles Turner, of Slough. Mr. Keynes closed his mayoralty amid the good wishes of all, and with fervent hopes that he may be spared to a life of usefulness for years to come. Horticulturists are not slow to take upon themselves the duties and responsibilities of citizenship; and in the course of the recent municipal

elections up and down the country it has been noticed that many members of the profession have been elected to councils, and the higher duties connected therewith.

—— At a recent meeting of the committee of the INTERNATIONAL POTATO EXHIBITION, the accounts for the past year were presented, showing a small balance in hand after the satisfaction of all liabilities. A sub-committee was appointed to consider the best places in which the exhibition of 1878 could be held. It was suggested that the exhibition next year should take place a little earlier than usual, to allow of the committee making a collection of the best tubers shown at the annual show, and sending the same to the Paris Exhibition as a contribution from the International Potato Exhibition. This found much favour, and it will be fully considered at an early meeting of the committee. Could not a representative collection of fruit be got up in the same way?

—— Are we to have the HARD WINTER so freely prophesied, or shall we have a repetition of the soft, moist weather that prevailed last winter? These are questions that sadly trouble the minds of gardeners, because in either case no pleasant prospect is afforded. Perhaps a middle course may be steered and a period of moderate cold and frost with a fair portion of fine open weather may result, but it is an unfortunate fact that we have recently experienced weather almost exactly corresponding with that which heralded the previous moist winter—the winter of downpours and floods, of south-westerly winds and muddy, oozy days; indeed, in these respects a most disastrous winter for all. We had a very delightful dry October, truly a glorious month in spite of some storms and tempests, but its successor is wild and wet and well maintaining its old reputation as being one of the most miserable months of the year. Yet it is comparatively mild, and under the influence of a low temperature, plenty of moisture, and a few comparatively sunny days, the earlier spring flowers are blooming freely, and give us a taste of that yet far off time when the new year shall once more open to us Nature's storehouse of floral beauty. Spring stretches out its hand across the dark chasm of an uncertain winter and grasps that of the fast-receding autumn as though it would indicate that the continuity of life and beauty in Nature is not dead but for a time only sleepeth, and will presently awaken into renewed energy and vigour. Amidst all the uncertainties and vicissitudes of the season gardeners are busy, and pushing on with all possible despatch the needful work. Gardening must never stand still, it has to provide for the wants of months and even years hence; and so imbued are the workers of horticulture with the necessity to be ever prepared for futurity, that even the possible knowledge of the near approach of the crack of doom would not stay their hands. Gardening essentially inculcates the maxim, to plant and sow that we may reap and gather fruits.

—— Mr. EDWARD GANDY has lately been appointed to succeed Mr. ROBERT CHURCHER as head gardener to the Earl of NORTHBROOK at Stratton, Micheldever, Hants.

—— MICROCACHRYS TETRAGONA is quite a gem among Conifers. It is the Strawberry-fruited Cypress of Tasmania, in which country it is common on the western mountains, and on the hills of Port Cypress, forming a prostrate evergreen shrub. A female plant is just now very pretty indeed in the Temperate-house at Kew, nearly every one of the multitude of little branchlets being terminated by a bright red, almost globular, fleshy cone, measuring about one-fourth of an inch from base to apex. By training up a leader the lateral branches arrange themselves in a drooping manner round about. The leaves are ovate, extremely small, in four rows and closely imbricated, deep green in colour. It appears to be rare, no doubt from its being, unfortunately, not quite hardy. A male plant is also to be seen at Kew.

—— Among many other NEW FERNS AT KEW we are pleased to note a fine form of Adiantum cuneatum under the name Lawsoni, which, according to many, is of superior merit for horticultural purposes. Botanically it is inseparable from the above species, and, without doubt, is a seedling from it, differing chiefly in the more sharply wedge-shaped divisions, and in their being more deeply lobed. For garden purposes it is abundantly distinct, and immediately strikes the eye of a cultivator, many of whom have anxiously waited its distribution. The fronds, while graceful and elegant, are so thinly composed that in a floral arrangement the flowers are relieved without being in the least obscured—a feature for which A. gracillimum is so famous. In comparison it appears to have greater substance, and should therefore be more durable. It is named in compliment to the Rev. W. L. LAWSON, of Lynton, who contributed the plant to Kew.

—— In the last volume of the *Proceedings of the New Zealand Institute*, Messrs. KIRK and BUCHANAN describe a considerable number of NEW PLANTS RECENTLY DISCOVERED IN NEW ZEALAND, amongst other things a Pilularia and two Veronicas. The latter genus is represented by a multitude of forms in New Zealand, many of them very curious and beautiful, and sufficiently hardy to thrive in the south-western parts of the United Kingdom. One of the species described, V. canescens, is a delicate little plant with stems 1 inch to 2 inches in length, and leaves from one-twelfth to one-sixteenth of an inch long, and it is one of the most minute flowering plants known, not unlike Anagallis tenella in habit. It is the only New Zealand species having solitary axillary flowers. Already between forty and fifty New Zealand species of this genus are known. The ornamental species of Panax—P. crassifolium and P. longissimum—are figured, and their distinguishing characters defined. These plants present such differences in foliage in different stages of growth, that it is very difficult to refer young plants to their proper species. The leaves of P. crassifolium on young plants are five-foliolate or simple, very coriaceous and stiff, deflected, 12 inches to 18 inches long, by about an inch broad, distantly deeply sinuate-dentate, purplish below, and dark green above, with a pale green spot on each tooth. Those on the fruiting branches are quite entire, and only 4 inches or 5 inches long, and the flowers are subracemose. P. longissimum has very long, distantly-toothed, simple leaves, with a flat margin, whilst those on the flowering branches are more closely toothed, and the flowers are in compound umbels.

—— Mr. R. J. LYNCH communicates to the last number of the *Journal* of the Linnean Society, a communication relating to the spontaneous MOVEMENTS in the leaflets of AVERRHOA BILIMBI. The movement is one of slow depression, followed by still slower erection. The movement is not spasmodic, as in Desmodium gyrans, but is perfectly steady and continuous up to completion. In addition the plant is subject to "the condition of sleep, and is sensitive to mechanical irritation, thus possessing three distinct kinds of movement."

—— The BAMIA COTTON OF EGYPT, to which we drew attention at p. 561, vol. vii. of the *Gardeners' Chronicle*, seemed after the subsidence of the first great excitement in its favour destined to pass into the oblivion which is so often the fate of many newly introduced products. Our contemporary, *Cotton*, however, draws attention to the fact of recent experiments that have been made in its cultivation in Texas. The seeds were planted on May 4, in a garden situated in lat. 29° 40′, at an elevation of 30 feet above Galveston Bay, and about 300 yards from its margin. The soil was a light, fertile, sandy loam. The seeds germinated, and the plants made their appearance above the surface of the soil in six days, namely, on May 10. The first blossoms appeared on July 8, and the first open fruits on August 30. The average height of the plants was about 8 feet, but some grew up to 10 feet. After the plants had ceased growing the fruits perfected themselves, increasing in size. It is stated that the fruits are very abundantly produced from near the base of the plant to its very top. In the space of four months and ten days from the time of planting, the open fruits were of sufficient size for picking in any quantity. From as careful and safe an estimate as could be made the yield was found to be fully equal to 2500 lb. of cotton in the seed per acre. The habit of the plant is described as being very singular in its outline. Unlike the American Upland and Sea Island cottons it does not send off branches regularly from near the ground to the top of the plant; but the main stem bears close to the ground two, three, or more branches, and then rises to a height of 8 or 10 feet without a branch. Leaves only are given off along the stems, and in the axil of each leaf are from two to five, and sometimes six, long petioles each bearing a fruit. The branches described at the base were also very heavily fruited, as many as five large fruits growing so close together as to touch each other. The cotton or wool contained in every fruit on the plantation was of a pale yellow colour, which was difficult to be accounted for as there had been no heavy rains during its growth to stain it; it is suggested the profuse dews may have been the cause. From the record of these experiments, it seems that we may still hear something favourable about Bamia cotton with regard to its becoming an article of commerce.

—— At the evening meeting of the Society of Arts, to be held on December 12, Mr. J. B. LAWES, F.R.S., will read a paper on "Freedom in the Growth and Sale of the Crops of the Farm, considered in its bearings upon the interests of Landowners and Tenant-farmers."

—— Mr. JOHN CROOK, late gardener to T. BOND, Esq., Tyenham House, Warham, Dorset, is appointed gardener to W. SHERWIN, Esq., The Grange, Farnborough, Hants.

—— Among the new vegetables being announced in catalogues, M. ERNEST BENARY offers a GOLDEN-YELLOW OLIVE-SHAPED RADISH for summer use. It is described as of a pretty oval form, intense dark yellow in colour, of particularly fine flavour, and very early and adapted for forcing in the open ground. Will this yellow Radish find favour in London markets, where yellow-fleshed Turnips, and even those with colour on the skin, such as the Greentop and the Tipstone, find but little acknowledgment?

—— In consequence of proposed building operations necessitating the clearing of part of the nursery grounds at Inverleith Row, Edinburgh, belonging to the LAWSON SEED AND NURSERY CO., a sale by auction of a large portion of the stock of hothouse, greenhouse, and ornamental plants, evergreen trees, shrubs, &c., took place on the 7th and 8th inst. There was a large attendance, including buyers from various parts of England, Ireland, and Scotland; and we understand that there was a great demand for the stove and other plants, which realised high prices; while the nursery and other stock generally sold remarkably well.

—— M. WIESNER, in some researches on the TRANSPIRATION OF PLANTS, published in *Annales des Sciences Naturelles*, 1877, p. 175, comes to the following conclusions as to the influence of light on transpiration. The functions of chlorophyll in transpiration are evident. Part of the light which traverses the chlorophyll is transformed into heat, as a consequence of which there results a rise of temperature in the tissues, which causes an increased tension in the watery vapour in the intercellular passages. The excess of vapour escapes by means of the stomata. A plant may transpire in a saturated atmosphere, but only under the influence of light. M. WIESNER has studied the transpiration in three different ways. 1. By comparing that of green plants with that of blanched ones. 2. By exposing the plants in the solar spectrum; and 3, by placing them behind solutions of chlorophyll. By these different ways he has arrived at the same results, viz., that the presence of chlorophyll markedly increases the action of the light on transpiration; that it is the rays which correspond to the absorption-band of the chlorophyll spectrum, and not the most luminous rays, which excite transpiration; and lastly, that the rays which have traversed a solution of chlorophyll have only a slight influence on transpiration. Other colouring matters, as xanthophyll, for instance, may act in the same way as chlorophyll, but to a less extent. M. WIESNER does not deny that the opening of the stomata may accelerate the transpiration. But the very marked transpiration of young Maize plants, the stomata of which were closed, and the slight transpiration of a Hartwegia comosa, the stomata of which were widely open in obscurity, suffice to show that this cannot be the principal cause of the transpiration in the light. In a very positive manner, but in a less degree than in the case of the luminous rays, the obscure calorific

rays act. As to the chemical rays beyond the violet their action is null or very slight. Whatever may be the nature of the rays, they always act in raising the temperature of the tissues. The physiological object of the absorption of light by the chlorophyll is no longer a secret.

—— A local paper states that a marriage lately took place at Boston, when the assembled friends, in the absence of flowers, strewed the path of the bride with feathers! Were they goose feathers?

—— That dread visitation, the "spot," is sometimes apt to affect plants of Carnations and Picotees at this season of the year, and it needs to be guarded against if the stock of plants is to be maintained healthy and vigorous. The "spot" is a sad disfigurement to the leaves, besides perilling the well-being of the plants. Two things mainly operate to produce it—overcrowding the plants, and excessive moisture of the roots. It is very necessary that the air freely circulate among the plants, and therefore undue crowding should be avoided, and the contact of the foliage prevented as far as possible. Not only should the pots be well drained, but the bottom of the frame should be so constructed as that all wet passes away quickly. It is always wise in making cold frames so to form the bottom that as perfect a drainage as possible be secured. Those who grow Carnations and Picotees for exhibition should have them well established in the pots in which they are to be wintered in the cold frame. Air cannot be too freely given all the while the weather is favourable. Water should be administered sparingly, and only when it is required, and growers invariably recommend that it be done in the morning. The best aspect for the frame during winter is a north or easterly one, as the plants are less liable to excitement than when it is full south, and the sunshine falls directly on it. Where a large collection of plants is grown, it is well to go over them occasionally, brushing away any greenfly and dust deposits, for cleanliness is of great importance to the well-being of the plants, and the employment of the scissors is necessary to remove any decaying foliage. Advantage is taken of the leisure peculiar to the autumn season to prepare and mix together the compost for potting the plants into the flowering-pots in spring. It is best to do this in the open air on a dry day, and then place it in a shed or some such sheltered place to keep it from rain. "Nothing is better," writes a well-known cultivator, "than good sound loam, the top spit taken from an old upland pasture, stacked for twelve months in a sharply ridged heap previous to using. Of this take three parts, and let the fourth part be composed of well-decayed cow or stable manure and leafmould. As the heap is turned from time to time, a little quicklime may be used to destroy very small worms."

Home Correspondence.

Madame Cornellissen Fuchsia.—I am glad to see my old favourite Fuchsia so well spoken of as a hardy variety outdoors, but besides being such a beautiful-habited free-flowering kind in the summer its great value with me is as a winter bloomer, and those who have to keep up a display at that season will find it a great acquisition. Old plants are the best for the purpose, as they can be made to do double duty by being got in early in the season and then rested a bit by being kept partly dry, when if pruned back a little and started again they will be at their best about Christmas. The most suitable place to grow them is in any situation where they can get perfect shelter and shade during the hottest part of the day, as there they make shorter-jointed firmer wood than they do under glass, and are therefore more floriferous. If such as the above or others could be crossed with any of the evergreen winter-blooming varieties like serratifolia, it is likely something good might be obtained, but although I have tried it I have not as yet succeeded in getting any seed up. I hope, however, with the hint given that others may do so. *J. S.*

Neja gracilis.—This is certainly one of the prettiest of all the great Composite family for our rockworks. It will succeed in the open, but the best plant I have happened to lay hands upon is planted in a sunny position on a small rockwork. At the present time it would not be very difficult to count nearly one hundred flowers in different stages of development. Its bright yellow capitula, with the dark slender foliage, are pleasing. I cannot agree with Sir J. Paxton when he terms it a "worthless greenhouse plant." *J. T. Riches.*

Tanacetum fruticosum bracteatum.—Will you kindly allow me to correct an error which, by means I am unable to explain, appeared in your last issue, respecting Tanacetum fruticosum bracteatum, described by Mr. Clarke; he says, "seeds sent to England by Dr. King from Mr. Gammie from Sikkim, &c." Of course one would not doubt that Dr. King has sent seeds home, but the seeds from which the plants were raised, forwarded to Mr. Clark through Mr. Baker, were sent to Mr. Gower by a private friend of his at Sikkim, among a host of other good seeds—Cyananthus incanus, and a very distinct Androsace. The latter no doubt will shortly be introduced to the public. *J. T. Riches*, 4, *Avon Terrace, Defoe Road, Lower Tooting, S. W.*

The Palace Shows and the Royal Horticultural Society.—While deeply sympathising with the Royal Horticultural Society in its financial difficulties, I would ask is it not the duty of all gardeners to get an honest pound when they have the chance? If so, why are we to be blamed for competing for prizes, and comparing our productions with those of our neighbours in a friendly manner at the Palaces or Aquarium when an opportunity offers? It cannot injure horticulture, or the Royal Horticultural Society, any more than County Agricultural shows injure farming or the Royal Agricultural Society. The frequenters of these Palace shows are mostly those who cannot visit Kensington or Regent's Park. [The Royal Botanic Society's shows, being closed to the general public, should not be introduced into this discussion. Eds.] I wish the Royal Horticultural Society would hold a September show with moderate gate fees, and offer reasonable money prizes to enable exhibitors to cover part of their expenses. They would meet with such success as would show that the Society was not forsaken. I do not say that this would prevent the holding of the Palace shows, as the Palaces must necessarily hold a variety of attractions to carry on successfully. It may not be out of place here to protest against what is perhaps the most disheartening grievance connected with these shows, that is, the withholding of prizes, as is too often done, in the most indiscriminate manner, by some judges, even when prizes are offered unconditionally. *J. H. Goodacre, Elvaston, Nov.* 6. [The withholding of prizes may be, and no doubt is, disheartening to exhibitors, but having a very wide experience of shows, we have come to the conclusion that prizes might be withheld much oftener than they are, with great advantage to horticulture. It lowers the standard of cultivation to award prizes to inferior productions, as is too generally done now-a-days. Eds.]

The Royal Horticultural Society: The Wilson Raft.—Possibly owing to my having put wrong stops a sentence in my letter, p. 595, does not convey the sense intended. I meant to say that in the great days of Chiswick shows the Society, though fashionable and magnificent, was poor, and persecuted by weather, as it has so often been since. I might have added in the letter on the "Wilson raft" which you were good enough to print, p. 599, that in the course of experiment we made a couple of boxes of large slabs of cork. Into one of these, half filled with soil, was placed some Cress from the orchard-house border, where it thrives, but has not the fresh pungency of that grown naturally. The Cress soon overtopped its cradle, and is now a huge floating bush, which gives us a good regular supply of excellent Watercress. I think this hint may be usefully taken by many who have a tank or small pond of clean water. I have lately come on some rather curious facts connected with Lilies. If you care to have them I will send a letter in time for next week's *Gardeners' Chronicle. George F. Wilson.* [Do please. Eds.]

Cypripediums.—These are a most useful class of plants for the Orchid-house, having the singularly beautiful formation which is so distinctly marked in Orchids. The very name of Ladies' Slipper is pleasantly suggestive, although the shapes of some of them are not very complimentary to the ladies' feet. The C. caudatum with its marvellous appendages, the ribbons with which to tie on the slipper, seems to have been made to order, and finished by some expert workman, rather than to have come to us naturally; the C. barbatum nigrum might just have been polished with Day & Martin, while the charming and exquisite C. niveum makes one think of the wedding or the ball-room, and the very prettily painted C. Schlimii is suggestive of the slipper of comfort, the foot-cover made by the hand of affection and taste for the cosy parlour fireside. I admire these beautiful things because they are beautiful and because their beauty is so enduring. There is here now in bloom the lovely C. Dominianum, which plant has been in flower nine months. C. niveum was quite six months in bloom. C. villosum and C. barbatum had their blooms cut off long before they faded to make room for others, while now in November there are spikes enough in bloom and coming into bloom on C. Roezlii to last the entire winter, while C. concolor and C. Schlimii are in charming flower, and C. Argus and others are coming on full of promise, so that we may rely upon this section as perpetual bloomers all the year round. *W. Payne, Belmont, the seat of John Marshall, Esq., Taunton.*

The Poultry Yard (Cramp in Fowls).—A few days since I found a fine young pullet evidently suffering from cramp in the legs, as it crouched about, and was unable to walk except in the most painful way. I caught it, and immersed its legs into a bowl of warm water for a few minutes, then put it into a basket partly filled with litter, and covering it over kept it close confined for the night. Next morning when let out and fed alone, it was still stiff, and evidently better, but I did not intend that it should escape from the outhouse in which it was placed at once. Fortune, however, unexpectedly favoured it, and in a short time it was running about with its mates evidently quite well, and so it has since remained. I have thought the mention of this simple cure for cramp, if such it really was, would be of interest to poultry keepers. *A. D.*

Cinerarias and the Frost.—A few weeks ago a writer in the *Gardeners' Chronicle* advised its readers not to be too much in fear of Mr. Frost as regards this plant. For a long time I have looked upon Mr. Frost as a great foe to it—let me tell you how. Nearly thirty years ago, I had a house of mixed plants under my care, most of them Cinerarias, some fine bushy plants, but Mr. Frost paid this house a most unexpected visit in November, and having effected an entrance, seemed to cry "Havoc!" and let slip the dogs of war, for by morning there was not a Cineraria standing upright, and many of the poor things were killed. Some eight or twelve years afterwards I was walking through a nursery where plants were made a specialty, and on coming to a range of framing I was struck by a sad sight, for before me stood a lot of finely-grown Cinerarias, completely spoiled for the season, for I think this was in November; the successful efforts of a whole summer destroyed in one night. In the face of two cases so sad, can there be any need of advice to any one not to let Master John have anything to do with his Cinerarias? *Thomas Reid, Flaxley, Gloucestershire, November* 10.

Galvanised Iron and Fruit Trees.—When I read the information given at p. 533 I was a little surprised. The quarters of our kitchen garden were all done round five years ago by Messrs. Brown & Co., of Cannon Street, with stout galvanised trelliswork, and, when finished, were all planted with espalier-trained fruit trees, Apples, Pears, Gooseberries, Currants, and Raspberries. Since they were planted it would be impossible for them to have done better. I have not noticed a canker on any of the trees. I may mention that when we are tying them we always twist the matting twice round the wire before tying it round the shoot. The old Clematis flammula runs along the wire very freely. *J. Beattie, Moat Mount, Mill Hill, N.W.*

Glass Copings to Peach Wall.—Mr. Miller must be singularly favoured as regards climate if the photograph of which you give an illustration in last week's *Gardeners' Chronicle* may be taken as representing a fair specimen of the Peach trees at Coombe Abbey. [It does. Eds.] The wall on which it is growing appears to be a very high one, for on counting the courses and allowing four to the foot, which is the usual run for ordinary-sized bricks, I find that the height shown is 11 feet, and as there is no coping seen at the top it may be the gable end of a building [The top with its spouting was not shown] instead of a garden wall, and if so the overhanging eaves or other shelter has perhaps been the means of saving the crop. [There are no eaves near.] Out of a great number of trees on a wall having an east-south-east aspect, and all treated exactly alike, we had one Elruge Nectarine that set and swelled off a very heavy crop, while all the others were nearly bare of fruit. These freaks are difficult to account for, and although fully agreeing with what Mr. Miller says with regard to the necessity of scrupulous cleanliness in keeping down insects, we must do something by way of protection if we are to go on attempting to grow Peaches on open walls. I have unfortunately had no opportunity as yet of testing the utility of glass copings, and have only seen them in use in one instance, and that during the present season at Sudbourne Hall, where I think without a single exception the trees had all full crops of fruit, and in point of health were all that could be desired. I was informed by Mr. Pottle, the able gardener there, that all the protection they had was in addition some old fishing-nets strained from the coping to the foot of the wall,

and if the trees I saw were in that condition owing to the protection afforded by the overlapping glass above them and the nets in front, there can be no question as to its value, and the sooner we have such aids to outdoor fruit culture the better, as in the end they are far cheaper than the sorry contrivances of blinds and such-like appliances now in use. In seasons like the present they are of no avail whatever, and what is wanted is something that can be depended on as being effectual, which these glass copings would appear to be. It is much to be regretted that those who have had some years' experience of them do not speak out, that others may profit by the failures or successes, as the case may be, for to go on year after year without being able to get any Apricots, Peaches, or Nectarines, the trees of which take up so much time and attention in their management, is most discouraging, and alike vexations to employers and gardeners. Glass copings from 2 to 3 feet wide ought not to be expensive, and if the frames and supports are made of metal, as those in use now are, they ought to last almost as long as the walls to which they are attached. To all appearance they are just the thing needed, as they are a compromise between a house and the makeshift appliances for protection that have been so long resorted to. I intend giving them a trial, and should have put up a considerable length, but hesitate to do so till I hear more concerning them, and as it may be the same with many others, I hope those who have them will not keep silent any longer. Mr. Shingles, of Tortworth, I see, appears to have found them a failure, but why this should be I am at a loss to imagine unless there is a long stretch of wall without breaks, in which case the draught would be so sharp as to lower the temperature considerably. No doubt but that projections about every 50 feet or so would be a great help in stopping the cold current of air that dashes itself against the brickwork, and in addition would form a tie and strengthen the coping, besides giving it a more ornamental appearance. A coping with breaks of this kind, with a double fishing-net suspended in front, ought to be proof against 10° of frost, taking into account the heat the bricks absorb from the sun, and which, under such a covering, is only parted with slowly owing to its escape being cut off in the vertical direction. It is a well-known fact that even a newspaper laid over plants will often preserve them from being frozen under glass, but this is owing to the way it intercepts radiation and cuts off the line of communication between the upper and lower air. The same thing occurs if a few evergreen branches overspread the ground, and one would expect a broad coping to act in a similar manner, but whether they are to be relied on as efficient in all seasons is another matter. If they have done as well in other places as the one that came under my notice they must be valuable aids in any garden during such trying springs as the past, when the cold was so continuous as not only to destroy the bloom, but to cripple the young tender leaves so much as seriously to affect the health of the trees. The only objection I can see to glass copings is that they keep off the rains and night dews from the foliage, but with a garden engine and the use of plenty of water the trees are just as well situated for being kept free from spider and other insects as those grown in houses in the ordinary way. *J. S.*

Parachetus communis.—This is an exceedingly pretty creeping perennial, either suitable for a damp place on the rockwork or for the open bed or border. Its Clover-like foliage, apart from the large blue Pea-like flowers, is very pleasing. It is now copiously clothed with flowers fully exposed. It is a native of the mountains of Asia and Western Africa, and is the only species. *J. T. Riches.*

Shade-loving Plants.—For the information of "Trowel" I have enumerated some of the many shade-loving plants that are to be found in many places:—Galanthus plicatus, Ægopodium podagraria [Beware of this. EDS.], Helleborus niger, atrorubens, fœtidus, viridis; Galeobdolon luteum, Corydalis bulbosa, Acanthus mollis, spinosissimus; Gentiana acaulis, Caltha palustris plena, Aconitum Napellus versicolor; Geranium Endresii, Veratrum nigrum, Hemerocallis flava, fulva; Actæa spicata, Colchicum autumnale plenum, Asarum europæum, Hesperis matronalis, Lunaria biennis, Meconopsis cambrica, Allium Moly, paradoxum; Doronicum pardalianches plantagineum, Leucojum vernum, Narcissus poeticus, Alströmeria aurea, Crocus sativus, Omphalodes verna, Anchusa sempervirens, Rhodiola rosea, Polygonum Bistorta, Cnicus heterophyllus, Cyclamen hederæfolium, europæum; Vinca major, Gagea lutea, Fritillaria imperialis, meleagris; Sedum album, Anemone apennina, Nemorosa plena, Funkia ovata, cœrulea; Asperula odorata, Ficaria ranunculoides plena, Lysimachia ciliata, Symphytum bullatum, Aster Tradescanti and dumosus, Pulmonaria officinalis, Erinus alpinus, Scilla bifolia, sibirica; Astrantia major, Lilium Martagon, Dondia Epipactis, Ornithogalum umbellatum, fimbriatum, narbonense; Atropa belladonna, Saxifraga umbrosa, Andrewsii; Ferula gigantea, Sedum Telephium, Erythronium dens-cannis, Tradescantia virginica, Hepatica triloba, Euphorbia Cyparissias, and others that might be enumerated, that afford pleasure in our shady walks, glens, and wildernesses. *Constant Reader.*

Fowl's Food.—Probably no kind of food is more commonly given to fowls than is Barley, but poultry fanciers have their favourite diets and mixtures, most of which is probably quite as dear and less nutritious than firm clean corn. Fowls that have a good run find an abundance of soft food, and if no hard corn be given them the gizzard, Nature's crusher, has little to do, and this lack of work may probably lead to many derangements. I feed my fowls regularly twice a day, that is, the first thing when let out in the morning, and again at mid-day, with a good measure of Maize and Barley in equal quantities; and I observe that, either because the former is the larger, or because it is sweeter, and therefore better appreciated, the poultry pick up every Maize corn before touching the Barley. In addition to this and what in a good run they can pick up, they get now and then a few boiled Potatos and household crumbs, but in no case is the soft food so eagerly eaten as is the corn. On this diet they thrive well, and are at any moment fit to be prepared for the table. *A. D.*

Arundo Donax (p. 597).—Are Mr. Hanbury's plants of the Arundo Donax which flower so freely in the open ground? If so, his plants are an exception to all that I have seen. I have grown it for many years and the plants flourish well, but they have never flowered. The only other instance of which I can find a record is in the *Hortus Collinsonianus*, in which there is the following notice:—"Mem. Arundo Donax in flower September 15, 1762; the first time I ever saw it, but this very long, hot, dry summer has made many exotics flower. Mr. Miller is greatly mistaken to say that it dies down every year; in my garden the stalks have continued some years to make annually young green shoots from every joint; it bears a handsome tassel of flowers.—P. Collinson." *Henry N. Ellacombe, Bitton Vicarage.*

Do Roots Digest?—The roots of plants have the power of digesting mineral and other inorganic substances in the soil with which their rootlets may come in contact, in the same way that the vessels of animals have the power of digesting organic substances which may come in contact with their exuding vessels, either in the mouth, stomach, or intestines. What I mean by roots and vessels having this power is, that they excrete liquids holding matters in solution which are able to dissolve inorganic and organic substances. And here analogy, asserted to be "a fertile source of error," steps in and assists us, and a wonderful aid it is in enabling us to establish new and accurate conclusions in matters before unknown. We will, before passing to the offices of the roots of plants, consider the following well-known operations in animals, and compare them with others not so well known. We will take the secretions of saliva and gastric juice, the one alkaline the other acidulous, each having the property of breaking down and rendering soluble, *i.e.*, capable of being absorbed, matters which might be in the mouth and stomach until corruption set in, unless they were acted upon by these digesting juices. It is well known that during the digestion of a meal a very large quantity of the fluids, charged with an alkali and an acid, flows into the mouth and stomach, but, as rapidly as it flows in, with equal rapidity it flows back again from whence it came, but by another set of vessels, so that there is never present any large quantity at a time. These fluids hold in solution the food—now rendered soluble and capable of being absorbed by the surfaces—with which they come in contact. The same identical fluid, charged with fresh alkali and acid, returns again and again to break down and rob the mouth and stomach of its contents, and store them up in vacant spaces of the animal. We may compare this fluid to a vehicle or carrier taking goods to their destination and returning empty for more, or like a squirrel loading itself with nuts, depositing them in its storehouse, and returning empty-mouthed for more. The above process seemingly takes place during the digestion of carnivorous plants. I have described all this to prepare your readers for the comprehension of the action of the roots, or rather rootlets of plants, which action I believe to be precisely analagous to that of the excreting vessels of animals, rendering soluble and preparing food suitable for their different organisations; as I said before, the plant has to prepare inorganic matters, organise them, and render them suitable for the digestion and organisations of animals. I had, several years since, arrived at this conclusion regarding this digestion of mineral food in the soil, for it must have been at least twenty-five years since that I had a slight controversy with the late Dr. Lindley in the *Gardeners' Chronicle* on the exudation of a fluid from the rootlets of plants holding carbonic acid in solution. I affirmed that it was impossible for the delicate fibrils of the roots to push through a hard and dry soil, away from the influence of rain and air, unless some chemical means were called into action. Professor Lindley denied my theory, and brought forward several interesting examples to prove that roots were capable of thrusting themselves through hard substances, merely by the mechanical force of growth, and that nothing of an acid nature had ever been discovered to exude from roots. I have had several articles on this subject at different times both in the *Chronicle* and *Journal*, and believe that, at last, I satisfactorily proved my theory; at all events, in a recent letter from Mr. Darwin, I find that a German Professor proved experimentally, by growing plants in marble pots, that roots did exude carbonic acid, and corrode marble. I do not quite see how he arrived at any accurate conclusion unless he banished everything of a carbonaceous nature from the pot, for, as I afterwards discovered, free oxygen also exudes in solution from roots, which would combine with any carbon in the soil, and, forming carbonic acid, would act on mineral substances. He may or may not have been aware of this, and taken precautions against it, but great care and delicacy is necessary in making all these experiments. As an instance of the roots of plants passing through a hard dry soil I will relate what I saw at Woburn last year. The gardener pointed out a well which had been dug close to a vinery. He showed me where the roots of these Vines had penetrated a hard dry bed of clay, immediately beneath which was a bed of sand in which the roots were then revelling. *Observer.*

Verbena venosa.—I am glad to see attention drawn to this useful old favourite. It has qualities to recommend it to be more extensively used. It is a good early and continuous bloomer on the borders. It is also an excellent bedding plant, and very telling when mixed with a white variegated Pelargonium. It is quite hardy, and easily managed. When the frost spoils the flowers in the beginning of winter we lift it, and plant it in any corner where the soil is light. It begins pushing through the soil, like the Mint, by the middle of April, and by bedding-out time is just coming nicely into bloom, when it is again transferred to the flower beds, and stands either in hot sun or heavy rain better than almost any other plant; and, as you say, the rabbits very seldom touch it. *James Beattie, Mill Hill.*

The Best Cucumber.—I have been greatly interested in reading the correspondence in your columns on the best Cucumber, especially so as it regards the Telegraph, which was raised here in my father's time about thirty years ago, and named and sent out soon afterwards by Messrs. Fisher, Holmes & Co., of Handsworth Nurseries, under the name of Telegraph, which was the first Cucumber of that name ever sent out. I am aware that many varieties of Telegraph are advertised, upon which I will make no comment. I have grown it myself for the last twenty-five years, without ever having disease or failure; and during that time, I am glad to be able to say, instead of deteriorating it has improved, still holding its own for all purposes against all others, and is at the present time in greater demand than ever. One correspondent speaks of Telegraph and Blue Gown being grown together, and treated alike, "but Blue Gown held on and was producing beautiful fruit, 20 inches long, at least a month after Telegraph had given out." On Friday, November 2, I cut very nice Telegraph Cucumbers from plants which have been bearing all through the season in frames where the temperature for the last month has often fallen to 55° on account of the cold wet weather which we have experienced. I hope I shall not be thought egotistical in writing this letter, which I have done to show the length of time Telegraph has maintained its position amongst Cucumbers, which I consider a strong recommendation. *J. Batley, Wentworth Castle Gardens, Barnsley.*

Cryptotype.—As you have referred to my new photographic process for rapidly obtaining pictures upon boxwood blocks for engraving, perhaps a few words of explanation from me may interest many of the readers of your paper who may have noticed the naturalness of many of the views and garden and greenhouse scenes which for some time past have weekly appeared in the *Gardeners' Chronicle*. To persons unacquainted with photography and engraving it no doubt seems as easy to produce a photographic image upon wood as it is to print a photograph upon albumenised paper, but there are three very great difficulties in the way of printing a photograph upon wood. 1. If an attempt is made to prepare the wood in the same way as sensitive paper is prepared, some change takes place in the wood which turns it to a mahogany colour. 2. The usual photographic preparation also injures the wood. 3. Photographs upon paper have to be subjected to repeated washings; now if boxwood is washed or placed in water it is greatly damaged for engraving purposes. For some years past photographs have been placed

upon wood for engraving by dexterously peeling films off glass and transferring them backwards on to box-wood blocks. But a film of collodion on a boxwood block is highly objectionable in several ways. 1. In fine work the engraver does not know whether he has cut through the collodion and reached the wood; and if the wood is not reached, then, when the block is cleaned, the engraver has to recut his work, for the fine engraving will have vanished with the film. 2. Sometimes the collodion will peel off like a pancake. 3. At other times it will be brittle, and so pieces of the picture will fly away from the wood at the touch of the graver. A process is known for removing the collodion, but this leaves the print so pale, unsatisfactory, and evanescent, that it rubs off on being touched with the fingers. Hitherto all attempts have ended in brown or grey pictures, and these colours are objectionable in wood engraving. The process perfected by me entirely gets over all these difficulties, for the block is never placed in water or washed, there is no preparation of the wood, and there is no collodion. All that is present upon the naked wood is a permanent jet-black image of the object copied. The discovery (which for obvious reasons is kept secret) was not accidental. It was only arrived at after nearly three years' incessant daily work in one direction. Nearly every day of all this long period saw a more or less disheartening and often expensive failure. That it is a success there is no room for doubt, as during the last six months it has been largely tested in different directions by many engravers, and always with uniform and perfectly satisfactory results. For half a year nearly all the more elaborate landscape and garden subjects engraved by my father for the *Gardeners' Chronicle* have been first placed upon the wood by me by this process. The very natural appearance of many of the subjects is owing to this fact. Many portraits have of late been engraved direct from the cryptotype image, and Mr. Berkeley's portrait mentioned by you is now nearly ready for printing. The process is also adapted for producing an enlarged image on the wood of any object direct from the field of the microscope, and I am now executing a number of subjects of this nature. *Arthur E. Smith*, 15, *Mildmay Grove, London, N.*

The Entire-leaved Tulip-tree.—With regard to the "Liriodendron tulipifera integrifolia," spoken of by Mr. Meehan, I send you with this a leaf that you may determine whether or no it is identical with that sent by him [Yes]. I do not think that it is as rare as your correspondent supposes, although I am aware that it is by no means a common tree. I think I may say that all the trees we have here are seedlings. The shape of the leaf is very peculiar, for as that of the normal type is likened to a saddle, the outline of this gives very nearly the cross section of a line-of-battle ship, the leaf-stalk forming the keel and the apex the deck, minus bulwarks. *T. Smith.* [Other correspondents write to the same effect, and we are ourselves conversant with more than one example. Eds.]

Dean's Snowball Cauliflower.—Last year I had sent me some seeds of this variety for trial, but owing to the dry weather it came up badly, and ultimately was eaten off by the fly. But I resolved to give it another trial, and this year procured a packet of seeds, which I sowed in pans, pricking off and transplanting the seedlings when large enough, and by keeping them well watered during the dry weather succeeded in having a good supply of the most beautiful Cauliflowers that any one could wish to possess; and a basket of them did me "good service" in a collection of vegetables at a local exhibition, with which I gained a 1st prize. This Cauliflower is the very thing for exhibition, as it possesses the merit of not being too large, is compact, and as white as the snow from which I suppose it is named. All exhibitors of vegetables should grow it. *J. Batters, Gr., Chilworth Manor, Romsey.*

Cattleya gigas, a Winter-flowering Plant.—We have a plant of the above with twelve fully expanded flowers. It is deliciously scented. Some ladies who have seen it say the smell is a mixture of Violets and Primroses. *R. Carr, The Gardens, Taverham Hall.*

The Deciduous Cypress.—I have observed with much interest the remarks of "P. P. C.," and also of H. W. Ward, in your numbers of the 27th ult. and 3d inst. respectively regarding the deciduous Cypress. Will you allow me to supplement their statement by saying that there is here an avenue nearly half a mile in length of these magnificent and beautiful trees, numbering upwards of fifty. On one side of the avenue the trees grow close to, and spread their roots half-way across the River Lea—the other side of the avenue is some 7 yards from the river. I have no means of knowing the age of these trees, but from circumstances that have come to my knowledge I have no doubt they are upwards of 100 years old. Their height varies from 20 to 75, or perhaps 80 feet, and some of the larger ones measure 9 feet 6 inches to 9 feet 8 inches in circumference, at a distance of 4 feet from the ground. The trees adjoining the river-side throw up from their roots large excrescences which have a peculiar but almost indescribable appearance. These trees are now in their richest autumnal garb, and their graceful foliage sweeping to the ground is an object of much attention to those who delight in arboriculture. *William Gurney, Brocket Hall Gardens, Herts.*

Lilium Krameri.—The most refined of all Lilies and the most beautiful is L. Krameri. The exquisite delicacy of the colour and the pleasing fragrance emitted enhance its value as a conservatory plant. Mr. Boscawen has to-day sent me a flower, and I had no idea that this species would flower in November. I shall be glad to know the experience of other Lily cultivator whether this is an exception or a characteristic. All my specimens have ceased flowering for well-nigh two months. Auratums I had in bloom from July, and had I housed them I believe the succession would have continued up to Christmas—the only Lily I am acquainted with which seems to have no specific season for blooming. Another remarkable thing in L. auratum is the variation in the size of the flower, as well as the diversity in the markings. During the past season I have had flowers not more than 3 inches in diameter, and others a foot; and I have even seen flowers of this Lily 15 inches in diameter. *P. B.*

The Tomato Crop.—Our Tomatos planted on a south border on June 2 grew luxuriantly, set a good crop of fruit, which attained to the usual size, but 90 per cent. refused to ripen in the open air, and some of my neighbours' Tomatos were just as bad. On the same border were placed six medium-sized pots with two plants in each. The pots were well drained, and equal parts of fibry loam and old Mushroom-beds used in potting the plants, which made satisfactory growth. After their fruit were set, manure-water was liberally used until the fruit showed signs of colouring. From that period the plants were merely kept from flagging. Without exception, every fruit ripened in the open air. The plants grown in the pots were trained on the wall in the same manner as those planted in the border. *Thomas Lloyd, Gr. to John M. Fraser, Esq., Mongwell Park, Wallingford, November* 12.

Laying Down of Broccoli.—Why, I ask, do gardeners generally lay down Broccoli with their heads towards the north for protection rather than the south? My experience is that Broccoli laid toward the south resist the influence of frost much better, but I will not enter into the why and the wherefore here, only simply say to those who have never adopted the plan I advocate—try it. *J. Gardner, Elsham Hall Gardens, Brigg.*

Carpet Bedding: Herbaceous Plants.—The best answer to Mr. Thomson's letter, p. 599, is your report of the meeting of the Royal Horticultural Society's Floral Committee, p. 600, where you describe the "very choice collection of cut flowers of various hardy herbaceous plants," exhibited by Mr. Parker, of Tooting. I should be very sorry if our herbaceous borders had to be "torn up at the first frost." *George F. Wilson.*

Irish and English Ivy.—I have often wondered exactly where Irish Ivy begins and English ends, and after reading your correspondent's letter I am as far off a solution as ever. There are in this neighbourhood many acres of woods carpeted with what I suppose we may call Irish Ivy, and it has the long leaf-stalk so objectionable to Mr. Williams (all plants in shady woods, I believe, have longer leaf-stalks than similar plants in the open); and in this same neighbourhood there are miles of stone walls covered with so close a verdure of Irish Ivy (again) as to look almost like paint—the difference, I suppose, between sunshine and shade. It would I think be quite possible in a day's ramble to find as many varieties of Ivy as there are days in the year, but none except in hedges or woods with long leaf-stalks. I have seen ruined towers in both countries mantled over with what to my unpractised eye seemed to be one and the same thing—English or Irish Ivy, and after the ruin has become covered the Ivy loses its palmate character and assumes a more entire leaf. This it always does when it has reached the top of a wall, a tree, or any object up which it has climbed. I suppose there are large and small-leaved forms in both countries; the large-leaved one is, I believe, in England called Irish Ivy, and here the reverse is the case. As to Irish Ivy on a wall requiring an amount of clipping, signboard, &c., if it is clipped at the proper time, just as growth is beginning, you don't have long to wait for the fresh mantle; and to my mind to watch the new beautiful pea-green growth developing so rapidly lends an additional charm. I have never yet seen Ivy, of any country or form, where there was room for twenty leaves in place of one that it had. Another word about the difficulty (?) of propagation: there is one seed-bed not far from where I write that contains not less than 100,000 plants. *T. Smith, Newry.*

Horticultural Exhibitions: General Principles.—With your permission I should like to say a few words on the "general principles" growing out of the closed discussion. Your excellent leader seems to me to have an important bearing on the subject, and with which I quite agree. I say again what I said before, that one main object the joint-stock companies have in view is to bring people together to consume the refreshments they have on sale, or, to use your more elegant phraseology, they "make horticulture a means to an end." Then there is (what seems to me) another evil—I allude to the large number of shows held in a small area. I am not alluding to cottagers' shows, but shows at which gentlemen's gardeners and nurserymen exhibit, the latter very often against their will, inasmuch as their time would be more profitably spent in looking after their business. A friend of mine in the seed trade was speaking with me the other day on this subject, and informed me that it was becoming a very serious matter — the incessant calls for this and that little society. The picture he drew was something in this way:—I go on my rounds in a village, and am asked to subscribe to the horticultural society; drive two or three miles further on to the next village, the same application is made. The applicant, perhaps, is told, Why I have just subscribed to the society in the village I have just left. Yes, the answer is, but "Codlin is the man, not Short;" and, as you say, "all such shows accomplish little or nothing creditable to horticulture." Then, judging from the report published by the National Rose Society, it was a financial failure, and I am sure it must be very humiliating to the excellent men composing the committee of that Society to issue a schedule and at the close of their labours to be obliged to ask the exhibitors to take 50 per cent. from the amount awarded to them. What are the inferences to be drawn from these things? Clearly, to my mind, one is that the efforts of horticulturists are too diffuse—there is sadly too much sail spread; and until differences are sunk and our efforts are more concentrated I fear that this state of things will continue; and inasmuch as I have frequently come in contact with many gentlemen who have expressed a desire to have a strong national horticultural society, I have been very much surprised to observe the same gentlemen act in a way that seems to me to thwart the laudable object they have in view. *A. B.*

Mandragora microcarpa (p. 595).—There seems to have been always some confusion about M. microcarpa and M. autumnalis; but I have little doubt they are synonyms of the same plant. Sweet published M. autumnalis (*British Flower Garden*, ii. 325), but afterwards withdrew the name in favour of Bertolini's M. microcarpa. The plant seems to be perfectly hardy, and I consider it one of the very best of our winter and spring flowering plants. Here it began to flower last November, and continued in flower till May. During that time it threw up several flower-stems, and at a little distance the flowers looked like a bunch of Anemone pulsatilla. For a long time I could see no sign of fruit, but in April I at last found a few fruit hidden away under the leaves close to the ground; and I was induced to believe that these fruit were the produce of some inconspicuous flowers, which fruited like the inconspicuous flowers of the Violet; but this is a mere guess. The plant is now again throwing up its leaves, and I hope will flower. *Henry N. Ellacombe, Bitton Vicarage.*

Reports of Societies.

Scottish Arboricultural: *November* 6.—The twenty-fourth annual general meeting of this Society was held in the class-room of the Royal Botanic Garden, Edinburgh, the Right Hon. W. P. Adam, of Blairadam, M.P., President, in the chair.

The President opened the proceedings with an address, in which he referred to the gradual, steady, and sure progress which the Society was making, not only in the number of its members, but in the influence and authority with which it spoke to all connected with arboriculture. He urged all landed proprietors interested in rearing woodlands, and all foresters engaged in that most interesting pursuit, to become members of the Society, and to assist in the only way at present open to them in the good work of promoting and extending the knowledge and practice of arboriculture in the kingdom. Whereas the number of members in 1858 was only 168, and the income £39 10s., this year the membership was 776, and the income £351; and this advance they owed very much

to the valuable services rendered to the Society by his distinguished predecessors in the chair—Professor Balfour, Dr. Cleghorn, and Mr. Hutchison, of Carlowrie. In 1871 the Queen was graciously pleased to become patron of the Society. Her Majesty had always evinced great interest in the rearing of woodlands, and on her own estate in the Highlands much has been done in this way. He observed also that about the same time they had become affiliated to the Royal Society (Botanical?), which he considered a great step in advance, and most useful and valuable for the Society. It should be an inducement to all who were interested in their success to use greater endeavours to bring their powers of accurate observation to bear on the natural phenomena of which so many came under the eyes of practical foresters, and so render that assistance to the march of scientific progress and knowledge which it became them to do as members of that important body. These two additions to the dignity and importance of the Society ought to be followed by another, and, in his opinion, they ought to use their earliest and best endeavours to obtain a Royal charter. He was not aware whether any and what steps had been taken towards the accomplishment of this object, but he could only say that if he could do anything towards furthering its attainment they might command his services. He had naturally asked himself what his claims were to the distinguished honour of being elected President. Those claims were not great, but he could at least say in the first place that he was a practical woodman, accustomed from his earliest youth to the use of the axe, and delighting both in the exercise and in the interest that it gave him. And he might add that he had brought up all his sons to the same employment, and that they had all acquired in their early years a thorough acquaintance with the use of that implement. In this they would all recognise him as a faithful follower of his late distinguished chief and leader, Mr. Gladstone. One often heard Mr. Gladstone derided for his partiality for woodman's work, but he was sure in that Society, whatever their political opinions might be, and whatever they might think of Mr. Gladstone as a statesman and an orator, they could all appreciate this trait in his character. He (Mr. Adam) was a humble but most persistent follower of Mr. Gladstone in this as in other things, and his general admiration for his character was, as they might suppose, much increased by knowing his proficiency in his favourite exercise. His other claim to the position in which the Society had placed him was, that he came of a race of planters and foresters. He was now the fifth in succession who had specially devoted himself to improving the estate of Blairadam more by planting than by anything else. He had this advantage over many other races of landed proprietors who had devoted themselves equally zealously to this occupation, and that the planting of Blairadam had become classical through a touch of the magic wand of that enchanter Sir Walter Scott. Blairadam, in its original unimproved state before the planting was begun, was a wild unsheltered moor, lying from 500 to 700 feet above the sea, with a certain amount of natural beauty, and with fine views of the plain of Kinross, Lochleven, and the Lomond Hills. But it must have been cold and bare; it was covered with Heather and coarse grass, and had only one enclosure, and one tree—an Ash—which, though it still grew vigorously, was far outtopped by the younger generation. He knew of no instance in the improvement of waste land that more thoroughly illustrated the value and advantage of judicious, continuous, and persistent planting than the estate of Blairadam. Silver Fir had always flourished luxuriantly, and was the most remarkable species of tree on the estate. There were four still living, of which he had the dimensions in 1811, in 1851, in 1862, and in 1877. No. 1 was 8 feet 4 inches in 1811, 13 feet in 1851, 13 feet 6 inches in 1862, and 13 feet 9½ inches in 1877. No. 2 was 8 feet 1 inch in 1811, 12 feet 1 inch in 1851, 13 feet in 1862, and 13 feet 3½ inches in 1877. No. 3 was 10 feet 5 inches in 1811, 12 feet 11 inches in 1851, 13 feet in 1862, and the same in 1877. No. 4 was 9 feet 2 inches in 1811, 11 feet 5 inches in 1851, 12 feet in 1862, and the same in 1877. These trees were planted about 1754, and others probably planted about the same time measured 15 feet 3 inches in girth, 15 feet 1 inch, 14 feet 8 inches. Five measured between 13 and 14 feet, six or more between 12 and 13 feet, and a great many others between 11 and 12 feet. Three very remarkable Hemlock Spruces were planted about 1757. He did not give the exact girth, as two of them divided into separate limbs near the ground, but one had a girth before dividing of about 12 feet, and the other two of about 10 feet. He was afraid that these trees had almost ceased to grow, and that their gradual decay might now be looked for. He had dressed some of them with compost, but without producing any perceptible advantage. The right hon. gentleman went on to refer to the necessity for something being done to establish a school of forestry in this country. He did not say that it would be an easy thing to obtain recognition from Government as to this necessity. He had been long enough connected with the Treasury to know that in this country where any demand on the public purse had to pass the ordeal of Parliamentary criticism, and where the prevailing idea of the Government was to keep down the estimates, it was not till many years of pressing application, and till public opinion was brought to bear, that the public purse strings were drawn. This was one great difficulty in the way, and the other was that whatever might be the case in India and the colonies, they had at home no great forests under the charge of the Government, as was the case in most Continental countries, and this made it difficult to arrange for the practical education of foresters. Still, in spite of these difficulties and drawbacks, he could not but think that in a country like this, with so many dependencies and colonies where a knowledge of the science of forestry was necessary, not only for the protection of forests from destruction, but for the maintenance of that balance between woodland and open ground which was so necessary to preserve proper climatic conditions, it was absolutely essential that a school of forestry should be established. It was the duty of the Society to awake intelligent interest in this question, and he for one should be glad to do all that he could in and out of Parliament to further so praiseworthy an object. The necessity for good schools of forestry was illustrated by what was taking place in India. The wanton destruction of forests in that country had been going on for years. He could confirm from his practical observation as a sportsman all that had been said as to this in Western India. And who could say that the terrible famine which was now devastating some of the fairest provinces of that country, might not be directly traceable to the improvidence of man denuding the country of its natural vegetation, and so altering all the climatic arrangements of Nature.

On the motion of Professor Balfour, seconded by Dr. Cleghorn, a hearty vote of thanks was accorded to the President for his interesting address.

Mr. George Crichton, treasurer, reported that on the transactions of the year the balance had been slightly adverse, but that there still remained to the credit of the Society a sum of £319 10s. On the motion of Mr. R. Hutchison, of Carlowrie, it was agreed to invest £300 in the name of the usual trustees.

Mr. Alexander Buchan, convener of the Meteorological Committee and secretary of the Scottish Meteorological Society, submitted the report on the meteorological experiments at Carnwath. In the outset he referred to a lengthened series of observations of great value which had been carried out in the German forests. The results of these observations worked out were that the mean temperatures of the stations outside forests and of the tops of trees in the interior of the woods were identical. Both sets of instruments were in this case placed in the full light and heat of the sun. The mean temperature on the surface of the earth in the wood was considerably lower than that at the top of the trees, and the mean temperature under the trees was also considerably lower than that outside the wood. Underground temperatures were also very interesting. For instance, the temperature of the soil shaded from the sun by the trees in the heart of the wood varied from two to four degrees below the mean of the outside of the wood under a full exposure of the sun, and protected by the grass. At the Society's station at Carnwath it was impossible to carry out the experiments so fully, owing to the want of observers and of the elaborate sets of instruments. The committee determined to confine their attention to the elucidation of the question of what effect trees had in modifying the temperature of the air around them and of the soil on which they grow. At Carnwath the Society had two sets of apparatus—one fully exposed to the sun's light and heat, and the other quite near, but completely sheltered from the sun. Taking the maximum and minimum thermometers in the open space, they gave a mean temperature from March to July of 46°.6, exactly coinciding with the mean of the dry-bulb thermometers. The mean temperature of the thermometers in the boxes inside the wood and protected by the trees was 46°.5, thus showing that when the sun's heat was increasing there was inside the wood a diminution of temperature compared with the outside of half a degree. The difference of the temperature of the soil in the two positions was even more marked. Inside the temperature of the soil 3 inches underground was 3°.2 below that of the open, at a depth of 12 inches it was 3°.5 below the open, and at a depth of 22 inches it was 3°.9 below the open; whereas outside the wood the difference was at 3 inches 1°.9, and at 12 inches 2°.1.

The President moved a vote of thanks to Mr. Buchan for his able and interesting report, and that the contribution by the Society towards the Carnwath experiments be continued.

Mr. M'Corquodale, Scone, said that he had carried out experiments himself, and found that where the trees were very crowded the ground was kept cool, and retarded the growth of the trees, for the bark thickened, and prevented the flow of the sap. Therefore they ought to thin plantations more.

The President's motion was agreed to, and thereafter he vacated the chair to fulfil other engagements, Professor Balfour, senior Vice-President, taking his place.

Mr. M'Grigor, Ladywell, convener of the judges, gave in the report on the essays submitted for the usual prizes.

A silver medal was granted to Mr. C. F. Amery, forest department, North-West Province of India, for report on Indian Forests.

Silver medal to Mr. J. Hutton, Mackintosh Estates, Kingussie, for report on Woods and Soils on which they Grow.

Bronze medal for report on Use of Dynamite and Tonite in Forestry, by Mr. D. F. M'Kenzie, Murthly Castle.

Silver medal for paper on The Movement of Fluids in Stems, considered in Relation to the Felling and Seasoning of Timber, by Professor W. R. M'Nab, College of Science, Dublin.

Gold medal for Collection of British Woods, by Mr. James Duff, Bayham Abbey, Tunbridge Wells.

Silver medal for Rustic Work, by Mr. James Scrimgeour, Hopetoun House.

The following officebearers for the year were elected:—

President—The Right Hon. W. P. Adam, of Blairadam, M.P.

Vice-Presidents—William M'Corquodale, Hugh Cleghorn, Professor John Hutton Balfour, Thomas Methven, and Robert Hutchison.

Council—John Anderson, P. S. Robertson, Robert Baxter, William Stewart, John M'Laren, William Gilchrist, Malcolm Dunn, William Gorrie, James Robertson, Alexander Richardson, John M'Gregor, C. Y. Michie, John Grant Thomson, Charles S. France, D. Scott.

Secretary—John Sadler, Royal Botanic Gardens, Edinburgh.

Treasurer—George Crichton, of Messrs. G. and M. Crichton, 18, Princes Street, Edinburgh.

Auditor—John Ord Mackenzie of Dolphinton, W.S.

Rev. J. Crombie Brown, LL.D., read a paper on Schools of Forestry, in which he described the schools of France, Italy, Prussia, Spain, Russia, Sweden, Bavaria, Wurtemberg, Austria, Finland, Saxony, Baden, and India, and the curriculum pursued therein. He urged the institution of a school of forestry in Great Britain, and especially suggested that that school should be located at Edinburgh in connection with the new arboretum and with the forests of the Highlands.

Professor Balfour, in moving a vote of thanks to Dr. Brown, commended the plan of an Edinburgh school of forestry, and hoped it would soon be realised.

The motion was agreed to.

Mr. Robert Baxter, forester, Dalkeith Park, read a paper on "Woods for Making different kinds of Charcoal, and the Modes of Preparing it." Almost any kind of wood that grew in this country made, he said, very useful charcoal, with the exception of Poplar. Scotch Elm, Spanish Chestnut, and Lime tree, he did not regard with much favour, owing to their peculiar bark offering great resistance to the charring process. Beech, Plane tree, Ash, Thorn, Oak, Hornbeam, Birch, Alder, and Laurel could all be employed as charcoal producers. The Yew and Holly made very superior charcoal, as they were very heavy, held well together, and had good lasting qualities as fuel. In conclusion, he entered into an elaborate description of the different processes for making the charcoal.

Mr. Malcolm Dunn, the Palace Gardens, Dalkeith, read a paper on "Cryptogamic Plants Injurious to Forest Trees, and their Remedies." Many of this class, he said, were injurious to plant life, and one very important class of diseases amongst trees and timber arose from the attacks of parasitic fungi. He noticed at length instances of attack of a fungus on the roots of Wellingtonia gigantea. The spawn of the fungus had completely choked up the sapwood, and thus killed the trees. The fungus had arisen from the decaying roots of old Elm trees which had been allowed to remain in the ground. The remedy for such attacks was the thorough preparation of the ground before planting, the removal of all dead or decaying wood likely to produce fungi, with careful attention to drainage, and timely and judicious prunings and thinnings. When trees were once attacked the best and safest plan was to root them out and burn them, and so prevent the disease spreading to healthy trees.

An interesting discussion followed.

The remainder of the business was of a routine character. *Scotsman.*

Edinburgh Botanical: *November* 8.—The first meeting of the forty-second season of this Society was held on the above date. Sir Wyville Thomson, LL.D., Vice-President, occupied the chair, and delivered the following opening address:—

Although I am happy to be able to say that the

health of your venerable President, Sir Robert Christison, is greatly restored, he does not yet feel it prudent to take an active part in evening meetings. I have accordingly been requested to occupy the chair this evening in his place, and to congratulate you upon the commencement of another session of the Botanical Society. I ought probably under the circumstances to have prepared for you to the best of my ability a general *resumé* of the progress of botanical science during the present year. You are aware, however, that I am greatly occupied with other matters, and have had but little time for preparation; I must therefore ask your indulgence if, instead of attempting to run over the whole range of botany, I direct your attention for the few moments at my disposal to a curious subject of inquiry to which important contributions have been made even since we last met. We are in the habit of teaching that while the differences between living and inert matter are definitely marked, it is difficult, perhaps impossible, to draw a hard-and-fast line between the animal and vegetable kingdoms; but this statement has usually reference to a certain confusion which arises on the border land among a mass of obscure unicellular or very simple organisms, which Ernst Haeckel, the great German innovator, has proposed to raise to the rank of an intermediate kingdom, under the name of the Protista. Between the higher plants and animals the distinction seemed abundantly clear, and to depend not so much upon structure and form as upon fundamental differences in the mode of performance of the most essential vital functions; plants through their protoplasm acting in contact with chlorophyll under the influence of light have the power of shaking asunder the elements of carbonic acid, water, and ammonia, and of recombining their four elements, carbon, oxygen, hydrogen, and nitrogen, into such ternary compounds as starch and cellulose, and such quaternary and higher compounds as albumen. This power, broadly speaking, the animal kingdom does not possess; and thus the vegetable kingdom must be understood to pre-exist the animal kingdom, and to be necessary for the preparation of its food. But in the young and active condition of the vegetable cell there is no chlorophyll present, and no such process takes place. The elements of carbonic acid and water are fixed and recombined in the green leaves of plants, and the more complex products are conveyed in solution in vessels or by endosmosis to the growing points. At these points the cells are multiplying rapidly, but they are entirely pale, and they have no power of performing any true plant functions. In a growing point every cell consists of an external cell-wall of cellulose, an inert ternary compound, enclosing a nucleated mass of protoplasm, or of protoplasm in conjunction with metaplasm, which gives all the manifestations of vital activity which we have in the lowest forms recognised as truly animals. Every living vegetable shell is thus an amæboid rhizopod, enclosed in an external shell of cellulose, a shell which it has been the active agent in secreting. Growth of the plant-shoot goes on, but this growth is produced by the multiplication by fission of the rhizopods, each division enfolding itself in a new cellulose chamber, which we recognise as an additional vegetable cell. During the past year or two some very important observations have brought this aspect of plant life much more prominently before us. Several observers, including Dr. Nitschke, Sir Joseph Hooker, and more especially Mr. Darwin and his son, Mr. Francis Darwin, have worked up carefully the habits and the constitution of the amæboids inhabiting the cells of glandular hairs. In Mr. Darwin's curiously interesting book about *Insectivorous Plants* we have an account of the process by which Drosera rotundifolia, the common Sundew, manures itself through its leaves, catches insects, and absorbs and assimilates the nitrogenous matter which they contain. Dr. Nitschke, Mr. Darwin, and others have traced the process fully, and have determined that under the stimulus of a supply of suitable food the cell contents of the cells of the leaf-glands secrete a substance having very much the properties of pepsin, and an acid fluid closely resembling that produced in the stomach of the higher animals during the process of digestion. The hair-glands of Drosera inflect themselves tightly over a body, such as a piece of bone, which contains the material specially required by the organism, and gradually the angles of the bone are rounded off, and finally the whole is absorbed, and disappears. Of actions such as this Drosera, though a strongly marked, is by no means a solitary case. The same properties pertain to many glandular hairs; and within the last few months Mr. Francis Darwin has published some results which bring out still more strongly the close resemblance between the protoplasmic masses contained within active vegetable cells and ordinary rhizopods. The common Teasel, a plant abundant in the woods in some parts of the south of England, has connate leaves—that is to say, leaves which by a soldering of the edges of the leaf-stalks form a cup round the stem. These cups catch the rain-water, and while it is slowly evaporating insects creep in, and their decomposing bodies shortly make the water slightly putrid. All over the leaves of the Teasel there are scattered minute trichomes, club-shaped glands at the end of short hairs. The clubs consist of an aggregation of a number of cells containing active protoplasm mixed with metaplasm in the form of resin. These glands are abundant in the cups, and at the top of the gland where the little congeries of cells meet, long threads of protoplasm, associated or combined with some of the resin, are thrown out into the water containing a solution of nitrogenous matter. These pseudopodial threads do not apparently pass through any defined openings in the wall of the cell; they seem to pass through it, which is the less surprising as such membranes are well known to be pervious to viscid semi-fluids. When the pseudopodia are brought into contact with any substances greatly required by the economy of the plant, they contract and run into knots and bladder-like expansions, and absorption takes place rapidly, large sarcode aggregations converting the slender threads into chains of bulbous swellings. Mr. Darwin believes that the protrusion of these sarcodic filaments may have been originally connected simply with the excretion of resin, but he has fully demonstrated that they now subserve the function of the absorption of decaying animal matter. These observations are extremely curious, but they also seem to me to bear an important practical significance. In coaxing and stimulating and coercing plants to do their utmost to win over from the inorganic kingdom the maximum of food fit for man, we have hitherto been treating them simply as plants, grossly analysing their bodies and their ashes, and supplying in a crude way the material which is necessary to build up the whole fabric. If we are forced to look upon a plant as more emphatically a colony of tolerably independent rhizopods, building a symmetrical zoœcium, but building it simply in the sense in which a hydroid zoophite builds its hydrœcium, we must do our best to realise the fact that it is with animal functions that we have mainly to do, and that the full development of the plant, which it is our object to secure, depends upon the maintenance of the health and full nutrition of the animals which are building it up. We have learned empirically that certain salts of ammonia and soda are good manures. We are now taught the precise way in which these manures act. These substances, which contain the materials necessary for the life of the protoplasm are supplied to plants by Nature in too small quantity. On the other hand, water and carbonic acid, the chief materials of their habitation, are usually supplied abundantly. The moment a particle of one of the desired salts is brought into contact with the contents of one of the cells the whole series are stimulated, the matter is rapidly absorbed, and the portion of the plant to which the material has been supplied, or by absorption this whole plant, takes on a more vigorous and hearty aspect. The rhizopods, amply supplied with their proper food, multiply freely, and rapidly attain their full size; at the same time they develope more fully their protecting cell-walls, and the plant grows vigorously.

On the motion of Professor Balfour a vote of thanks was given to the Chairman for his address.

The following communications were read:—

I. Obituary notices of deceased members, prepared by Professor Balfour and Mr. F. M. Webb.

The following are among the names of those whom the Society has lost during the past session:—Professor Alexander Braun, Berlin; Professor Hofmeister, Tübingen; Professor Parlatore, Florence; Dr. Hugh Algernon Weddell, Poictiers.

II. On Fossil Lichens. By W. Lauder Lindsay, M.D., F.L.S., F.R.S.E.

III. Note on a New Species of Agaric (Agaricus Sadleri of Berkeley, M.S.). By Mr. John Sadler.

IV. Miscellaneous Notices.—1. A note was read from Rev. David Landsborough giving an account of a plant of Edwardsia microphylla at present growing in the open air at Kilmarnock, where it has stood for several years without any protection, and is now 3½ feet in height. He also reports that a plant of Dicksonia antarctica is growing to perfection in the open air at Corrie, in Arran, where it was planted some years ago.

2. Dr. Balfour exhibited dried specimens of Indian Pandani which he had received from Dr. King, Calcutta. He also exhibited branches of Sea-Buckthorn covered with ripe fruit, and reported that the plant had fruited abundantly this season on the shore at Tynninghame.

4. Mr. W. Evans exhibited specimens of Trichomanes radicans which he had collected last summer on Torc Mountain, Killarney.

5. Mr. W. P. Drummond exhibited fully expanded Pear blossoms from his garden, near Edinburgh, and stated the late flowering of the Pear was not uncommon this season.

6. Sir P. Murray Threipland exhibited and presented to the museum at the Botanic Garden a cone of Araucaria imbricata, which had been produced this season in his garden at Fingask Castle, Errol.

7. Mr. Sadler exhibited specimens and coloured drawings of Peziza Adæ, Sadler, P. cretea, Cooke, and P. tectoria, Cooke. The drawings were executed by Dr. M. C. Cooke.

8. Mr. McNab placed on the table flowering plants of two varieties of Primula capitata.

Chrysanthemum Shows.—The growers of this indispensable autumn flower at least have no cause for complaining that justice is not done to it, seeing that at the present time quite a plethora of shows are being held in its honour. Unfortunately the majority of the growers, or rather their flowers, were behind time for the earlier exhibitions, and some postponements have in consequence had to be made. However, the flowers that we have seen have been quite up to the mark, though nothing beyond it; and we regret to notice that but slight advance is being made in the production of new varieties. True, the new sorts of recent introduction make their appearance here and there, but nothing absolutely new and of any importance has yet seen shown. The metropolitan Chrysanthemum ball may be said to have been opened on Monday at Blackheath and Lambeth, and to have been continued so far as Brixton and Gravesend on Wednesday, and at Woolwich and Stoke Newington yesterday, Friday. The Woolwich show was postponed from Wednesday to the latter date; and the Wimbledon exhibition has been put off from Wednesday for a fortnight, so late are the generality of the flowers in that district. To-day (Saturday) the Ealing Society's exhibition comes off, and similar displays will be held next week, on Monday in South London, on Tuesday and Wednesday at Hackney, and on Wednesday and Thursday at Kingston and Surbiton. Besides these there are the admirable displays at the Crystal Palace and the Temple Gardens, to say nothing of the various nurseries where this flower is made a speciality.

The Lee and Blackheath Horticultural Society's show, held on Tuesday and Wednesday last, was a very nice one, and included many other flowers besides Chrysanthemums, and fruit and vegetables. The most noticeable features were the groups of flowering and foliage plants, for which Mr. Hart, of Lee, was 1st, and Mr. R. Hill, gr. to G. Penn, Esq., the Cedars, Lee, a good 2d; and their collections included some good Odontoglossums, Calanthes, Poinsettias, &c. Mr. Hart also gained the highest honours for Poinsettias with some very good plants, and again he was placed 1st for six white Primulas—Mr. C. Welsh, gr. to Mrs. Read, Blackheath, taking a like prize for dark-flowered specimens. The show of Chrysanthemums was below the average, the plants in this district being apparently very late this season. Among the cut blooms the best were Elaine, in Mr. Osborne's stand of six large-flowered, and Prince Alfred in Mr. F. Hatchett's twelve large-flowered. Mr. Hatchett was 2d for twelve large-flowered, having, among others, a fine example of Bismarck. In the pot plants Mr. Osborne had a good pyramidal plant of Mr. George Glenny. Mr. W. Green, Padrol Place, taking equal 1st with Mrs. G. Rundle. A good plant of White Cedo Nulli gained for Mr. Osborne another 1st in the class for one specimen Pompon. The same exhibitor also took the lead with four standard Pompons, good examples of Golden Circle, Salamon, White Cedo Nulli, &c. In the class for four large flowering standards, Mr. Osborne again came to the front, showing amongst others admirable plants of George Rundle, Prince Alfred, &c.

The show of hardy fruit was tolerably good, especially the dessert and kitchen Apples shown by Mr. Waterhouse and Mr. Pavey, gr. to W. Watkins, Esq., respectively; and the collection shown by Mr. Osborne. The vegetables and cottagers' classes added much to the interest of the show, although nothing of special merit appeared. The table decorations by Mr. Morley, of Blackheath; the collection of fruit, not for competition, of Mr. H. R. Smith, of Blackheath; and Mr. Hart's miscellaneous group of plants were highly commended,

The Borough of Lambeth Amateur Chrysanthemum Society's third annual show, held on the same day at the Lecture Hall, Borough Road, was one of the best arranged that we have seen, and most creditable to the locality—especially when it is considered that the whole of the productions were grown within a mile radius of the "Elephant and Castle." The stands of cut blooms of Japanese Chrysanthemums were admirable, as were also the standard plants of large and Pompon-flowered varieties. Messrs. Wilsher, Pryer, Summers, Ball, and Fill, were the chief prize takers.

The Brixton, Streatham, and Clapham Society's show, held on Wednesday and Thursday in the pleasant grounds of a local skating club on Tulse Hill, was a small affair, but very good in its

way. The 1st prize group of six large-flowered plants, contributed by Mr. W. Hall, gr. to S. Stevens, Esq., Tulse Hill, were an admirably grown lot, and perfectly bloomed in the case of specimens of Faust, Mrs. Dixon, and Mrs. G. Rundle, the others being scarcely opened enough. The same exhibitor was also 1st with a neatly grown lot of six Pompons, but all deficient in open flower; one, indeed, had not an open bud on it. The other plants staged call for no comment. Cut blooms were fairly well represented as to numbers, and included a few stands of really high-class flowers. The winner of the 1st prize for twelve large blooms was Mr. J. Lee, gr. to Mr. Tom King (a name once famous in connection with a less refined art than gardening), and an excellent stand of blooms it was, the varieties represented being Princess Alexandra, Prince Alfred, Prince of Wales, Nil Desperandum, Hero of Stoke Newington, Mrs. Brunlees, Mrs. G. Rundle, Lady Talfourd, Mrs. Halliburton, Rev. J. Dix, Mrs. Dixon, and Baron Beust. For twenty-four there was also a good competition, and equal 1st prizes were awarded to Mr. W. Hall and Mr. J. Holmes, gr. to G. Storey, Esq., Nightingale Lane. The exhibition included a few small groups of Ferns, stove and greenhouse flowering plants, a capital lot of Primulas, a fair show of fruit, and a first-rate lot of vegetables, amongst which the collection from Mr. Livermore may be singled out for honourable mention.

The GRAVESEND AND NORTH KENT CHRYSANTHEMUM SOCIETY held its annual exhibition in the Milton Hall, Gravesend, and, as a whole, a very good show was got together. Beginning with the cut blooms, we find among the classes for gardeners that for twenty-four incurved blooms. Mr. J. Boulton, gr. to R. A. Gibbons, Esq., Northfleet, came 1st, having amongst others fine blooms of Mrs. George Rundle, General Slade, and Mrs. Dixon; the 2d prize going to Mr. Pendred, gr. to S. C. Umfreville, Esq., Greenhithe, amongst whose exhibit we noted good examples of Novelty, Empress of India, Guernsey Nugget, &c. For twelve incurved blooms the order of the above prizetakers was reversed, Mr. Pendred being 1st, and Mr. Boulton an excellent 2d. In these stands were found good blooms of Jardin des Plantes, Golden John Salter, General Slade, White Globe, &c. For twelve blooms, reflexed, Mr. J. Biggs, The College, Northfleet, came 1st, Garnet and Fair Maid of Guernsey being most noticeable. In the class for twelve bunches of Anemones, Mr. J. Boulton was again 1st, showing fairly good Sidonie, Miss Nightingale, Mr. Astie, &c. Among the amateurs, Mr. Carpenter, Gravesend, had it nearly all his own way, being 1st for twelve incurved, showing Sam Weller, Lady Halford, Prince Alfred, &c.; Mr. W. T. Druck, of Stonebridge, Northfleet, gaining 2d honours with, amongst others, good Golden Beverley, Mrs. Dixon, Mrs. George Rundle, &c. For twelve reflexed, Mr. Carpenter was again 1st, staging good Elaine, Beauté du Nord, &c. Twelve bunches of Anemones gained him another 1st, and twenty-four incurved blooms gained him 2d honours. The cottagers' exhibits of these flowers were certainly above the average, Mr. J. Burdee being fortunate in the classes for twelve large-flowered and for twelve Pompons, being also highly commended for a nice collection not for competition, amongst which were James Salter, Elaine, Prince of Anemones, &c.

Dismissing the cut blooms, and turning attention to the pot plants, Mr. J. Boulton was again to the fore with beautifully trained plants of Mr. George Glenny, Hermione, &c.; Mr. J. Pope, gr. to J. Russel, Esq., coming 2d with good plants. For two plants large-flowered and for four standards Mr. J. Boulton was again premier prizetaker, having good George Rundle, Prince of Wales, Dr. Sharp, &c. Mr. Pope was placed equal 1st in this class, and was also 1st in the class for four standard Pompons, the most noticeable amongst which was Pearl. Mr. Boulton also took the 1st for two standards, showing Mr. George Glenny and Mrs. George Rundle; the 2d falling to Mr. Pepper, gr. to Capt. Sankey, who showed the same varieties. In the class for four dwarf-trained plants Mr. J. Biggs was 1st with good Mr. Estie, Bob, Cedo Nulli, &c. Mr. J. Boulton also gained the 1st for a single specimen plant with Mrs. George Rundle, and for a single pyramid Pompon with a fine plant of Calliope.

Among the amateurs' pot plants Mr. W. T. Dunk gained the 1st for four standards with Venus, Mrs. Dixon, &c.; two plants, dwarf-trained, gained Mr. W. B. Carpenter like honours for good plants of Dr. Sharp and Venus. There were also tolerably good collections of vegetables and fruit, also many "garden designs," worked out with bright coloured Chrysanthemums, which all added interest to the show.

Although we must congratulate the management on making the arrangement good for "effect," yet we must stop there, as a large number of the exhibits had neither the names of the exhibitors attached nor the slightest indication as to which classes they belonged.

FLORISTS' FLOWERS

NEW DAHLIAS OF 1877.—The notes of the new Dahlias distributed by Mr. Turner last spring may be said to have prepared the way for some account of those sent out by his old friend, and in the kindliest sense of the term floricultural rival, Mr. John Keynes. It is to these two famous raisers and cultivators that the floricultural community look for new productions, and on the whole what they put into circulation find much favour with growers.

Of the new varieties put into commerce by Mr. Keynes last spring, Mrs. Drummond, a pale lilac self, and of fine quality when shown as a yearling, has not proved so good as was expected: perhaps the season was not favourable to it. Mrs. John Downie, blush ground, deepening to pale lilac, and heavily edged with rosy purple, was much admired when shown as a seedling, and it has proved a fine constant exhibition variety—a model of what a good Dahlia should be. Mr. Keynes has termed it "a wonderful flower," and in doing so he has not overstated its value. The Hon. Sidney Herbert, while grand in colour, being a self flower, of a rich shaded crimson glow, is yet deficient in outline; it is, however, very constant, and for that reason will be grown. David Saunders is a fine dark Mulberry self in the way of the Rev. Dr. Moffatt, but with a higher centre. This is an improvement that will commend itself to Dahlia exhibitors, for it is a taking flower in an exhibition stand. Perfection of Primroses is of a beautiful primrose glow, and comes slightly edged with rose. It is large in size, but remarkably well built, and has been seen to great advantage in stands during the summer. A very constant and valuable show flower is found in John William Lord, shaded orange-buff, but paler in colour on the surface; it is one of the best and most useful Dahlias of the season. Minnie Bond is an exceedingly pretty and pleasing flower, the ground pale cream, finely laced or edged with rosy purple; but it requires liberal growth to get it into size for the exhibition table, and when in good condition it is really a striking flower. Benjamin Crossland is a flower of which high expectations were formed, but it has proved rather too small this season for exhibition purposes; it is a rich dark purple self of excellent form and substance. Vivid is a soft bright scarlet self that is occasionally a good show flower, but requires cutting-out to get the blooms into proper condition. It bids fair to make a first-rate bedding variety, being dwarf in growth, and throws out its numerous flowers well from the foliage on erect stems. John Wyatt is a grand flower in every respect; it is a finely formed crimson-scarlet self, and too much cannot be said in its favour; it takes a high place in a select list of exhibition varieties. John Fraser is a flower which excited high hopes that have not been realised; it has come coarse, probably owing to the wet season, or more likely still from being overworked at the time of propagating it in the spring; it has a chocalate ground, shaded with purple and buff, and is very novel and distinct. Dauntless is remarkable for its telling colour, being of a rich shaded orange shaded with buff; it is likely to be useful.

Some of the best and most useful fancy Dahlias in cultivation have come out of Salisbury, and it is not surprising that the batch of fancy flowers distributed by Mr. Keynes last spring comprised some thoroughly good things. Hercules, yellow ground, striped and speckled with rich crimson, has proved a great acquisition; it is always ready for show, and is capital in every respect. Tippy Bob is a very useful high centred flower, but wanting in the matter of perfection of outline; colour canary-yellow, with stripes of rose and purple; it is novel in marking, and distinct in character. Monsieur Chauvière is a large back-row flower of a very constant character; lilac ground spotted and striped with dark crimson; it must not be thinned, or the flower will become coarse. Rosette is a lovely flower when caught in proper character, the white ground being handsomely striped with rows of purple; but it is apt to come self-coloured, in which case it is not so good as when the fancy character is well displayed. Lucy Fawcett, straw colour, striped and spotted with rich crimson, is both large in size and constant in character, but lacks outline. Lady Allington, dark scarlet tipped with white, is a very showy useful flower, and will no doubt be grown for its attractive appearance.

The following selection of thirty-six varieties of show Dahlias represent the cream of the flowers shown at various times during the past summer, omitting those that have not yet been distributed:—Mrs. John Downie, John William Lord, John Wyatt, Canary, Christopher Ridley, Acme of Perfection, Alexander Cramond, Countess of Pembroke, Cremorne, Criterion, Charles Leicester, Edward Purchase, George Goodhall, Henry Walton, Herbert Turner, John McPherson, James Service, John Standish, James Cocker, John Neville Keynes, Julia Wyatt, King of Primroses, Leah, Mrs. Stancomb, Memorial, Mrs. Boston, Queen's Messenger, Queen of Beauties, Samuel Plimsoll, Thomas Goodwin, Vice-President, Willie Eckford, William Lucas, Flora Wyatt, Henry Glasscock, and Monarch, the three last named being fancy flowers shown in the self character. The best twenty-four fancies comprised Hercules, Tippy Bob, Mons. Chauvière, Mrs. Purvis, Peacock, Singularity, Artemus Ward, Butterfly, Carnation, Dolly Varden, Fanny Sturt, Flora Wyatt, Henry Glasscock, Letty Coles, Laura Haslam, Leopardess, Miss Lilly Large, Mrs. Goodwin, Mrs. Saunders, Pauline, Prospero, Queen Mab, The Rev. J. B. M. Camm, and Viceroy. *R. D.*

PLANT PORTRAITS.

ADIANTUM EDGWORTHII, Hook., *Illustration Horticole*, t. 286.—An elegant little Fern, with slender linear fronds, having brownish-black rachides, and dimidiate-oblong pinnæ, represented as small wedge-shaped, and toothed along the free edge, in the figure. The fronds are occasionally proliferous, producing little buds or tufts of secondary fronds. Native of Mooltan, where it was discovered by Mr. Edgeworth.

ÆCHMEA VEITCHII, *Botanical Magazine*, t. 6329.—A noble Bromeliad with tufted leaves, leathery in texture, broadly strap-shaped, spotted and minutely serrulate. The inflorescence is a dense spike of scarlet toothed bracts, closely investing flowers of a similar colour. It was discovered in New Grenada by Mr. Wallis, and was introduced into cultivation by Messrs. Veitch.

BEGONIA ROYAL STANDARD, *Floral Magazine*, t. 281.—A seedling raised by Messrs. J. Laing & Co., Stanstead Park, Forest Hill, S.E. The flowers are bold in form, of a rich crimson-lake colour.

BOLLEA LALINDEI, *Botanical Magazine*, t. 6331.—Originally described by Professor Reichenbach, *Gardeners' Chronicle*, 1874, ii., 33. The present plant, grown by Mr. B. S. Williams, differs in colour from that first described. The sepals are rose-coloured, with straw-coloured tips, the petals also rose-coloured but with white margins. The lip is golden-yellow, its disc marked with several elevated ridges.

CALCEOLARIA LOBATA, *Botanical Magazine*, t. 6330.—An herbaceous species, with palmately lobed leaves, like those of a Gooseberry, and erect loosely-branching cymes of yellow flowers, the lip being curiously folded on itself, and spotted on the inner surface. Introduced by Messrs. Veitch.

CERASUS SERRATIFOLIA ROSEA, *Revue Horticole*, October 16, 1877 (also known as C. Sieboldii rubra).—A very beautiful, hardy, free-flowering, double-flowered Cherry; the outer petals of a pink colour.

DOUBLE-FLOWERED MIMULUS, *Florist*, November, 1877.—Three varieties are figured, Galatea, Crown Prince, Spotted Gem. All are remarkable for size, form, richness of colouring and spotting, the stamens, moreover, in some cases being replaced by petals. These fine novelties were raised by Messrs. E. G. Henderson & Co., of the Pine-apple Nursery.

DRACÆNA REFLEXA, *Botanical Magazine*, t. 6327.—A very old plant in gardens, but not previously figured save in Redoubte's *Liliaceæ*. The leaves are lanceolate-sessile, the flowers very numerous in a handsome branching raceme, each nearly 1 inch long, greenish-yellow, with a short tube and narrow spreading segments. Native of tropical Africa, Mauritius, &c. The figure was taken from a plant which flowered in the Succulent-house at Kew.

HYACINTH QUEEN OF LILACS, *Florist*, November, 1877.—A single flowered variety with pale lilac bells, figured from the collection of Messrs. Veitch.

IXORA FORMOSA, *Floral Magazine*, t. 284.—A fine variety raised by Mr. John Fraser, of Lea Bridge, from javanica, crossed with coccinea, or some other

species (*sic!*). It is a fine variety, with compact trusses of novel colour.

LARKSPUR EARL OF VERULAM, *Floral Magazine*, t. 285.—A very dwarf form of dense compact habit, leaves deeply cut into linear segments and erect dense spikes of flowers. The guard petals are bright ultramarine, the other petals violet-purple. Sander & Co., St. Albans.

MALUS CORONARIA, *Revue Horticole*, November, 1877.—A North American species with shining leaves, more or less lobed, flowers small, rose-coloured, anthers yellowish.

NEW HYBRID CAPE PELARGONIUMS, *Floral Magazine*, t. 282: Rosy Morn, Spotted Gem, Echinatum.—The two first-named are presumably hybrids from Echinatum, crossed with pollen of one of the nosegay section, and to this is attributed their distinctness of character, variety of colour, and the much finer appearance and stouter build of the flower.

TOVARIA OLERACEA, Baker, *Bot. Mag.*, t. 6313.—In accordance with the rule of priority the name Tovaria is here adopted instead of Smilacina. The present plant is a native of Sikkim Himalaya, at a great height, and is quite hardy here. The stem is 6 feet in height, with broad ovate-oblong puberulous leaves and terminal panicles of whitish flowers, tinged with pink, in form and size not unlike those of a Lily of the Valley. It was introduced into cultivation at Kew, by Dr. Treutler, and flowered in June. The young flower-heads form an excellent vegetable in Sikkim, hencethe specific name.

TYDEA MONSIEUR THIERS, *Illustration Horticole*, t. 287.—A handsome Gesnerad, with large, ovate, downy leaves, and panicles of long-stalked, pendulous, Gloxinia-like flowers of a red colour; the lobes of the corolla spotted; the interior of the tube is of a whitish hue. It is said to be a cross between Tydea Ceciliæ as the seed parent, and Sciadocalyx Luciani as the pollen parent.

VANDA CŒRULESCENS *var.* BOXALLII, *Botanical Magazine*, t. 6328.—A form with sepals and petals pale violet, the lip dark violet, with raised white lines. See Rchb. f. in *Gardeners' Chronicle*, 1877, i., p. 749. Low, Clapton.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, NOV. 14, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Nov.	In.	In.	°	°	°	°	°				In.
8	29.66	−0.15	57.7	45.2	12.5	50.8	+ 6.5	44.3	79	S.S.W. WSW	0.00
9	29.35	−0.45	56.1	46.9	9.2	51.7	+ 7.8	49.1	91	S.S.W.: S.	0.16
10	29.21	−0.59	55.3	44.6	10.7	49.5	+ 6.0	41.9	85	S.: WSW	0.20
11	28.87	−0.93	52.4	46.2	6.2	49.6	+ 6.4	46.3	89	S.: S.E.	0.41
12	28.83	−0.96	51.2	38.0	13.2	44.0	+ 1.1	39.2	83	S.S.W.: S.	0.45
13	29.35	−0.43	47.7	39.9	7.8	44.0	+ 1.3	41.1	90	S.S.W.: S.W.	0.04
14	29.97	+0.20	51.5	35.8	15.7	42.8	+ 0.3	37.8	83	WSW	0.00
Mean	29.32	−0.47	53.1	42.4	10.7	47.5	+ 4.2	43.2	86	S.: S.W.	sum 1.26

Nov. 8.—A very fine bright day. Little fog in morning. Overcast at night. Mild.
— 9.—Overcast, dull and wet till 9 P.M. Fine and bright after.
— 10.—Fine, but dull and showery at times. Strong wind. Thunder and lightning, accompanied with hail at about 5 A.M.
— 11.—Overcast, dull and very wet throughout. A violent gale of wind. The heaviest gusts occurred just before midnight, being about the time of the lowest reading of the barometer. The direction of the wind at this time was S.S.W., after which it veered to the West. A day of bad weather.

* Barometer reading, November 11, 9 A.M., 29.169 in.; 3 P.M., 28.928; 10 P.M., 28.625; 10.30 P.M., 28.613; 11 P.M., 28.591; 11.20 P.M., 28.567; 11.30 P.M., 28.557; 11.40 P.M., 28.549 (lowest); 11.45 P.M., 28.554; 11.50 P.M., 28.569; 11.55 P.M., 28.571; midnight, 28.566. Nov. 12, 0.5 A.M., 28.565; 1 A.M., 28.608; 4.30 A.M., 28.617; 8 A.M., 28.772; 9 A.M., 28.788; 11 A.M., 28.836; noon, 28.836.

Nov. 12.—Fine day, frequently dull and showery. Cold. Heavy rain and strong gale in early morning. The barometer read at midnight 28.912 inches.
— 13.—A fine day. Cold, cloudy, and gloomy in morning. Barometer reading at 9 A.M., 29.145 inches; 3 P.M., 29.335; midnight, 29.634.
— 14.—A very fine clear day. Cold. Thick fog in morning. Barometer reading at 9 A.M., 29.907 inches; 3 P.M., 30.001; at midnight, 30.067.

LONDON: *Barometer.*—During the week ending Saturday, November 10, in the neighbourhood of London the reading of the barometer at the level of the sea decreased from 30.14 inches at the beginning of the week to 29.76 inches by the evening of the 4th, increased to 29.86 inches by the evening of the 5th, decreased to 29.63 inches by the morning of the 7th, increased to 29.88 inches by noon on the 8th, decreased to 29.37 inches by the afternoon of the 10th, and was 29.43 inches at the end of the week. The mean reading for the week at sea level was 29.70 inches, being 0.36 inch above that of the preceding week, and 0.30 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 60° on the 5th to 54¾° on the 4th; the mean value for the week was 57¼°. The lowest temperatures of the air observed by night ranged between 36½° on the 4th and 50° on the 7th; the mean for the week was 45½°. The mean daily range of temperature in the week was 12°, the greatest range in the day being 18¼° on the 4th, and the least 8¼° on the 7th.

The mean daily temperatures of the air were as follows:—4th, 46°.5; 5th, 52°.6; 6th, 54°; 7th, 53°.6; 8th, 50°.8; 9th, 51°.7; 10th, 49°.5, and the departures in excess of their respective averages were 0°.9, 7°.2, 8°.9, 8°.9, 6°.5, 7°.8, and 6°. The mean temperature of the air for the week was 51¼°, being 6½° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 110¾° on the 5th, and 104¾° on the 8th; on the 6th the reading did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky were 24½° on the 4th, and 41° both on the 5th and 8th. The mean value for the week was 40½°.

Wind.—The direction of the wind was S.S.W., and its strength strong. The weather during the week was generally dull and wet, but very mild. A slight thunderstorm occurred accompanied with hail and heavy rain on the morning of Saturday the 10th inst.

Rain fell on five days during the week, the amount collected was 0.81 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 62° at Sunderland, 60¼° at Sheffield, and 60° at Blackheath; the highest temperature of the air at Bradford was 56½°, and at Brighton, Wolverhampton, Liverpool, and Hull was 57°; the mean value from all stations was 58½°. The lowest temperatures of the air observed by night were 30¼ at Nottingham, 32½° at Wolverhampton, and 34¾° at Cambridge; the lowest temperature at Liverpool and Bradford was 43°, and at Plymouth 42°; the mean value from all stations was 37½°. The range of temperature in the week was the greatest at Nottingham, 28¾°, and the least at Bradford, 13½°; the mean range of temperature from all stations was 21°.

The mean of the seven high day temperatures was the highest at Blackheath, Truro, and Sunderland, all 57½°, and at Portsmouth, Plymouth, and Bristol, all 56¼°, and the lowest at Wolverhampton, 52½°, and at Bradford, 53°; the general mean from all stations was 55½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 39°, and at Nottingham, 40¼°; and the highest at Portsmouth, 48¼°, and at Brighton, 48°; the mean value from all stations was 44½°. The mean daily range of temperature in the week was the least at Brighton, 7½°, and the greatest at Nottingham, 14½°; the mean daily range from all stations was 11°.

The mean temperature of the air for the week from all stations was 49¼°, being 10° higher than the value for the corresponding week in 1876. The highest were 51½° at Portsmouth, 51¼° at Blackheath, and 51° at Brighton and Plymouth, and the lowest were 45° at Wolverhampton, and 47° at Nottingham.

Rain fell on every day in the week at most stations, and generally on five or six days. The amounts measured varied from 1 inch and and four-tenths at both Brighton and Eccles, and 1¼ inch at Truro, to one-tenth of an inch at Sunderland. The average fall over the country was three-quarters of an inch.

The weather during the week was generally dull and wet, but very mild. Thunderstorms occurred generally on the 9th and 10th inst. A solar halo was seen at Bristol on the 7th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 62° at Paisley to 53° at Glasgow, Dundee, and Greenock; the mean value from all stations was 55°. The lowest temperatures of the air varied from 38° at both Edinburgh and Dundee to 42½° at Glasgow; the mean from all stations was 40°. The mean range of temperature from all stations was 15°. The mean temperature of the air for the week from all stations was 47¾°, being 10¾° higher than the value for the corresponding week in 1876. The highest was 49°, at Leith, and the lowest 47¼°, at Aberdeen.

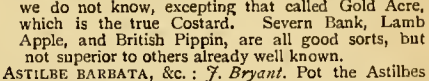
Rain fell at Greenock and Paisley to the amounts of 3½ inches and 3¼ inches respectively, whilst at Aberdeen only a quarter of an inch fell. The average fall over the country was 1 inch and four-tenths.

DUBLIN.—The highest temperature of the air was 57°, the lowest 35°, the range 22°, the mean 48½°, and the fall of rain three-quarters of an inch.

JAMES GLAISHER.

Variorum.

HINTS ON CHIMNEY CLEANING.—No hard and fast rule can be laid down as to the length of time that any chimney will go before it requires sweeping. So many things have to be taken into consideration; much depends upon the size of the chimney, the extent of the fire used, and the nature of the fuel. A kitchen fire being used daily, the kitchen chimney requires sweeping every three or four months. Should it smoke, it is a pretty sure sign that the sweep is necessary; for though the chimney itself may be clean enough, the chimney-pot may have become choked up in some way or other that prevents the smoke having free egress. All other chimneys should at least be swept once a-year; and, considering that now-a-days drawing-room fires have sometimes to be lighted during the summer months, twice a-year is by far the safer plan. At the time of the sweep's visits, all small articles should be removed from the rooms, pictures and curtains taken down, and this opportunity should be seized for taking up the carpets. In country places, where a difficulty exists in obtaining the services of a chimney-sweep, persons often clean their own flues in the following manner:—After the fires are out at night the grate is cleared from cinders and ashes, in order that the soot (which is very valuable for gardens) may not be mixed with them. A garden mat, or other convenient material, is then fixed against the front of the mantelpiece, in the same way that it would be by the sweep. The gardener, or any available man, then passes a gun up the chimney as high as he can reach from the left-hand side, removing the mat only just enough to admit his right arm, and holding the mat close with the other. As soon as the soot is settled, and the gun re-loaded (of course with powder only), the operation should be repeated, two discharges of the gun being generally sufficient. The mat must remain safely secured against the chimney-piece all night, and in the morning a man should ascend to the roof and sweep down as far as he can reach. For this purpose a long stick should be procured, to the end of which an old broom, or, better still, a bush or furze, should be attached. *Cassell's "Domestic Dictionary" for November.*



APPLES: *A. H. P.* The fruits you have sent to us we do not know, excepting that called Gold Acre, which is the true Costard. Severn Bank, Lamb Apple, and British Pippin, are all good sorts, but not superior to others already well known.

ASTILBE BARBATA, &c.: *J. Bryant.* Pot the Astilbes without cutting the roots at all if you can help it. After flowering plant them out on a rich border. Don't prune the Maréchal Niel at all, except it be to thin out the shoots. We should think the best book you can have to begin with would be an elementary one like Paxton's *Cottager's Calendar.*

HEATING: *J. W. W.* A small gas stove or one of the several little oil stoves now advertised would answer your purpose.

NAMES OF FRUITS: *J. T. P.* Apple: Pomme violette.—*Perrystone.* 2, King of the Pippins; 3, Fearo's Pippin; 5, Margil, probably; others not known.—*H. A. B.* 3, Yorkshire Greening; others so rubbishy that they can't be recognised—*F. Clarke.* 1, Sops of Wine; 3, Longville's Kernel; 4, London Pippin; others not known.—*B. G., Whitehaven.* Pear: Jersey Gratioli. Apples: 1, King of the Pippins; 3, Emperor Alexander.—*W. T.* Apple: King Harry.

NAMES OF PLANTS: *Redwood.* Helianthus strumosus var.—*A. G.* 1, Begonia (?), flowers required for identification; 3 and 4, Cactuses, which it is impossible to name in the condition sent; 5, Euonymus japonicus variegatus; one of the two others sent without numbers is a Kleinia, the other Isoloma Deppeana.—*J. Leman.* Browallia viscosa.—*T. T.* Your plant may be Dendrobium cumulatum, but it reached us in such condition that we cannot determine it for certain.—*C. B.* Cotoneaster affinis.—*T. K. K.* 1, Aster horizontalis; 2, Cotoneaster Simonsi; 3, Escallonia macrantha.—*P. T. N.* Heeria rosea of Triana, or Heterocentrum mexicanum of Hooker.

Paronychia Tea, p. 594.—In addition to P. argentea P. nivea is also used.

Plant Culture: *J. H. T.* Palms will grow in almost any description of soil, either peat or loam; but where good loam of a rich, somewhat adhesive nature, similar to what is found in most parts of Kent, can be had, it is best to grow Cocos Weddelliana and others. Drain the pots well, but do not put so much sand in the soil as usual for the generality of other plants; do not over-pot, and give abundance of water in the growing season, never letting the soil even during the winter get nearly so dry as with most things. The above treatment holds good for Palms collectively. Aspidistra lurida variegata is an easily grown plant, but although all but hardy in most parts of the kingdom it does much the best when it can have a little warmth; it will do in either peat or loam, but we have found that the leaves usually come with more white in them when loam is used than peat; add one-sixth or a seventh of sand. *T. B.*

Vines Shanking: *A. Z., Oxford.* Yes; we would advise you to do as you say with the outside borders. Make the outside border wider, and not exceeding 3 feet in depth, but well drained. The inside border you need not trouble about, except to have it well watered.

Erratum.—In the article on the remains of Egyptian plants, at p. 563, twelve lines from the bottom, for "inhabitants" read "plants."

Catalogues Received.—J. M. Thorburn & Co. (15, John Street, New York), Wholesale List of American Seeds for the European Wholesale Trade.—Kelway & Son (Langport), Twenty-seventh Annual Catalogue of Gladioli.—Messrs. Simon-Louis Brothers (Metz, Lorraine), Catalogue of Trees and Shrubs, Roses, Plants, Fruits, &c.—A. M. C. Jongkindt-Coninck (Tottenham Nurseries, Dedemsvaart, Pays-Bas), Price List of Trees, Shrubs, Bulbs, Plants, Cactus, &c.—Messrs. Rush & Yeats (19, Foregate Street, Chester), Price List of Forest, Ornamental and Fruit Trees, Evergreens, Shrubs, Roses, &c.

Communications Received.—J. W.—M. M.—C. Y. M.—R. P.—Derbyshire (next week).—N. W.—Duffer.—H. L. & Co.—R. G.—E. W.—A Gardener.—J. S.—D. G. M.—G. D.—S. J.—J. M.—F. B. (next week).—E. E. E.—J. B.—A. F. B.—W. R.—M. C. C.

Markets.

COVENT GARDEN, November 15.

There is a general depression in all parts of our market, and prices are, with few exceptions, lower. A good supply of Grapes is still to hand, at previous rates. The first direct cargo of St. Michael Pines has arrived in very good condition, realising fair prices. Cobs are stagnant, good samples on offer at reduced rates failing to meet with buyers. *James Webber, Wholesale Apple Market.*

Cut Flowers.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6- 1 6	Jasmine, per bunch	1 0- 2 0
Asters, 12 bun. ..	6 0-12 0	Mignonette, 12 bun.	2 0- 9 0
Bouvardias, per bun.	1 0- 4 0	Narcissus, (Paper White), per doz...	3 0- 6 0
Calceolaria, p bun.	0 6- 1 0	Pelargoniums, 12 spr.	1 0- 3 0
Camellia blms., doz.	3 0-12 0	— zonal, 12 sprays	0 6- 1 6
Carnations, 12 blooms	1 0- 3 0	Primula, double, per bunch	1 0- 2 0
Chrysanth, 12 blms.	3 0- 6 0	Pyrethrum	0 6- 1 0
Cornflower, 12 bun.	6 0- 9 0	Roses (indoor), doz.	1 6-12 0
Dahlias, 12 bun. ..	6 0-12 0	Stephanotis, 12 spr.	6 0-12 0
Epiphyllum, 12 blms.	1 0- 3 0	Stocks, 12 bunches..	4 0- 8 0
Eucharis, per doz. ..	4 0-12 0	Tropæolum, 12 bun.	1 0- 4 0
Gardenia, per doz. ..	5 0-12 0	Tuberoses, 12 blms.	1 6- 4 0
Heartsease, 12 bun.	1 6- 6 0	Violets, 12 bunches	1 0- 3 0
Heliotropes, 12 spr.	0 6- 1 0		
Hyacinths, Rom. doz.	2 0- 6 0		

Plants in Pots.

	s. d. s. d.		s. d. s. d.
Begonias, per doz. ..	6 0-12 0	Ferns, in var., p. doz.	4 0-18 0
Bouvardias, do. ..	12 0-24 0	Ficus elastica, each	2 6-15 0
Chrysanth., per doz.	5 0-12 0	Foliage Plants, various, each	2 0-10 6
Clematis	6 0-24 0	Fuchsias, per dozen..	6 0-12 0
Coleus, per dozen ..	6 0- 9 0	Liliums in var., each	1 6- 6 0
Cyclamen, per doz...	12 0-24 0	Mignonette, per doz.	6 0- 9 0
Cyperus, do... ..	4 0-12 0	Myrtles, do... ..	3 0- 9 0
Dracæna terminalis	30 0-60 0	Palms in variety, each	3 6-21 0
— viridis, per doz.	18 0-24 0	Pelargon., scarlet, p. dozen	6 0- 9 0
Erica Hyemalis, doz.	18 0-42 0	Solanums	9 0-24 0
— gracilis, per doz.	6 0-18 0	Valotta purpur., doz.	9 0-18 0
Euonymus, in var., per doz.	6 0-24 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz. ..	2 0- 4 0	Herbs, per bunch ..	0 2- 0 4
Asparagus, Sprue, per bundle.. ..	1 6- ..	Horse Radish, p. bun.	4 0- ..
Beans, French, per packet	1 0- ..	Leeks, per bunch ..	0 2- 0 4
Beet, per doz. ..	1 0- 2 0	Lettuces, per score..	2 0- ..
Brussels Sprouts, p. bush.	6 0- ..	Mint, green, bunch	0 6- ..
Cabbages, per doz. ..	1 0- 2 0	Mushrooms, per pott.	1 0- 3 0
Carrots, per bunch..	0 4- 0 6	Onions, per bushel..	3 6- ..
Cauliflowers, per doz.	1 6- 4 0	— young, per bun.	0 6- ..
Celery, per bundle..	1 6- 2 0	Parsley, per bunch..	0 9- ..
Chilis, per 100 ..	3 0- ..	Radishes, per bunch.	0 1- 0 3
Cucumbers, each ..	1 0- 6 0	— Spanish, doz. ..	1 0- ..
Endive, per doz. ..	1 0- 2 0	— New Jersey, doz.	2 0- ..
— Bataviao, p. doz.	1 6- ..	Salsafy, per bundle	1 0- ..
Garlic, per lb. ..	0 6- ..	Shallots, per lb. ..	0 6- ..
		Spinach, per bushel	2 6- ..
		Tomatos, per doz. ..	1 0- 2 0
		Turnips, per bundle	0 4- 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6- 5 0	Peaches, per doz. ..	20 0- ..
Grapes, per lb. ..	0 9- 6 0	Pears, per doz. ..	2 0- 4 0
Lemons, per 100 ..	8 0-12 0	Pine-apples, per lb...	3 0- 6 0
Melons, each ..	2 0- 5 0	Figs, green, doz. ..	1 0- 3 0
Nuts, Cobs, per lb...	0 4- 0 6	Walnuts, per bushel	5 0- 8 0
Oranges, per 100 ..	6 0-16 0		

SEEDS.

London: *Nov.* 14.—More inquiry is now shown for Clover seeds, and there are indications that the stagnation of the past few months will shortly be succeeded by a moderate amount of activity. Red Clover, it is generally considered, has seen its lowest; and, in consequence of this opinion, there is greater disposition to purchase. Mail advices describe the supplies on the chief American markets as scarcely equal to the home demand. Although the crop is undoubtedly a good one, the Western farmers, not being pleased with current rates, and feeling assured that the expected orders from Europe must shortly enhance prices, will not yet thresh freely; at present, however, there seems no immediate chance of their wishes in this respect being fulfilled; for, taking quality into account, French seed is certainly cheaper than American. New English red does not yet appear in quantity; a few samples have been exhibited on Mark Lane, but no values have yet been fixed. There has been a little business doing in Alsike, and one or two parcels of new home-grown have changed hands. White Clovers and Trefoils are held with firmness. As regards Mustard seed prices have lately gone continuously in favour of buyers; the crop in Cambridgeshire has proved unusually large. Essex seed this year was of extremely fine quality. Good useful brown samples are now obtainable on reasonable terms. In Canary seed there has been rather more doing at the late decline; indeed, quotations are now so low that some little speculation in the article has sprung up. Blue Peas command a good sale at full rates. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was dull in the extreme, and as regards Wheat and flour still weaker prices prevailed. The chief incident was a reduction of 4s. in the price of of town-made flour, 52s. per sack being the top price. In Wheat transactions occurred at from 1s. to 2s. decline. This, however, does not apply to white produce, the better qualities of which were usually held for the full rates of the previous Monday. The depression in the market may be partly ascribed to the heavy arrivals. Barley was steady in tone, without much doing. Malt was slow, and much the same in price. Oats and Maize, Beans and Peas, all experienced a dragging sale, but quotations generally were no flatter. Flour of the various kinds and grades found very few buyers, even at reduced currencies.—On Wednesday there was no improvement observable in the market, indeed the tendency was towards increased depression. Wheat and flour could only be sold at less money, and holders as a rule were most anxious to realise. Barley was steady; Oats and Maize were much the same as on Monday; and though Beans and Peas were unaltered in value, yet the inquiry was particularly dull. The top price of town-made flour was 50s. per sack.—Average prices of corn for the week ending November 10:—Wheat, 52s. 5d.; Barley, 43s. 3d.; Oats, 24s. 6d. For the corresponding week last year:—Wheat, 48s. 3d.; Barley, 39s. 3d.; Oats, 25s. 10d.

CATTLE.

At Copenhagen Fields on Monday the supply of beasts was about the same as on the previous Monday, but the average quality was scarcely so good. Being scarce choicest qualities in a few instances exceeded our top quotations. The trade in sheep was brisk, and a fair clearance was effected at fully late rates. There were very few calves on offer, and choice qualities were in demand. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 6d. to 6s.; calves, 4s. 8d. to 6s. 2d.; sheep, 5s. 6d. to 6s., and 6s. 6d. to 7s.; pigs, 4s. to 5s.—Thursday's trade was quiet, and without special feature. Both beasts and sheep changed hands quietly, and whilst the best breeds were tolerably steady, other sorts were irregular in value. Calves were firm, and the best kinds rather dearer. Pigs were dull and weak.

HAY.

The Whitechapel market report for Tuesday states that with the supply rather considerable and the demand the reverse of active, prices were hardly so good as on the previous Saturday. Prime clover, 100s. to 137s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 105s.; inferior, 75s. to 85s.; and straw, 44s. to 58s. per load.—On Thursday there was a fair supply of fodder, trade for which was quiet, and prices for straw were somewhat lower. Quotations:—Prime Clover, 100s. to 137s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 105s.; inferior, 75s. to 85s.; and straw, 44s. to 54s. per load.—Cumberland Market quotations:—Superior meadow hay, 100s. to 110s.; inferior, 80s. to 90s.; superior Clover, 130s. to 136s.; inferior, 90s. to 110s.; and straw, 52s. to 57s. per load.

COALS.

The market was moderately supplied on Monday with house coals, which sold at last quotations. Business on Wednesday was quiet, but at firmer prices than on Monday. Quotations:—Springwell Hartley, 16s. 3d.; Walls End—Hetton, 20s.; Hetton Lyons, 17s. 9d.; Hawthorns, 17s. 9d.; Lambton, 19s. 6d.; South Hetton, 20s.; Tunstall, 17s. 9d.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

SPECIAL OFFER TO THE TRADE.

FRUIT TREES.

Extra Strong—Beautifully Trained.

	2-yr. Cordons and Palmettes. Per 100.
APPLES, on Crab and on Doucin	42s.
PEARS, on Crab and on Quince	50s.
PLUMS, on Prunus St. Julien	50s.

A List of the Names of the Fruit Trees gratis on application.

STOCKS for BUDDING and GRAFTING.

	Per 1000.
PYRUS MALUS, Crab-Apples	20s.
ROSE, Manetti	25s.
,, multiflora de la Grifferaie	25s.

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 15s. per 1000.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

BEAUTIFUL FLOWERS FOR WINTER & SPRING

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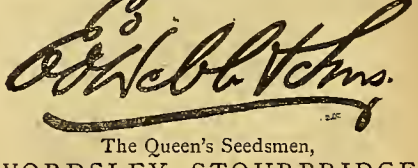

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

EXTRACT FROM
CARTER'S LIST OF NOVELTIES FOR 1877.

ESCHSCHOLTZIA MANDARIN.

First-class Certificate Royal Horticultural Society.

"ESCHSCHOLTZIA CROCEA MANDARIN.—A distinct variety; the outer side of the petals brilliant scarlet, the inner side rich orange; very brilliant in colour, and most desirable."—*Gardeners' Magazine*, July 7, 1877.

Electros, price 7s.

NEW JAPANESE DIANTHUS,

Eastern Queen and Crimson Belle.

"Messrs. James Carter & Co. exhibited cut blooms of two varieties of Dianthus Heddewiggii, named Crimson Belle and Eastern Queen. The size, substance, and richness of the flowers were remarkable. These varieties will be valuable for garden decoration, especially as they have been proved after some years of trial to come quite true from seed."—*The Journal of Horticulture.*

Electros, price 7s.

CARTER'S NEW CARMINE CANDYTUFT.

This splendid novelty is of dwarf compact habit, and the plant presents one mass of vivid carmine bloom. It is most distinct and beautiful—must not be confounded with a flesh-coloured variety lately exhibited by a Continental house.

"CARMINE-FLOWERED CANDYTUFT.—Messrs. Carter & Co. have sent us cut blooms of this Candytuft, which will doubtless be largely grown when better known, its colour being somewhat unusual amongst Candytufts. It is of good habit, and flowers freely in spring and early summer."—*The Gardener*, August 18, 1877.

Electros, price 5s.

LOBELIA PUMILA MAGNIFICA.

This is by far the finest form of Lobelia in cultivation. The habit of the plant resembles the fine-foliaged pumila variety, whilst the flowers are of immense size, and of the richest ultramarine-blue colour.

We have carefully selected our stock, and it may be depended upon to come perfectly true from seed.

VICK'S CRITERION TOMATO.

First-class Certificate Royal Horticultural Society.

REPORT OF TRIALS OF TOMATOS AT CHISWICK (Royal Horticultural Society's Gardens).—"Vick's Criterion (New Improved) is a large smooth ovate variety, of a distinct rosy crimson colour; free fruiting."

Electros, price 15s.

CARTER'S CHALLENGER PEA.

From Mr. WHALLEY, *Head Gardener to His Grace the Archbishop of Canterbury.*

"Carters' Challenger is the best Pea we have yet grown; it will become a very great favourite, particularly with market gardeners, as it requires no stakes, and grows well; also a very beautiful Pea, fine for exhibition."

Electros, price 10s.

NEW SWEET PEA—VIOLET QUEEN.

It is dwarfer in habit than the other varieties, and the seed is also quite distinct in appearance, the flowers ranging in colour from deep mauve to light violet, suggestive of the beautiful Bougainvillea.

Electros, price 6s.

TWO NEW MELONS.

CARTER'S PINE CREAM MELON.

First-class Certificate Royal Horticultural Society.

Distinct in seed, appearance, and flesh.

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KHIVA MELON.

We think this Melon will be found to be identical with the variety referred to by Captain Burnaby in his *Ride to Khiva*, p. 278, who speaks of the Khiva Melon as follows:—

"The Melons here have a fame which is celebrated all over the East. . . . The taste is so delicious that any one only accustomed to this fruit in Europe would scarcely recognise its relationship with the delicate, highly perfumed Melons of Khiva."

Mr. A. MCARTHUR, *Head Gardener to H.R.H. Prince Dhuleep Singh.*

"Your Khiva Melon is a very good one; it is medium sized, thin skinned, melting and juicy; the flesh is green, very prolific, and quite distinct."

CARTER'S LITTLE WONDER PEA.

A wrinkled Marrow, as early as Advancer, and quite equal in length and breadth of pods, productiveness, and flavour to G. F. Wilson, or the finest type of Veitch's Perfection.

From the "Gardeners' Chronicle," July 21, 1877.

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This is an extraordinary acquisition, the Peas often being so close together as to appear to be forming a double row in the pod. It is likely to be the forerunner of a new type of this indispensable summer vegetable.

From Mr. J. GOODACRE, *Head Gardener to the Right Honourable the Earl of Harrington.*

"Culverwell's Telegraph Pea is the longest and handsomest Pea grown, very productive, and excellent quality; a vigorous constitution; quite free from mildew; just the Pea for exhibition."

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For further particulars and other Novelties see above List, now in the Press.

☞ **Several Prizes of considerable money value will be offered for some of these Novelties at the Preston Show of the Royal Horticultural Society; for particulars see "Novelty List."**

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Aberdeen Forest Tree Nurseries.

LARCH and SCOTCH FIR (from Native Seed) are grown here on high-lying grounds by the million, of robust growth and abundant root-fibre; also various ages and sizes are grown for sale in similar large proportion of other CONIFERS and TIMBER TREES, FRUIT TREES, ORNAMENTAL TREES and SHRUBS, &c.

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CHOICE CHEAP BULBS.—The following Collection, carriage paid, for 12s. 6d.:—9 named HYACINTHS, 50 assorted TULIPS, 100 assorted CROCUS, 100 SNOWDROPS, 12 POLYANTHUS NARCISSUS, 6 JONQUILS, 12 Winter ACONITES, 12 SCILLAS, 12 IXIAS, 12 SPARAXIS.

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The Royal Seed Stores, Yeovil.

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CATALOGUE

OF

DUTCH FLOWER ROOTS

FOR

Autumn, 1877,

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For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacinths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
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50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
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WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

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From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

From R. PRONYCE, Esq., *Bathgate, N.B. February* 7, 1877.

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THE QUEEN'S SEEDSMEN, NORWICH.

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
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USED BY THE ROYAL HORTICULTURAL AND BOTANIC SOCIETIES.

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ARREST YOUR PURCHASES of all other Cake until you have read the "Book of Testimonials" from users of this cake. Sent post-free by the Agent for the County, or by the Makers.
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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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Illustrated Price Lists free by Post. The Trade supplied.

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KENT PEATS or LOAM supplied at lowest rates in any quantities.
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A liberal Discount to the Trade.

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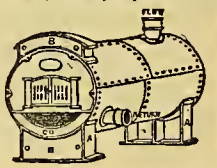
After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Copy of a Testimonial.

"Royal Exotic Nursery, King's Road,
"Messrs. SILVESTER. Chelsea, S.W.—Aug. 8, 1877.

"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

"For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hot-houses during the cold winter months as we do now.

"We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.

"We are, Gentlemen, yours faithfully,
"JAMES VEITCH AND SONS."

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P. & J. SILVESTER.

HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

GREENHOUSE BOILERS for SALE, a Bargain.
2 SADDLE BOILERS, in good condition.
1 LYNCH WHITE'S BOILER, Conical.
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1 COPPER BOILER, heated by Gas, with Fittings.
Also a quantity of 4 and 3-inch HOT-WATER PIPES.
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WAGSTAFF'S
Patent Saddle and Cylindrical
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Efficient and Economical.
Awarded 6 Silver Medals.

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Plans and Estimates of Work in any part of the Kingdom gratis, and efficiency guaranteed. Price Lists, Prospectus, and Testimonials free on application.
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Healthy Heat twenty-four hours or longer for about 1*d.*, without attention. For Bedrooms, Greenhouses, or almost any purpose. Prospectus and authenticated Testimonials sent. In use daily at Patentee's, THOMAS ROBERTS,
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AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

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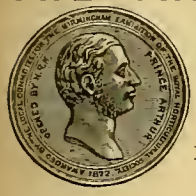

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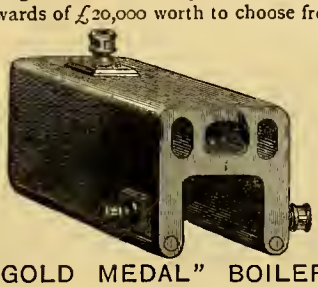
Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



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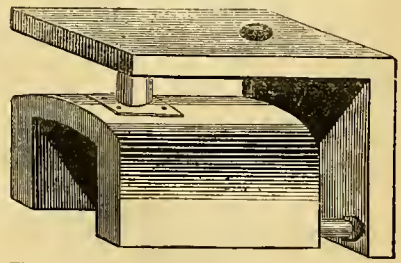
This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.
KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872).
PATENT "EXCELSIOR" BOILER (1871)
"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.
PATENT PAXTON INDEPENDENT BOILER.
"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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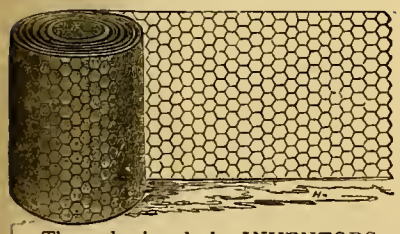

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HORTICULTURAL BUILDINGS OF ALL DESCRIPTIONS & HOT-WATER HEATING APPARATUS
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Show Rooms: MANSION HOUSE BUILDINGS, LONDON, E.C.,
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9 "	0	5	6	20 "	0	11	0
10 "	0	6	0	21 "	0	11	6
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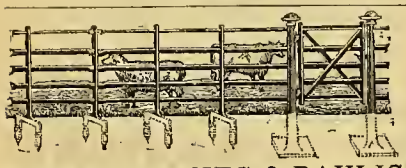

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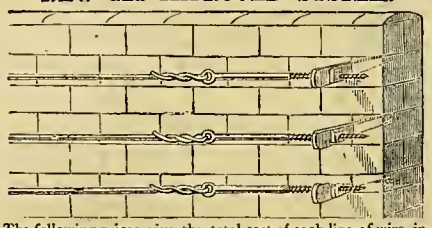

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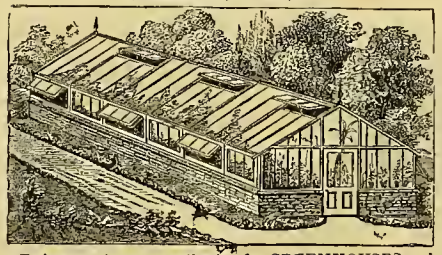

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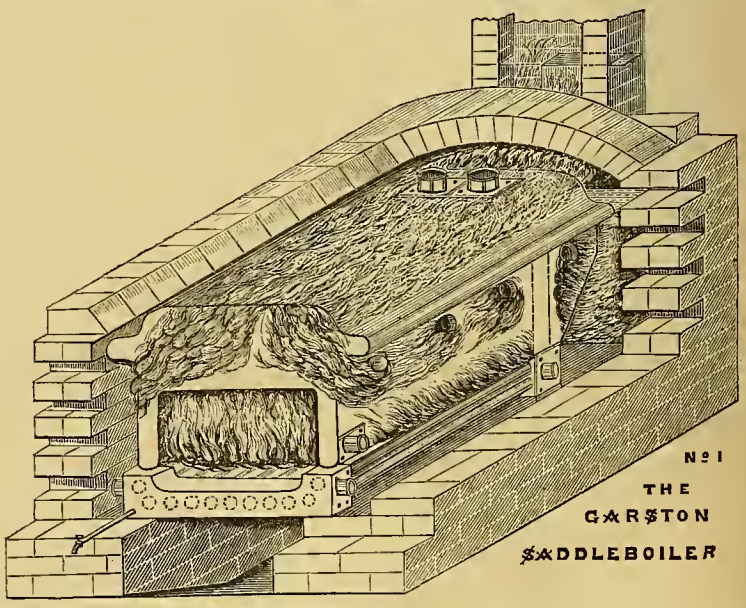

JOHN COWAN, THE VINEYARD, GARSTON, NEAR LIVERPOOL.

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THE

GARDENERS' CHRONICLE.

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TO SECRETARIES of HORTICULTURAL SOCIETIES.—The Editors will be greatly obliged for early information respecting the Dates Selected for Holding Horticultural Exhibitions in 1878.

NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 *are* 1*s. each.*

CAMPERNELLE JONQUILS.—Fine Bulbs of the above, 1*s.* per dozen.
Descriptive LIST on application.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to
S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie. St. Petersburg.

First-class Nursery Stock.

WITTY AND SON have to offer dwarf-trained PEACHES and NECTARINES. Also pyramid and standard APPLES, PEARS, PLUMS, and CHERRIES. An immense stock of EVERGREEN SHRUBS of first-class quality.
The Nurseries, Cottingham, near Hull.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, intimates that his New General CATALOGUE of NURSERY STOCK, of fifty pages, will be forwarded on application for three stamps, free to Purchasers, consisting of one of the best grown stocks in Europe.
Specialties—Roses, Fruit Trees, and Rhododendrons.

PHEASANT-EYED NARCISSUS.—For Sale, Bulbs of this sweet-scented Narciss, 10*s.* per bushel. Likewise Bulbs of LILIUM BULBIFERUM, 12*s.* per 100. Terms cash with order. Package free. Post-office Orders payable Vauxhall.
C. W. ALDERSON, Langley Lane, South Lambeth, Surrey.

SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16*s.* per 100. £7 per 1000, or £60 per 10,000.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

CHRISTMAS ROSES, 20,000. HEPATICA CŒRULEA, 8,000.
May be had from
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPIGELIA MARYLANDICA.—Beautiful perennial, of gay appearance. Strong flowering plants, with many crowns, at 64*s.* per 100.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

PANDANUS UTILIS.—Extensive stock of this splendid ornamental plant, at 20*s.* per 100, 180*s.* per 1000. Extremely healthy, 6, 8 and 10 inches high and upwards.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.
N.B. English CATALOGUE post-free.

FOR SALE, large Specimen PALM—DÆMONOROPS MELANOCHÆTES. Stands 12 ft. high. Perfect specimen. Price Ten Guineas, including packing. Apply to
HEAD GARDENER, Aelybryn, Llanelly, Carmarthenshire.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

MINIATURE HYACINTHS.—Fine Bulbs of the above (named sorts), 5*s.* per dozen.
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Epacris and Ericas.

WM. CUTBUSH AND SON have an enormous quantity of the above, beautifully set with bloom, in 48-size pots. Special prices on application.
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DAFFODILS, &c., for Naturalisation in floral walks, parks, pleasure-grounds, flower borders, shrubberies and woodland walks, 10*s.*, 20*s.* and 30*s.* per 1000; 2*s.* 6*d.*, 3*s.* 6*d.* and 5*s.* 6*d.* per 100. SNOWFLAKES, 7*s.* 6*d.* per 100. SCILLAS, 5*s.* 6*d.* per 100 LILIES, 20*s.* per 100.
BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

Chrysanthemums.

CHARLES TURNER invites an Inspection of his large Collection, now in fine bloom.
The Royal Nurseries, Slough.

Forest and Ornamental Trees and Shrubs.

LITTLE AND BALLANTYNE, NURSERYMEN AND SEEDSMEN to the Queen, Carlisle, have issued their Autumn Priced LIST of FOREST and ORNAMENTAL TREES and SHRUBS, which will be sent free by post on application.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium, CATALOGUES free on application.
Agents in London: Messrs R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

GARDENIA INTERMEDIA. 100 in 32-size pots for sale at very low price.
H. STROUD AND SONS, Nurseries, Green Lanes, Stoke Newington, N.

Variegated and Other Choice Hollies.

WM. CUTBUSH AND SON have at their Barnet Nurseries one of the finest stocks of the above in the Trade, well worth an inspection by intending purchasers.
Prices on application.
Highgate, N.; and Barnet, Herts.

80,000 Ponticum Rhododendrons.

JOHN STANDISH AND CO. have an immense stock of PONTICUMS to offer, suitable for Cover Planting. Prices on application.
Royal Nurseries, Ascot, Berks.

Planting Season, 1877-78.

JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks, invite the attention of Intending Planters to their large and varied STOCK, which, having been recently transplanted, is in the finest possible condition for removal. Liberal terms to large buyers.

SPRUCE FIR, extra fine, from 4 ft. to 7 ft., will remove with safety, well grown plants. Special low prices on application.
ELCOMBE AND SON, The Nurseries, Romsey, Hants.

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STUART, MEIN AND ALLAN offer the above to the Trade, finely rooted, 12 to 18 inches. Price on application. Kelso, N.B.

English Yews, English Yews.

ENGLISH YEWS, 3½ to 4 feet, 12*s.* per doz., 80*s.* per 100; 4 to 4½ feet, 18*s.* per doz., 100*s.* per 100. All recently transplanted. Every plant a perfect specimen.
JOHN PERKINS AND SON, 52, Market Square, Northampton.

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PICEA NORDMANNIANA, perfect symmetrical specimens, 3, 4, 5, to 6 feet, at 3*s.*, 4*s.*, 5*s.*, and 6*s.* each; less per dozen. Quotations to the Trade on application to
GEORGE JACKMAN AND SON, Woking Nursery, Surrey.

FICUS ELASTICA.—Parties having Large or Overgrown Specimens of FICUS ELASTICA, can have them EXCHANGED for other Plants, or receive their Value in Cash, from
JOHN COWAN, The Vineyard, Garston, near Liverpool.

WANTED, 10,000 MANETTI STOCKS, and 2000 Seedling BRIERS. Send sample and lowest price. Also GARDENIA FLORIDA, FORTUNEI, FIELDER'S WHITE; AZALEAS, CAMELLIAS, ALBA PLENA, CANDIDISSIMA, LADY HUME'S BLUSH, FIMBRIATA IMBRICATA; EUCHARIS AMAZONICA; large plants of each.
W. MAITLAND, Merton Abbey Nursery, S.W.

WANTED, RHODODENDRON CAUCASICUM ALBUM, or any good White Rhododendrons; R. AZALEOIDES and R. AZALEA PONTICA; large plants preferred; must be covered with buds.
W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, HAZEL, 2½ to 3 feet. Send lowest price per 1000 to
JOHN SCOTT, Merriott, Somerset.

WANTED, extra large, dwarf-trained PEACH TREES. Also good MANETTI CUTTINGS.
L. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

LILIES.—Being an Importer of many thousands annually of choice Lilies direct from their native habitats, Mr. WILLIAM BULL can supply all the rare sorts in large or small quantities.
Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

LILY OF THE VALLEY. — Buds for Forcing, without exception the finest in London, price 7*s.* 6*d.* per 100. Plenty for the Trade. Wholesale price on application.
HOOPER AND CO., Covent Garden, London, W.C.

GIANT LILY OF THE VALLEY.—Strong blooming Roots, 2*s.* per dozen, 12*s.* 6*d.* per 100, package free.
ROSES, Dwarf, the "Mile Ash dozen," twelve best varieties, extra strong plants, for 10*s.* 6*d.*, package free.
EDWIN COOLING, Mile Ash Nurseries, Derby.

CHARLES TURNER has strong plants, now ready for sending out, of CARNATIONS, Winter-flowering ditto, PICOTEES, and PINKS. Lists may be had on application.—The Royal Nurseries, Slough.

Pansy Seed.

DOWNIE AND LAIRD have much pleasure in offering Show and Fancy Pansy Seed, saved from the finest named Flowers. Price on application.
DOWNIE AND LAIRD, 17, South Frederick Street, Edinburgh.

PRIMULAS.—Twenty dozen good plants of Williams' choicest strain, Red and White, in No. 60 pots. 2*s.* 6*d.* per dozen.
WM. SMITH AND SON, Nurserymen and Seedsmen, Aberdeen, N.B.

AZALEA INDICA.—Fine healthy Plants, very bushy and well set with bud, in 4½-in. pots, all home-grown and of the best varieties.
9*s.* to 12*s.* per dozen, 70*s.* to 90*s.* per 100.
B. WHITHAM, The Nurseries, Reddish, near Stockport.

LARGE TREE BOX.—Handsome, bushy, and well rooted, 5, 6, 7 and 8 feet high. Tree Box live under trees better than any other evergreen tree. Prices on application. An inspection invited.
T. JACKSON AND SON, Nurseries, Kingston, Surrey.

Seedling Forest Trees, &c.

THE SUBSCRIBERS' NURSERY TRADE LIST will be forwarded to any address on receipt of Business Card.
W. P. LAIRD AND SINCLAIR, Dundee.—November 12.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Vines for Fruiting and Planting.

JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

HAMPTON COURT BLACK HAMBURGH VINES.—Strong Fruiting Canes of this well-known Grape, 5*s.*, 7*s.* 6*d.* and 10*s.* 6*d.* each; Planting Canes, 3*s.* 6*d.* Also a large stock of all the principal kinds at the above prices.
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

To the Trade.

VINES, strong planting Canes of all the leading varieties. Sorts and Price on application.
HIRAM SHAW, Richmond Hill Nursery, near Sheffield.

Roses, Fruit Trees, &c.

WILLIAM FLETCHER'S CATALOGUE for the present season is now ready, and may be had on application. The stock is very large and most healthy.
The Ottershaw Nursery, Chertsey.

Roses.

CHARLES TURNER is now prepared to execute orders for Standard and Dwarf ROSES in great variety. A Descriptive CATALOGUE on application.
The Royal Nurseries, Slough.

Dwarf Trained Peaches and Nectarines.

WM. CUTBUSH AND SON have a fine stock of well-grown trees, extra size, of the above. For prices, &c., see CATALOGUE, post-free.
Highgate, N., and Barnet, Herts.

RASPBERRY CANES for SALE.—About 20,000 to be had cheap. For further particulars apply to
H. THORNTON, 22, Maxwell Road, Fulham, S.W.

ASPARAGUS ROOTS.—Very superior lot of Connover's Colossal, 1, 2, and 3-yr. Also very fine CLUMPS for forcing.
C. R. FREEMAN, Seed Grower, Norwich.

ASPARAGUS, for Forcing or Planting.—A large quantity for Sale for cash. For samples and prices apply to
H. McMILLAN, Nurseryman, Kingston-on-Thames.

SALES BY AUCTION.

Unreserved Sale of a Large Consignment of

Strong Clumps of SPIRÆA (Hoteia) JAPONICA, a quantity of LILIUM LANCIFOLIUM in variety, and other choice LILIES, GLADIOLI, selected HYACINTHS for glasses, pots, and borders; TULIPS, CROCUSES, POLYANTHUS, and other BULBS from Holland, together with a fine collection of AMATEUR TULIPS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, E.C., near the Bank, on MONDAY NEXT, at half-past 11 o'Clock punctually.

Catalogues had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Important to Amateur Tulip Growers.

MESSRS. PROTHEROE AND MORRIS will include in their SALE of DUTCH FLOWER ROOTS, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, the entire stock of AMATEUR TULIPS the property of Charles Williams, Esq., of Stamford Hill, E., probably the finest and most unique collection extant, also the MAHOGANY CABINETS and FITTINGS. No reserve.

Gospel Park, N.W.

Mansfield Road Nursery, adjoining the Railway Station.

SALE of the VALUABLE LEASE, and also the whole of the NURSERY STOCK, in lots to suit the Trade and private buyers, consisting principally of a choice collection of Hardy Alpine and Herbaceous Plants, Evergreen and Coniferous Shrubs, Roses, Fruit Trees, and Two small Greenhouses, &c.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL the above STOCK by AUCTION, without reserve, on the Premises, on FRIDAY, December 14, at 11 for 12 o'Clock. The valuable LEASE of the NURSERY, held direct from Lord Mansfield for an unexpired term of 19 years, will be offered on the Premises prior to the Sale of the Stock and Effects. The Nursery occupies an excellent position, and comprises 2 Acres of very fertile Land. Rent £40 per annum. To an experienced Gardener with moderate capital this Sale offers an excellent opportunity.

May be viewed the day prior to the Sale. Catalogues and particulars may be had on the Premises; and of the Auctioneers, 98, Gracechurch Street, E.C.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY during November, consignments of Double and Single HYACINTHS, TULIPS, for glasses, pots, and borders; CROCUSES, of all colours; NARCISSUS, ANEMONES, SNOWDROPS, GLADIOLI, LILIUMS, and other BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

N.B.—The Sales each day commence at half-past 12 o'Clock precisely, and generally finish about half-past 5 o'Clock.

Lapageria alba.

MR. J. C. STEVENS will include in his SALE on THURSDAY, November 29, Thirty-six Plants of various sizes of the beautiful LAPAGERIA ALBA, some of which are in flower, the property of Mr. Howard, Florist, 29, King Street, Covent Garden, W.C.

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

Dendrobium bigibbum superbum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 29, at half-past 12 o'Clock precisely, a splendid consignment of DENDROBIUM BIGIBBUM SUPERBUM, by order of Mr. B. S. Williams, who has much pleasure in offering this hitherto rare and expensive Dendrobe, received from his collector in Torres Straits. It will be seen from the Plants in flower that there is no question about its being the true variety, producing, as it does, bulbs averaging from 12 to 24 inches in length, and flower-spikes producing as many as ten highly-coloured flowers. All the plants here offered are starting freely into growth, and many of them are throwing up spikes from the old bulbs, which it is expected will attain maturity, as some of the plants exhibited in flower are from the same importation. At the same time will be offered sixty fine imported trunks of TODEA SUBERBA, a collection of STOVE and GREENHOUSE PLANTS, &c.

On view the morning of Sale, and Catalogues had.

West Hallam Nurseries, near Derby and Nottingham.

To GENTLEMEN and OTHERS engaged in Planting.

MESSRS. OLIVER, NEWBOLD AND OLIVER beg to announce that they have received instructions from the Executors of the late George Small & Son (of the Ilkeston and West Hallam Nurseries), to SELL by AUCTION, at the Nurseries, West Hallam, on TUESDAY, WEDNESDAY, and THURSDAY, November 27, 28, and 29, at 11 o'Clock each day, without the slightest reserve, the magnificent Collection of Specimen CONIFERÆ and other TREES and SHRUBS, including fine-grown Araucaria, Retinospora, Wellingtonias, Cupressus Lawsoni, Cedar of Lebanon, Picea Nordmanniana, Cryptomeria, Irish Yews, Thujopsis boreale, &c., together with two very fine Specimen Weeping Hollies, also Apple, Pear, Plum, and other Fruit Trees. The Auctioneers recommend the above Trees, which are in excellent condition, well rooted, and will lift with large balls of earth.

Catalogues, seven days prior to the Sale, at the Auctioneers' Offices, Wardwick, Derby, and at the Nurseries, West Hallam and Ilkeston.

West Hallam is 3 miles from Ilkeston Station on the Erewash Line of Railway, 9 from Nottingham, 7 from Derby.

Bowdon Nurseries, Bowdon, near Manchester.

GREAT SALE of fine well-grown FOREST TREES, pyramid and dwarf-trained FRUIT TREES, choice CONIFERÆ and EVERGREENS, FLOWERING SHRUBS, ROSES, &c.

MR. J. WALTON is instructed by Mr. R. Thornhill to SELL by AUCTION, November 28 and 29, at 12 o'Clock prompt, all the remaining valuable stock of TREES as above. Catalogues now ready.

Wonersh Nursery, near Guildford, Surrey.

To NOBLEMEN, GENTLEMEN, CONTRACTORS, and OTHERS.

MR. JOHN BULLEN will SELL by AUCTION, on the Premises as above described, on WEDNESDAY and THURSDAY, November 28 and 29, commencing each day punctually at 1 o'Clock, by order of Messrs. Virgo & Son, the extensive and well-known Nurserymen and Florists, a well-grown Stock of TREES and SHRUBS, consisting of about 800 Pinus austriaca, 1½ to 8 feet; 40,000 Spanish Chestnuts, 2-yr. seedlings; 40,000 Hazel, 20,000 each of Ash, Alder, and Withy; 20,000 Birch, 4000 Maple, 7 feet; quantity of Scarlet Oak, 400 strong Filberts, 4 feet 6 inches; 400 English Yews, 500 Green Holly, 2000 Hornbeam, 2½ to 3½ feet; a good collection of Ornamental Trees of various heights, Mountain Ash, Laburnum, Wych Elm, Hornbeam, Sycamore; double white, pink and scarlet Thorns; Limes, Poplar, Horse Chestnut, Common Laurels, Portugal Laurels, Green Box, Weymouth Pine, Spruce and Silver Fir, 50,000 strong transplanted Quicks, black and red Currants, variety of trained and standard Apple, Pear and Plum Trees in sorts; quantity of Walnut Trees; several dozen of choice Rose Trees, standards and half-standards.

NOTE.—The whole of the stock is in good condition for removing. Wonersh Nursery is a short distance from Bramley Station, on the Horsham Line, where a conveyance will each day meet the 12 o'clock train.

May be viewed two days prior to the Sale, and Catalogues obtained of Messrs. VIRGO AND SON, Wonersh Nursery; "Grantley Arms," Wonersh; "Jolly Farmer," Bramley; "Albion Hotel," Woking Station; "Red House Hotel," Woking Station; "King's Arms," Godalming; "Bush Hotel," Farnham; "Queen Hotel," Farnborough; "Talbot Hotel," Ripley; and of the Auctioneer, 50, High Street, Guildford, Surrey.

In Liquidation, re Scott.—Northgate, Chichester.

UNRESERVED SALE of NURSERY STOCK.

Many thousands of beautifully-grown SHRUBS, in fine condition for removal, consisting of Aucubas, Bays, Laurels, Magnolias, Box, Euonymus, Laurustinus, Phillyrea, Yews, Berberis, Cupressus macrocarpa, and many others. Also fine specimen CONIFERÆ, ARAUCARIAS, CEDARS, PICEAS, ABIES, Golden YEWS, THUJA, CUPRESSUS, &c.; large Standard LIMES, ELMS, POPLARS, CHESTNUTS; FRUIT TREES of sorts, Gooseberries, Currants, Filberts, Asparagus, Rhubarb; a quantity of STOVE and GREENHOUSE PLANTS; about 1000 PINE PLANTS in all stages of growth, some with ripe fruit, and of the best varieties.

MESSRS. HOBGEN BROTHERS will SELL by AUCTION, on the Premises, on THURSDAY and Friday, December 6 and 7, the above well-grown stock of TREES, SHRUBS, &c. Sale to commence each day at 12 o'Clock punctually.

May be viewed two days previous to the Sale, and Catalogues obtained on the Premises; at the "Dolphin" Hotel, Petersfield; the "Angel" Hotel, Midhurst; "Sea House" Hotel, Worthing; and of the Auctioneers, East Street, Chichester, one week previous to the Sale.

FOR SALE, a FLORIST and NURSERYMAN'S BUSINESS, under exceptional circumstances. Premises are commandingly situated, with 50 feet frontage to suburban main road, and consist of excellent Dwelling House, Six Greenhouses, hot-water heated, good Shop, &c.; grounds ¾ acre. Rent £46; annual returns £850. Price for goodwill, eleven years' lease, fixtures, utensils, and stock, £375 only. A genuine bargain. Personal applications save time and trouble.

GARFORD AND CO., Auctioneers, 13, Bow Lane, Cheapside.

THE CANCER HOSPITAL, Brompton, and 167, Piccadilly, W. (Free), (founded 1851).—The late Archbishop of Canterbury, in a sermon preached by His Grace on behalf of this Hospital, said:—"There is no disease more pitiable than that to which this institution is specially devoted. From the first symptoms of attack one long course has commonly been prognosticated—a fearful looking-for of a lingering progress towards a death of anguish. Could the greatness of the suffering be laid before you—could you be shown its severity so as to see it in its true proportions and natural colours—no one endued with the feelings of humanity could resist the spectacle; they would think all they possessed a trifling sacrifice, if, at such a price, they could mitigate such misery; and yet they know that these sufferings exist as surely as if they were spread before their eyes. This, therefore, is a case in which I may justly ask your liberal contributions, that the relief afforded by this Hospital may more nearly approach the amount of misery it endeavours to remove."

SUBSCRIPTIONS will be most thankfully received for this Hospital, which is free. Diet required to be most generous, and medicines of the most expensive kind.

Hon. Treasurer—Geo. T. Hertslet, Esq., St. James's Palace, S.W.
Bankers—Messrs. Coutts & Co., Strand, W.C.
Out-patients' Establishment and Office, 167, Piccadilly (opposite to Bond Street), W. H. J. JUPP, Secretary.

GARDEN NARCISSUS.—Fine Bulbs of the above, 1s. and 1s. 6d. per dozen, 7s. 6d. and 10s. per 100.

Descriptive LIST on application.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgworth, Herts.

Camellias and Azaleas, well Set for Bloom, of VARIOUS SIZES.

CHARLES TURNER has a fine healthy stock to offer of the above.
The Royal Nurseries, Slough.

SPECIMEN and FINE FOLIAGED TREES and SHRUBS for immediate effect, FRUIT TREES, ROSES, &c. An inspection solicited.
CATALOGUES on application.
H. LANE AND SON, The Nurseries, Berkhamsted, Herts.

To the Trade.

AGRICULTURAL and GARDEN SEED.

H. AND F. SHARPE'S WHOLESALE SPECIAL CATALOGUE of HOME-GROWN SEEDS is now ready, and will be forwarded on application. Every variety named in it is of the very finest quality in every respect. The prices are very low.
Seed Growing Establishment, Wisbech.

Rare Dendrobiums.

MR. WILLIAM BULL has just received from Torres Straits an importation of several hundreds of good plants of the beautiful DENDROBIUM BIGIBBUM SUPERBUM, also a quantity of D. BIGIBBUM, and can now offer these hitherto costly Orchids at an extremely moderate price.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

POTATO ONIONS, GARLIC, and SHALLOTS. Lowest price on application to
HURST AND SON, 6, Leadenhall Street, London, E.C.

STONE'S APPLE.—As Certificated by the Royal Horticultural Society, and shown at the Crystal Palace. A very handsome Kitchen Apple, of large size and a great bearer. True to name. Fine 2-yr. trees, 42s. per dozen. Trade price on application.
THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

To the Trade.

SEEDLING TREES.—2,000,000, consisting of 1-yr. Larch, 1-yr. Alder, 1-yr. Scotch Fir, 1-yr. Thorn Quick, 1-yr. Sycamore, all grown from home-saved native Irish seed. Samples and Prices on application to
Mr. WILLIAM ALLEN, Dangan, Summerhill, Enfield, Co. Meath, Ireland.

Cytisus racemosus.

H. B. MAY offers strong plants in Thumbs at 16s. per 100, £7 per 1000, package included, for cash with order.—Dyson's Lane Nursery, Edmonton, London.

AUCUBA JAPONICA, 1½ to 2 feet, bushy, 35s. per 100.
PORTUGAL LAUREL, 3 feet, bushy, 50s. per 100.
COTONEASTER SIMMONDSII, 3 feet, bushy, 10s. per 100.
See larger advertisement inside.
WILLIAM IRELAND, Pilton Nurseries, Barnstaple.

F. AND A. SMITH can supply the following in well-grown Plants and Clumps:—

DRACÆNAS	FICUS ELASTICA
PALMS	LILY OF VALLEY
SPIRÆA JAPONICA	VINES

SOLANUMS well set with coloured berries for present use.
PRICED LIST on application.
The Nurseries, West Dulwich, S.E.

SEAKALE.—Good strong Crowns for Forcing, 8s. per 100; extra strong, 10s.
T. AND R. MASON, Market Gardens, East Greenwich, S.E.

CONNOVER'S COLOSSAL ASPARAGUS, 4-yr. old, for forcing, splendid roots; and MYATT'S RHUBARB. Apply to
PENGILLEY AND POOL, Seed, Bulb and Plant Merchants, 59, Queen Victoria Street, London, E.C.

SEAKALE for FORCING.—Largest roots in the Trade, 90s. per 1000, and 2s. packing; 500 and under, 10s. per 100 and 1s. packing: many acres for sale. Remittances to accompany all orders.—ALFRED ATWOOD, Market Gardener, 3, Althorpe Road, Upper Tooting, Surrey (late of 5, Simpson Street, Battersea).

To the Trade and Others.

SEAKALE and ASPARAGUS.—I am prepared to receive Orders for Seakale and Asparagus, for Forcing or Planting, in any quantity. Price on application to
J. COOPER, Gardener and Florist, Belfour Cottage, Fulham, Fields, S.W.

FOR SALE, cheap, six large CROTON VARIEGATUS; soon be fit for Exhibition. Want of room cause of sale.
T. V. STEVENS, Grove Nursery, Southampton Street, Camberwell, S.E.

FOR SALE, Seven splendid Standard SWEET BAYS, in tubs, from 5 to 10 feet high, 3 to 5 feet through, recently imported from Belgium; also a fine Specimen CORYPHA AUSTRALIS, 5 feet by 5 feet; DRACÆNA AUSTRALIS, in tub, 12 feet; two Cast-iron GARDEN SEATS, and two CHAIRS, equal to new.
Mr. CLARKE, Head Gardener, The Park, Leytonstone, E.

Special Offer to the Trade.

C. DIMMICK AND SONS beg to offer their VICTORIA COS LETTUCE, and NONPAREIL RED BEET, in packets to the Trade only. Price will be furnished on application.
146 & 147, High Street, Ryde, Isle of Wight.

TUBEROUS BEGONIA SEED.—Saved from our unrivalled collection, fresh harvested, and only a very small quantity to offer. In sealed packets at 2s. 6d. and 5s. each.
RODGER, McCLELLAND AND CO., Nurseries, Warrenpoint Road, Newry.
P.S.—Our NEW CATALOGUE of New and Old Varieties will shortly be issued, and will be sent on application.

FOR SALE.—Standard APPLES, named, 40s. and 60s. per 100; CUPRESSUS LAWSONI, 7 to 9 feet, 24s. and 30s. per dozen; also HOLLIES, AUCUBAS, EUONYMUS, CUPRESSUS, &c., for pots, at very low rates for Cash.
J. B. BUTTERFIELD, Nurseries, Baker Street, Enfield.

HEPATICAS.—Splendid Established Clumps, well furnished with strong flowering crowns, at special Prices:—
H. triloba Barlowi (blue), 60s. per 100, 8s. per dozen; H. triloba rubra, 60s. per 100, 8s. per dozen; H. triloba rubraplena, 60s. per 100, 8s. per dozen. Also other fine varieties, per dozen only, at the lowest rate. Hepatica triloba cœrulea, one to four flowering crowns, 80s. per 1000, 10s. per 100.
Established HELLEBORUS, albus, fœtidus, purpureus, roseus, ruberrimus, &c., at very low rates.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

WINTER ACONITES.—Fine Bulbs of the above, 6d. per dozen, 3s. per 100. Descriptive LIST on application.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

MANETTI STOCKS. Fine samples and prices on application.
WALTER C. SLOCOCK, Goldworth Old Nursery, Woking.

NEW HARDY RHODODENDRONS.—
MRS. MENDEL.
SIGISMUND RUCKER.
MARCHIONESS OF LANSDOWNE.
The above beautiful and distinct hardy Rhododendrons will be supplied for Three Guineas.
ANTHONY WATERER, Knap Hill, Woking, Surrey.

KENTISH FRUIT TREES.—One of the largest and cheapest stocks in the county, consisting of tall Standard CHERRIES, Standard, Pyramid, and Espalier APPLES, PEARS, and PLUMS, from 7s. per 100; GOOSEBERRIES, CURRANTS, &c.
CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers.
T. EVES, Gravesend Nurseries. Established 1810.

To the Trade.
SEED POTATOS.
H. AND F. SHARPE'S SPECIAL PRICED LIST of SEED POTATOS is now ready. It comprises all the best sorts, both English and American. They have all been grown from carefully selected stocks, are free from disease, and the prices will be found very reasonable.
Seed Growing Establishment, Wisbech.

The Best Hardy Bedding Plant.
CLEMATIS JACKMANNI.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

The Cirencester Nurseries.
ROBERT F. DARBY begs to offer the following TREES for immediate effect, all straight, handsome, well-rooted, and cheap; price, according to quantity, on application:—
ELM, Chichester, 16 to 20 feet.
HORNBEAM, 5 to 6 feet.
BEECH, 6 to 8 feet.
LIMES, 10 to 12 feet.
NORWAY MAPLES, 10 to 12 feet.
SYCAMORES, 12 to 16 feet.
Also dwarf Bush APPLES, of best sorts, in good bearing, an excellent lot for Market Gardeners.

HOTEIA (SPIRÆA) JAPONICA.—100,000, in very strong and sound condition.
SPIRÆA JAPONICA, 16s. to 20s. per 100; have been awarded several First Prizes, and always considered best shown.
DIELYTRA SPECTABILIS, very strong, 20s. to 26s. per 100.
LILIUM LANCIFOLIUM ALBUM MONSTROSUM, 30s. to 40s. per 100; very free flowering.
" " ROSEUM, strong, 20s. to 26s. per 100.
" " RUBRUM, strong, 20s. to 26s. per 100.
" CHINENSIS TIGRINUM, 5s. to 7s. per 100.
Trade Catalogues on application. Post-office Order or good reference from unknown correspondents.
BUDDENBORG BROS., Nurserymen, Hillegom, near Haarlem, Holland.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.
The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to
R. AND G. NEAL, Chief Office, Wandsworth Common.
The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

Vines and Strawberries.
"Plant now to ensure a full crop of fruit next season."
FRANCIS R. KINGHORN begs to announce that his stock of VINES, including all the leading varieties, is very extensive, and in excellent condition this season. The Canes are very fine, well ripened, and perfectly free from disease. Strong Planting Canes, 3s. 6d. to 5s. each; strong Fruiting ditto, 7s. 6d. to 10s. 6d. each.
Also his collection of STRAWBERRIES includes all the most popular kinds, and are ready for immediate planting. Price, in small pots, 16s. to 20s. per 100; from the open ground, 3s. to 5s. per 100.
Less numbers than 100 of any variety can be had, if desired. Prices to the Trade and LISTS post-free, on application.
Sheen Nursery, Richmond, Surrey.

Grape Vines.
MESSRS. OSBORN AND SONS possess this season an unusually fine stock of thoroughly healthy, stout, well-ripened Fruiting and Planting Canes of the best varieties in cultivation, including Novelties of established good repute; also a fine collection of FIGS, in pots.
A Descriptive Priced CATALOGUE (inclusive of Fruits generally), free on application.
The Nurseries, Fulham, London, S.W.

Pansies, Pansies.
WILLIAM PAUL, Paisley, N.B., has upwards of 20,000 Show and Fancy PANSIES, in splendid condition, 4s., 6s., to 12s. per dozen.
W. P. was awarded Silver Medal and six First Prizes at Scottish Pansy Show, June, 1877. First Prize of £6 for 24 Show Pansies (open to all) at Paisley, July, 1877. First Prize for 24 Pansies, at Newtownards, Ireland, July, 1877, &c.
Orders carefully forwarded by Post or Rail. The Trade supplied.

To the Trade Only, for Cash on Delivery.
HELLEBORUS NIGER.—A few hundreds of blooming plants, £5 per 100
DIELYTRA SPECTABILIS, strong, 20s. per 100.
VESUVIUS GERANIUM, bloom splendid trusses, 10s. per gross.
THOMAS KITLEY, Oldfield Nursery, Bath.

Vines—Vines—Vines.
B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.
NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING," price 21s. and 42s. each. For Detailed List and Descriptions, see BULB CATALOGUE.
NEW FIG, "HARDY PROLIFIC," price 10s. 6d. each. Extra sized fruiting plants, 21s. each.
B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

SPRUCE FIR.—Christmas Trees, extra fine, from 2 to 4 feet, special offer, 12s. per 100, Cash. BEECH, clean and well grown, 4 to 6 feet, suitable for working, 10s. per 100.
E. R. DAVIS, Yeovil Nurseries, Yeovil, Somerset.

Cabbage Plants, Cabbage Plants.
S. BIDE can supply, for Cash, good strong plants of Enfield Market, Imperial, Improved Nonpareil, and Drumhead or Cattle CABBAGE, at 3s. per 1000, free on rail and package free; Red or Pickling CABBAGE, 5s. per 1000. All the above are grown on light land, and are beautifully rooted. Send orders early to
S. BIDE, Alma Nursery, Farnham, Surrey.

Florists' Flowers, and Roses.
Autumn Edition.
THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.
Hale Farm Nurseries, Tottenham, London.

Queen of Lilies, Lilium auratum.
As this year's shipments will be shortly arriving from Japan,
WILLIAM GORDON begs to call attention to the following low prices:—sizes: No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; No. 4, 2s. each. Sampling orders are supplied only in the following quantities, and are carefully packed in tin boxes to contain only the following number of bulbs, the prices quoted including carriage to any part of the United Kingdom:—2 bulbs, 6d. extra; 4 bulbs, 1s. 6d.; 8 bulbs, 2s.; 12 bulbs, 2s. 6d., added to the foregoing prices. Quantities of 18 bulbs and over package and carriage free, less 10 per cent. discount. LILY LIST on application.
WILLIAM GORDON, Lily, Bulb, and Plant Importer, 10, Cullum Street, London, E.C.

FOREST TREES, well transplanted and good.
LARCH, 2 feet, fine and good leads.
FIR, Scotch, 1 to 1½ foot, 1½ to 2 feet, twice transplanted.
" Spruce, 1½ to 2 feet, 2 to 2½ feet, twice transplanted.
Send for samples and prices to
W. JACKSON AND CO., Nurseries, Bedale, Yorkshire.

F. AND A. SMITH offer the undernoted, which are well-set with bud and flower:—

AZALEA	EPIPHYLLUMS
BOUVARDIAS	ERICAS HYEMALIS and WILLMOREA
CAMELLIAS	PELARGONIUMS
CINERARIAS	PRIMULAS
CYCLAMENS	
CYTISUS	

Prices on application.
The Nurseries, West Dulwich, S.E.

PENGILLEY AND POOL'S GUINEA COLLECTION of BULBS for General Cultivation, Packing and Carriage Free, 59, Queen Victoria Street, London, E.C., contains:—
18 HYACINTHS, in 18 choice named varieties,
12 POLYANTHUS NARCISSUS, in 12 varieties,
24 JONQUILS, sweet-scented,
25 CROCUS, Louis d'Or,
25 " Prince Albert,
25 " Caroline Chisholm,
12 SCILLA SIBIRICA,
50 SNOWDROPS, double,
12 TULIPS, Duc Van Thol,
6 " Tournesol,
6 " Rex rubrorum,
6 " Lac Van Rhyn,
6 " Molière,
6 " Queen Victoria,
6 " Souvenir,
6 " Royal Standard,
6 " Yellow Prince,
6 " Couleur Ponceau,
3 IRIS PAVONIA,
9 IXIAS, in variety,
9 SPARAXIS, in variety,
12 TRITELEIA UNIFLORA,
3 LILIUMS, in variety,
1 Clump, LILY OF THE VALLEY.

W. BALL AND CO. beg to offer the undermentioned PLANTS, all of which are strong and well established:—
AURICULAS, finest mixed Alpine, in 54-pots, 4s. per dozen, 30s. per 100.
ALYSSUM SAXATILE COMPACTA, 6s. per 100.
CARNATIONS, CLOVES, and PICOTEES, strong, in 60-pots, twelve varieties, 25s. per 100.
" The Bride, Miss Jolliffe, and La Belle, 18s. per dozen.
DAISY, The Bride, the finest of all Whites, 7s. 6d. per 100.
" Rob Roy, 6s. per 100.
" Giant Variegated, 6s. per 100.
" aucubæfolia, fine, 7s. 6d. per 100.
MYOSOTIS DISSITIFLORA, 6s. per 100.
ŒNOTHERA MACROCARPA, 1s. 6d. per dozen, 10s. 6d. per 100.
PAMPAS GRASS, extra strong, 4s. per dozen.
PANSY, Blue King, 8s. per 100.
" Cliveden Blue, 8s. per 100.
" Cliveden Purple, 8s. per 100.
" Cliveden Yellow, 6s. per 100.
" Dean's White, 6s. per 100.
PINKS, in twenty-five named varieties, in 60-pots, 25s. per 100.
PRIMROSES, double Yellow, 20s. per 100.
" single Lilac, 12s. per 100.
ROCKETS, double Purple, 2s. 6d. per dozen, 18s. per 100.
" double White, 2s. per dozen, 15s. per 100.
SILENE PENDULA COMPACTA, 2s. 6d. per dozen.
STOCKS, Scarlet Queen, 2s. per 100.
TRITOMA UVARIA, 4s. per dozen, 28s. per 100.
WALLFLOWERS, finest dark, 2s. 6d. per 100.
All the above cheaper by the 1000. Orders amounting to 20s. boxes and packing free.
The Nurseries, Bedford Road, Northampton.

For Present Planting or Sowing.
CABBAGE PLANTS.—Gee's Superior Early Enfield Market, Drumhead, and Thousand-headed, all at 3s. per 1000; Purple Sprouting BROCCOLI, and BRUSSELS SPROUTS, 5s. per 1000; Winter LETTUCE PLANTS, Brown Cos and Hardy Green, at 7s. 6d. per 1000. Terms cash with order. Gee's noted stocks of Winter ONIONS, CAULIFLOWER, CABBAGE, and all other kinds of Seeds and Plants for present use, of best quality. CATALOGUES on application to FREDK. GEE, Seed and Plant Grower, Nurseryman, &c., Biggleswade, Beds.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to
EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

CHEAP OFFER.—Ozothamnus rosmarinifolius, white, useful for cut flowers; Escallonia macrantha, very fine for potting; Cotoneaster microphylla; Pyracantha, red-berried; Aristotelia Maqui, fine evergreen, with Laurel-like foliage, seldom offered; Santolina chamæcyparissus, white foliaged evergreen; Lonicera aurea reticulata, Sambucus aurea variegata, admirable for town gardens; Ribes sanguinea. All the above at 2s. per dozen, 15s. per 100. Laurustinus, common, shining and black-leaved, 7s. 6d. per 100, 60s. per 1000.
WILLIAM ABRAHAM, Nurseryman, Limerick.

BEAUTY OF HEBRON POTATO.—This new American sort is now offered for the first time. This valuable Potato originated in 1874 from seed bulbs of the Chili Red. The vines and leaves strongly resemble those of the Early Rose, only more vigorous. The plants appear above-ground very shortly after planting, and from that time continue to grow with great rapidity, outstripping all other varieties in strength of growth and luxuriance of foliage. On this account it will be understood they withstand better the ravages of the Colorado Potato Beetle than any other Potato yet brought before the public. The tubers, shaped like those of the Early Rose, are very smooth, slightly tinged with pink around the eyes, but attain a pure white colour during the winter. Their yield is really enormous. The tubers lying closely together in the hills, the labour of digging them is but slight. In point of earliness it may be ranked as ripening at least twelve days earlier than the Snowflake, and no less than three or four days ahead of the Early Rose. For culinary purposes its mealy qualities and richness and delicacy of flavour give it a precedence before all other varieties. Contrary to what is usually the case in all large specimens of Potatos the Beauty of Hebron almost invariably prove sound and solid to the core.
May be obtained of the principal Seedsmen of England.
J. M. THORBURN AND CO., 15, John Street, New York U.S.A.

CHARLES B. SAUNDERS, Cæsarean Nurseries, St. Saviour's, Jersey, respectfully solicits Orders for the following NURSERY STOCK:—
ELMS, 5000 Guernsey, fine upright trees, 7 to 12 feet, 30s. to 100s. per 100.
OAKS, 5000 Evergreen, carefully grown, 8 inches to 8 feet, 8s to 150s. per 100.
EUONYMUS, 10,000 Golden, Green, and Silver, 8 inches to 2 feet, 12s. 6d. to 50s. per 100.
BULBS, CAMELLIA STOCKS, CARNATIONS and PICOTEES, FRUIT and FOREST TREES, SHRUBS, &c.
CATALOGUES of which may be obtained on application.

Kent—The Garden of England.
THOS. BUNYARD AND SONS offer the finest Stock in the Trade of
10,000 Standard CHERRIES,
15,000 Standard PEARS,
1,000 Standard MULBERRIES,
KENT COB NUTS, and other FRUIT TREES.
Prices of which may be found in their Trade LIST, just published.
Also cheap and fine AUCUBAS, 2 to 6 feet; trained PLUMS and PEARS, RHODODENDRON PONTICUM, SPRUCE, large; YUCCAS, ELMS, LIMES, and other FOREST TREES, CLIMBERS, &c.
THOS. BUNYARD AND SONS, The Old Nurseries, Maidstone, Kent.

Fruit and Forest Trees, Ornamental Shrubs, SEEDS, &c.
J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.
The "ORCHARDIST," price 3s. 6d. The best work on Fruit Trees and their cultivation in the English language.

STOTT'S MONARCH RHUBARB.—The stems grow to an enormous size, and are of a fine Gooseberry flavour.
From the Canadian "Weekly Globe."—"Shirley Hibberd says that any one who wants a Rhubarb that makes leaves as big as a dining table, or stems as thick as a Cedar Tree, that rise as high as a tall human dwarf, should order Stott's Monarch at once. After being at sea for three years as to the whereabouts of this wonderful Rhubarb, he has at last discovered that it is to be obtained from Stuart & Mein, Kelso."
Roots 1s. 6d. each.
STUART, MEIN AND ALLAN, Nurserymen and Seedsmen, Kelso.

AMERICAN BLACKBERRY CUTTINGS, of the Kittatinny variety.—A few hundred specimen cuttings of this celebrated American Berry have been imported by the subscribers from New England, and will be sold at 15s. per dozen. Post-office order to accompany. They will be carefully packed and delivered at any railway station in Liverpool. An Illustrated Descriptive CIRCULAR sent on application with postage stamps.
D. C. LOWBER, 35, Chapel Walks, Liverpool.

To the Trade.
MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

BEAUTIFUL FLOWERS FOR WINTER & SPRING

WEBBS' CHOICE COLLECTIONS

OF

HYACINTHS,
CROCUS,
TULIPS,
NARCISSUS,
&c,

CONTAIN A

Superb assortment of the best varieties.

For Growing in Glasses, Pots, Vases, &c.
10s. 6d., 21s., and 42s. each.

For Outdoor Cultivation.
10s. 6d., 21s., and 42s. each.

For Greenhouse or Window Boxes.
10s. 6d., 21s., and 42s. each.

All Goods 20s. value Carriage Free.

Five per cent. discount for Cash.

Webb's Autumn Catalogue of Dutch Flower Roots, &c.,

Contains Original and Complete Cultural Instructions.

GRATIS AND POST-FREE ON APPLICATION.

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

SPECIAL OFFER TO THE TRADE.

FRUIT TREES.

EXTRA STRONG—BEAUTIFULLY TRAINED.
2-yr. Cordons and Palmettes.

	Per 100.
APPLES, on Crab and on Doucin	42s
PEARS, on Crab and on Quince	50s.
PLUMS, on Prunus St. Julien	50s.

A List of the Names of the Fruit Trees gratis on application.

STOCKS for BUDDING and GRAFTING.

	Per 1000.
PYRUS MALUS, Crab-Apples	20s.
ROSE, Manetti	25s.
,, multiflora de la Grifferaie	25s.

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 15s. per 1000.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

MESSRS. CHARLES LEE & SON,

ROYAL VINEYARD NURSERY, HAMMERSMITH,
LONDON, W.,

HAVE MUCH PLEASURE TO OFFER THE FOLLOWING VERY

BEAUTIFUL AND INTERESTING NEW FRUITS,

Now offered by them for the first time:—

RUSSIAN TRANSPARENT APPLE.

In the *Journal of Horticulture*, December 21, 1876, "J., Lincolnshire," describes this valuable Apple as giving a "never-failing crop," and as being "a rent-paying tree" for cottage gardens. Mr. BEULAH, an experienced Lincolnshire Orchardist, confirmed this evidence of the usefulness and profitableness of this much neglected but desirable Apple.

A Tree that bears a never-failing crop, of excellent quality, as stated below by Dr. HOGG, must be as near perfection as possible, and a desideratum that cannot fail to be appreciated by Orchardists in general. The Russian Transparent Apple was brought from Moscow during Napoleon's campaign in Russia, by General Boncheret, who, noticing its hardiness and free growth, and believing it would be suitable for English gardens, brought a quantity of grafts to his home in North Lincolnshire, round which it became and has remained up to this time localised; and now, through the kindness of Mr. Beulah, we have been enabled to purchase all the available grafts from the original stock.

The following is from Dr. HOGG'S *description:—*

"Fruit large, roundish, somewhat oblate, narrowing towards the crown, where it terminates in several prominent ridges, flat at base; skin smooth and shining, grass-green, strewed with large russet dots. Eye closed. Flesh very tender and juicy, with a pleasant sub-acid flavour, and a peculiar and agreeable aroma. I am convinced that this is one of the most valuable culinary Apples in cultivation, and is worthy of more than local fame."

MESSRS. CHARLES LEE AND SON have much confidence in introducing this desirable and profitable Apple to more extended cultivation.

Strong Maiden Plants now ready, price 7s. 6d. each.

HENSON'S SEEDLING GOOSEBERRY.

This excellent variety was figured in the *Florist and Pomologist* for May, 1874, a First-class Certificate having been awarded to it by the Fruit Committee of the Royal Horticultural Society in 1873. It was described as "a new and distinct variety of exceedingly good quality, of the hairy red section, and a good dessert fruit of medium size."

MESSRS. CHARLES LEE AND SON having purchased the entire Stock of this valuable Gooseberry, they are now prepared to distribute it to the Public.

Price per Plant, 3s. 6d.

THE USUAL DISCOUNT TO THE TRADE.

NEAPOLITAN ONION SEED.

NEAPOLITAN GIANT ROCCA	NEAPOLITAN GIANT FLAT RED TRIPOLI
NEAPOLITAN GIANT EARLY WHITE TRIPOLI	NEAPOLITAN MARZAJOLA WHITE
NEAPOLITAN GIANT LATER WHITE TRIPOLI	NEAPOLITAN NEW QUEEN.

G. V. DE LUCA

Has all the above well-known varieties of these deservedly esteemed Onions now in Stock and ready for immediate delivery.

Price on application. Special Quotation for Quantities.

See *Gardeners' Chronicle*, January 20, 1877.

G. V. DE LUCA, 5, GUILDHALL CHAMBERS, BASINGHALL STREET, LONDON, E.C.

IMPORTANT.

We, the undersigned, certify that all the above varieties of Onion Seed have been carefully tried by us, with a good result, especially the Giant Rocca, which proved excellent growths.

(Signed), W. ROLLISSON AND SONS, The Nurseries, Tooting, S.W.

IMPORTANT SALE.

DENDROBIUM BIGIBBUM SUPERBUM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 29, at half-past 12 o'Clock precisely, a splendid Consignment of DENDROBIUM BIGIBBUM SUPERBUM, by order of Mr. B. S. WILLIAMS, who has much pleasure in offering this hitherto rare and expensive Dendrobe, received from his Collector in Torres Straits. It will be seen from the plants in flower that there is no question about its being the true variety, producing, as it does, bulbs averaging from 12 to 24 inches in length, and flower-spikes producing as many as ten highly-coloured flowers. All the plants here offered are starting freely into growth, and many of them are throwing up spikes from the old bulbs, which it is expected will attain maturity, as some of the plants exhibited in flower are from the same importation.

On view the morning of Sale, and Catalogues had.

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APPLES, Pyramids, Fruiting Trees.
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PLANES, 7 to 8 feet, 12s. per dozen; 8 to 9 feet, 18s. to 24s. per dozen; 9 to 10 feet, 30s. to 42s. per dozen; 10 to 12 feet, 50s. per dozen.
,, larger and stouter trees for avenue and roadside planting, 10 to 15 feet, 60s. to 150s. per dozen.

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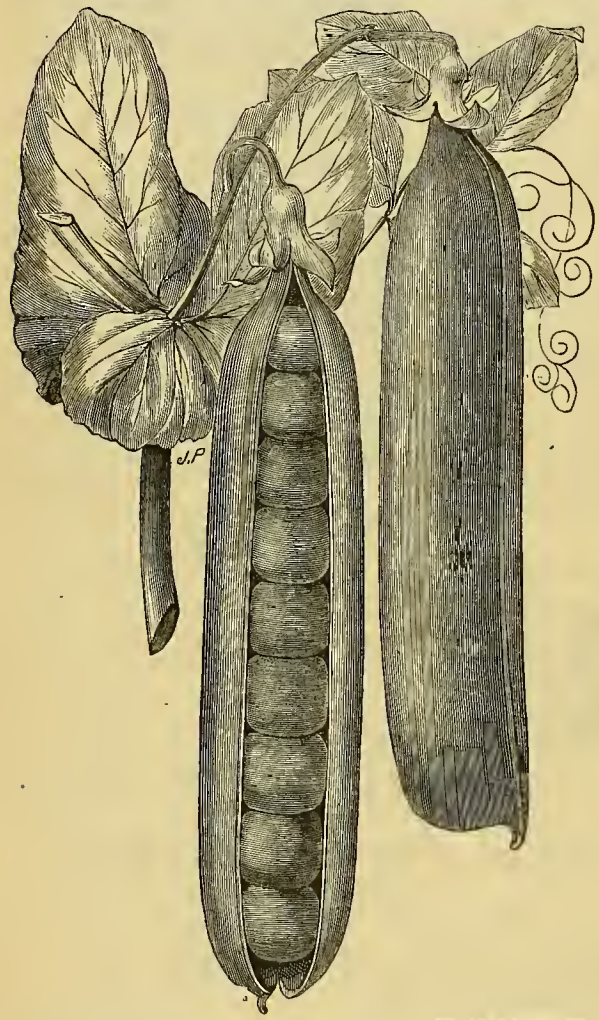
JAMES VEITCH & SONS

DESIRE TO DIRECT ATTENTION TO

THIS EXCEEDINGLY FINE NEW MAIN CROP PEA.



It is one of several seedlings raised by the late Mr. John Standish, who for some years devoted much attention to hybridising and improving the quality of this vegetable, and from whose Executors J. V. & Sons have purchased the whole stock of his Seedling Peas.

Criterion is supposed to be a cross between Advancer and Ne Plus Ultra, and was considered by the raiser to be one of the finest of his seedlings. In general appearance it partakes much of the character of the Ne Plus Ultra, while, as a second early, coming into use somewhat in advance of Champion of England, it is valuable on account of its fine quality and free cropping properties.

The plant is of a strong robust branching habit, and grows from 5 to 6 feet in height. The pods, which are produced in pairs, are of a deep olive-green shade and exceedingly well filled, generally containing from seven to nine Peas. These are of a fine deep green colour, and remain a long time fit for use. When boiled they are of a fine rich flavour, and, retaining their beautiful deep green shade of colour, have a very attractive appearance on the table.

Mr. DRAPER, *The Gardens, Seaham Hall*, says:—"Your New Pea has proved to be a first-class sort, suitable for general crop. It has six to eight Peas in a pod, of large size, and it is also a good cropper, and the pods are well filled. I exhibited it at the Seaham Horticultural Show, and got First Prize, against seven others."

Mr. JONES, *The Gardens, Bentley Priory*, says:—"I have formed a very decided and favourable opinion of your New Pea, Criterion. With me it grew about 4½ feet high, with a mass of beautiful green pods, averaging eight Peas in each, with the look and flavour of Ne Plus Ultra, and being so early I think it just the Pea wanted."

From *The Florist*:—"Messrs. Standish & Co., of Ascot, who have raised a very promising batch of New Peas, have just adopted the name of 'The Criterion' for that which has been set apart as the best of the series. It is in every way an excellent Pea. Being one of the Wrinkled Marrows it has a fine sweet flavour. It is in use a fortnight earlier than Ne Plus Ultra, and is a good bearer, with well filled pods, resembling those of Laxton's Supreme, and having thick fleshy husks. When cooked it is of grass-green colour, and, being of a delicate texture, it will, it is said, keep longer in use than any other Pea, partaking, in this and in other respects, of the character of Ne Plus Ultra, which was one of its parents. We look upon the Criterion as one of the most valuable of the New Peas."

Mr. BREESE, *The Gardens, Petworth Park*, says:—"Criterion was sown under the same conditions and on the same day as British Queen and Ne Plus Ultra. I think it is a finer looking Pea than either of these, a heavier cropper and finer looking pod, and quite a week earlier. It is undoubtedly a good Pea."

Mr. MCINNOE, *The Gardens, Hutton Hall*, says:—"Criterion, when boiled, has a beautiful dark green colour and a most delicious flavour. I think it cannot fail to become a great favourite where high-class deep green Marrow Peas are esteemed."

Mr. GILBERT, *The Gardens, Burghley*, says:—"Through your kindness I am enabled to give an opinion of Standish's New Pea, Criterion. My small packet was all sown in pots in one of the cool houses, planted out in April, withstood such a succession of cold, stormy, and frosty weather that I despaired of ever getting any Peas at all, nevertheless they braved it all and were ready for picking June 18. Criterion Pea grows from 5½ to 6 feet high; a Green Marrow of the most delicious flavour, bearing in pairs from sixteen to eighteen pods, with an average of eight Peas in each. It is the hardiest and best Pea of the British Queen type."

Mr. SPEED, *The Gardens, Chatsworth*, remarks:—"It is the finest of all late Peas that I know, and is an excellent flavour and good colour when cooked."

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ABIES DOUGLASII, 7 to 9 feet, 24s. per dozen.
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All the above have recently been transplanted, and will rise with fine roots.
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There is an enormous Saving in the Maintenance and Repairs of Roofs on this System—say from 80 to 90 per cent.—and there is no reason why a Roof should not be as perfect in 20 years as the first week, because all the perishable Materials, such as wood, iron or paint, are completely covered by the glass from the destructible influences of the weather.

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SATURDAY, NOVEMBER 24, 1877.

PLANT NAMES: THEIR PRONUNCIATION.

IN continuation of the remarks made last week, we now give some additional rules for the pronunciation of plant names.

VI. In modern times it has become the practice to bestow commemorative names, or such as will preserve the memory of distinguished men and women. These are exemplified in Milleria, Boltonia, Richardsonia, Wellingtonia, Sutherlandia. The number is now very large. Those in Loudon's *Encyclopædia* alone count up to over 700, and in the index to Lindley's *Vegetable Kingdom* there are hundreds more. Commemorative names, with the exception of the few that point to Pliny, Aristotle, Theophrastus, &c., and the few mythological ones, such as Artemisia and Dionæa, have no classical foundation; therefore they have to be dealt with, in part, from another point of view. The pronunciation to be given to them is that which best accords with the one employed in ordinary English converse when speaking of the men themselves, engrafting upon this what we have learned from the classical names after the fashion of which the terminations of the commemorative ones have been moulded. Euphony and common-sense here come to our aid most particularly. Ordinarily, in commemorative names, the accent falls upon the antepenult, as in Hooke'ria, Mentze'lia, Dalto'nia, Veitch'ia, Ga'gea, Lightfoot'ia. Sometimes it falls on the penult, as in Liste'ra, Torrey'a, Dampie'ra; also in the complimentary names applied to species, which end in *anus-a-um*, as in Hookeria'nus, Harrisia'na, Wallichia'num. In commemorative specific names which end in *i*, denoting discovery or first description of the plant, this letter is sounded like *eye*, as in Fraseri, Roberti, Gibsoni. In those of the same class which end in *i i*, the first *i* is short, and the second is again sounded like eye, as in Smithii, Fortunii, which are pronounced Smith-ĭ-eye, Fortūn-ĭ-eye.

When the names of the persons commemorated belong to foreign languages, in which the sounds given to the letters are often very different from those which they bear in England, upon arrival in our own country those names of course conform to the English methods, and become, as it were, Anglicised or nationalised.

Whatever may be the Continental pronunciation of Kölreuteria, Schweiggeria, Wachendorfia, &c., in England they are to be pronounced as if they were English. There are persons, however, who assert that we ought to affect to be Continental when we happen to have got some notion as to how to do it. They assert that instead of saying Dahlia and Fuchsia in the way that Englishmen have decided to do, by almost universal consent, we ought to say something like Darlyer and Fooksyer. How the Swedes pronounce Dahl we do not know, and therefore cannot say anything about it. The peculiar sound given by a German to the base of the other, or Fuchs, is unknown to the English language, it cannot be illustrated by comparison with any colloquial English word, and can only be approximately represented on paper; even if it could be readily taken up by English lips, to propose to

ape the Germans whenever we want to say Fuchsia, is simply to recommend people to make themselves unintelligible and ridiculous. That there is a genus called Dalea, which not one gardener in a thousand ever so much as even heard of, is no reason for superseding the accustomed sound given to Dahlia, familiar for half a century, and established throughout the length and breadth of the land. The one great object in the use of all language, botanical names included, is to speak so as to be understood, and this would be entirely negatived by conceitedly saying Darlyer, &c.

Dipthongs and digraphs occurring in commemorative names have the accustomed classical sound, as in Furcrœa, Alstrœmeria, Weigela, Weinmannia. The non-classical digraphs found in Braya, Heynea, Tofieldia, Sloanea, Raylea, &c., follow the English custom. In commemorative names there is also, now and then, a doubling of *e* and *o*. Here again the two reckon as a single syllable, as in Teedia, Teesdalia, Woodsia, Doodia, Charlwoodia.

VII. Besides the names inherited from the ancients, those compounded of classical words, and those of the commemorative kind, there are many which have been founded upon the native appellations of the plants, such as Skimmia, Petunia, Nelumbium, Genipa, Metaiba. The nature and origin of these very soon becomes apparent to the careful and industrious; no damage comes of first searching for them in the dictionary, and how to pronounce them is learned by comparison with similar ones of genuine classical birth, euphony and common sense acting, as before, as referees.

VIII. In words of more than three syllables, whatever their derivation, there is also a minor or subordinate accent, which falls at or near the beginning. In Anœctochilus, for instance, it falls upon the *œc*, and in Odontoglossum upon the *don*. The minor accent is subject to the same rules as the accent in chief. The ear is generally a sufficient guide to its proper place, as implied, among other things, in the opening remarks in my first paper on the general subject of plant-names, when, not without design, I spoke of "aural civilization."

IX. Whoever proposes to look out derivations, &c., in a lexicon, of course makes himself acquainted, in the first place, with the peculiarities of the Greek alphabet. Take, in the first place, the consonants.

(*a.*) Latinised Greek words beginning with *c* are found under κ—Comarum, κομαρος.

(*b.*) When beginning with *ch*, they are found under χ, as in the initial portion of Cheirostemon.

(*c.*) When beginning with *ph*, they are found with φ, as in the first portion of Philodendron.

(*d.*) When beginning with *ps*, they are similarly found under ψ.

(*e.*) And when beginning with *th*, under θ.

(*f.*) There is no separate character in Greek for *h*, the aspirate being expressed by the mark ' placed over the vowel. Hexacentris, as to its first part, is derived from ἑξ; Hypolepis, as to its first part, from ὑπο.

(*g.*) The same rules apply when *c*, *ch*, *ph*, *ps*, *th*, occur in the body of words derived from the Greek.

(*h.*) When *n* precedes *ch* or *g*, in words derived from the Greek, it represents an original γ, as in Catanan'che.

X. Secondly, as to the vowels. The Latin æ represents the Greek αι, as in Æthusa. The Latin œ represents οι, as in Anœctochilus. The Latin *i* is often an abbreviation of ει, as in Conium; and the Latin *u* of ου, as in Arctopus. The Latin *y* often represents the Greek υ, as in Lychnis, γυχνος.

XI. In the Latinising of Greek words the terminations are often slightly altered—phyllum, for example, represents φυλλον. For the sake of euphony, also, the concluding letter of the first member of a compound word is often omitted, as in Poly-podium from πολυς.

XII. Occasionally, again for euphony's sake, the genitive is employed instead of the nominative, as in Trichomanes and Callitriche, from θριξ, τριχος; Myosotis, from ους, ωτος. The Linnean terms ending in *-andria*, and in *-andrus-a-um*, are formed from the peculiarly contracted genitive of ανηρ.

XIII. Miscellaneous rules as to consonants:—

(*a.*) *C* and *G*, when followed by *a*, *o*, or *u*, are sounded hard, or as in cat and get, Galium, Cornus, Cupressus, Gunnera. Before *e*, *i*, and *y* they are soft, as in city and giant, Celsia, Citrus, Cyrilla, Gentiana, Gillenia, Gynerium, Gymnogramma.

(*b.*) The digraph *ch* is in classical names pronounced like *k*, as in Chelidonium, Cichorium, Cochlearia, Schœnus. But in commemorative names the sound usually follows that given in the colloquial, as in Charlwoódia, Richardia.

(*c.*) In words like Pteris, Cnicus, Gnidia, Cneorum, Czackia, Gmelina, Gnaphalium, Mnium, Psamma, Psidium, Psoralea, the initial consonants being uncombinable, the first is dropped, and we say 'teris, 'nicus, 'nidia, &c.

(*d.*). *Ph* always has the sound of *f*, as in Phleum, Phlomis, Phlox.

(*e.*) *S* at the end of a word is sounded as in grass—Dactylis, Ophrys, Stachys, Serapis, &c. But when preceded by *e* or *n* it takes the sound of *z*, as in Ribes, Trichomanes, Limnanthes, Lens, Bidens.

(*f.*) *X* at the beginning of a word is sounded like *z*, as in Xanthium, Xyris, Xanthorrhœa.

(*g.*) *C* and *t* in the middle of a word, when followed by two vowels, are pronounced like *sh*, as in Vicia, Bletia, Spartium.

(*h.*) *S*, under similar circumstances, changes to *zh*, as Blasia.

XIV. Miscellaneous rules as to vowels:—

(*a.*). When a name ends in *a*, this letter is pronounced like the interjection ah, somewhat subdued, as in Sticta, Selloa.

(*b.*) When a name ends in *e*, the letter is always sounded in full, or as in Annë and Phœbë. Thus Orobanchë, Silenë, Elatinë, Æglë, viridë, arvensë, rivalë, acrë, palustrë.

(*c.*) So with *es* final, as Trichomanes, Calophanes, where the latter half of the word is sounded, not like that of counterpanes, but as *a-nes*.

(*d.*) Under Rule I. (*c*) it was stated that the *oi* of such names as bromoides is not a digraph, like the *oi* of dioicus-a-um. The *oicus* of the latter word represents the Greek οικος, a house. In bromoides the *o* has nothing to do with the *i* of the *ides*, the latter being representative of the Greek ειδος, resemblance. Therefore we say ocymo-idës, musco-idës, hypno-idës.

(*e.*) When in words derived from the Greek, *o* comes twice, as in Aizöon, the first *o* is sounded distinctly, as in zöology, zöophyte.

(*f.*) Certain Latin adjectives resemble Gladiolus and the other diminutives spoken of under Rule IV. (*d.*); care must be taken not to confound them, as they are totally distinct, the accent here falling upon the penult, as in scario'sus-a-um, folio'sus-a-um, cilio'sus-a-um, glareo'sus-a-um. A few of these adjectives have been employed for generic names, as Scabio'sa, Glorio'sa.

(*g.*) The dipthongs *œ* and *æ*, and the digraphs *e i* and *o u* always take the accent when they occur in either the penult or the antepenult, as in Cratæ'gus, Melanorrhœ'a, Velthei'mia. They do not take it when occurring in an earlier position—not, for example, in Elæocar'pus, Æthusa, cæspitosus, cœruleus. The same rule applies to single vowels which are representative of digraphs in the original language, as in Eri'ca, Lissochi'lus, Alopecu'rus, Potamoge'ton.

(*h.*) Two vowels coming together do not necessarily constitute a digraph, although they may simulate one, as in Sila'us, Me'um, Rhe'um, Phle'um, Hype'cöum.

I do not presume to say that the above rules and principles cover every possible case; neither do I assume not to have forgotten anything. But in default of the possession of a copy of London's *Encyclopædia*—or, as regards the names of British plants, of Hooker or Babington—they will at all events serve as a finger-post towards what in England is held to be right and practically best. They are the rules according to which the above-named authors have acted in placing their accents, consciously or unconsciously, though possibly enough mistakes have sometimes been made, all men being liable to err and to forget. *Leo Grindon, Manchester.*

New Garden Plants.

Masdevallia triglochin, *n. sp.**

I knew very well that Mr. Lehmann, the zealous Orchidist, had discovered a new Masdevallia of the Triaristella group in the hunting grounds of Hall, Jameson, Wallis, Krause, Spruce, Roezl, Klaboch, Sodiro, and André, for I possess a very satisfactory set of dry specimens (not miserable scraps) in my herbarium, where the lovely genus Masdevallia is not very poorly represented. Yet I was quite overcome with astonishment when, the other day, the marvellous gem stood alive before me, in a little box sent by my oldest English Orchid correspondent, Mr. Stuart Low. There it was, adorned with its lovely charms. Yet, let me speak coolly of the new species, since all the praises I can heap on it will not be sufficient to give any idea of it to the benevolent reader.

The leaves are not much longer than 1½ inch; they are cuneate-spathulate, acute, very narrow, very thick, light glaucous green, with numerous violet spots underneath. The slender peduncle is bent, and not much longer than the leaves. It bears more than one flower ("several succedaneous flowers" Mr. Lehmann writes on the label). The upper short triangular lip of the flower ends in an erect rather thick tail. The lower lip has a conspicuous chin, is boat-shaped oblong, and bears on each side before its blunt apex a diverging tail. The tails are shorter than in Masdevallia triaristella, the gem of Messrs. Veitch; the whole of this is red, excepting the tails, which are yellow. Now we must look to the interior mystery. The petals are ligulate truncate with a medium apex, a little toothletted at the top, pallid yellow with a red blotch in the disk. The lip is ligulate obtuse, sagittate at the base, much narrower at the apex, pallid yellow, with some red on each side at the base. The green slender column is bent, with a toothletted yellowish white cucullus around the androclinium.

Both Masdevallia triaristella and tripeta, the late M. Endres' beautiful discoveries, have much narrower leaves. Masdevallia triaristella has a much longer peduncle, and much longer tails or bristles to the perigone. Masdevallia tripeta is more like M. triglochin, but its peduncle is much longer, its petals are sharp tridentate, and there appear to come several flowers in succession.

It was in June when Mr. Lehmann found this novelty, at an elevation of 5500 feet. All Orchidists will be very pleased to thank him for the discovery, and Mr. Low for the lucky introduction. *H. G. Rchb. f.*

Bomarea oligantha, *Baker, n. sp.* †

A native of Peru, imported by Herr Leichtlin, and flowered by him at Baden-Baden in June of this present year. It belongs to the true Bomareas, with simple pedicels and sub-equal perianth-segments. Of published species it comes nearest B. Halliana,

* *Masdevallia triglochin*, n. sp.—(Triaristellæ.) Dense cæspitosa; foliis cuneato-spatulatis obtuse acutiusculis (microscopice bidentatis apiculo mediano prope obliterato) crassis, pedunculo folia haud multo superante, unifloro primum, floribus paucis hysterochronicis sequentibus; perigonii labio superiori triangulo in caudam subæquilongam exeunte; labio inferiori cum mento magno abrupto naviculari obtuse acuto; cauda utrinque abbreviata divergente; tepalis ligulatis apice retuso serratis cum apiculo mediano; labello lineari pandurato postice sagittato; apice deorsum inflexo; columna trigona gracili; androclinii cucullo denticulato.—In Ecuador detexit opt. Lehmann, Junio, 1877. *H. G. Rchb. f.*

† *Bomarea oligantha*, Baker, n. sp.—Caule gracili glabro scandente; foliis membranaceis oblongis acutis facie glabris dorso pubescentibus; umbellis 1—2 floris; bracteis parvis lanceolatis; pedicellis glabris simplicibus flexuosis subpollicaribus; perianthii subpollicaris segmentis subæquilongis, exterioribus oblanceolatis minute cuspidatis extus rubellis intus luteis, interioribus obovato-cuneato-unguiculatis luteis distincte cuspidatis luteis maculis parvis copiosis rubro-purpureis decoratis; staminibus tribus longioribus perianthio vix brevioribus antheris parvis oblongis.

Herbert, *Amaryll.*, p. 117, tab. 10, fig. 3, from which it differs by its shorter, broader leaves, pubescent on the veins beneath, and fewer flowers, with glabrous pedicels and small bracts. According to the sequence followed in Kunth's *Synopsis* it would rank beside B. variabilis of Herbert.

Stems wide-climbing, slender, glabrous. Leaves with a short, winged, twisted petiole, oblong, acute, about 2 inches long, membranous in texture, with close ribs and obscure cross-bars, bright green on the upper surface, ciliated on the ribs beneath. Flowers one or two to an umbel, on simple, flexuose, glabrous pedicels, about an inch long. Bracts small, lanceolate. Perianth regularly funnel-shaped, about an inch long above the small globose ovary; outer segments slightly shorter than the inner, oblanceolate, under ¼ inch broad, obtuse, with a minute pilose apiculus, unspotted, reddish on the outside, yellow within; inner segments obovate-cuneate, with a claw as long as the blade, broadly rounded at the tip, with a distinct cusp, ⅜ inch broad, bright yellow, with abundant small, claret-brown spots. Three longest filaments nearly as long as the perianth limb; anthers oblong, $1\frac{1}{2}$ inch long; filaments subulate. *J. G. Baker.*

APONOGETON DISTACHYON.

This abominable appellation for a lovely plant may be commended to Mr. Grindon as an exercise in pronunciation. Etymologically the name is as barbarous as it is in sound. Such as it is, however, it must be preserved, for there is none other, and any attempt to frame a new one in the vulgar tongue would result in failure. Our object in calling attention to so old a plant is to recommend it for cultivation to many who do not know its merits. The flower-spike splits into two divisions, along each of which are disposed in two ranks, one on each side, the large pure white bracts in whose axils nestle the small inconspicuous flowers. The flower-spikes are thrown up well above the floating leaves, which are of an oblong shape. In addition to its beauty it has the additional charm of fragrance. The plant is a native of the Cape of Good Hope, and is seldom seen except in botanic gardens, though its beauty is such that it should surely find a place wherever a tank can be found for its reception. In two places that we know of it grows vigorously and flowers freely out-of-doors—one in the lake in the Edinburgh Botanic Garden, the other in the nursery of Mr. Parker, at Tooting. In both cases the ponds are fed by a spring, which seldom or never freezes. Mr. Parker's plants seed freely, and this has enabled him to select a fine strain, one spike of which is represented in the accompanying illustration (fig. 127). A slice across the flower-stalk will reveal a very pretty arrangement of the air-canals, by which the stalk is traversed throughout its length.

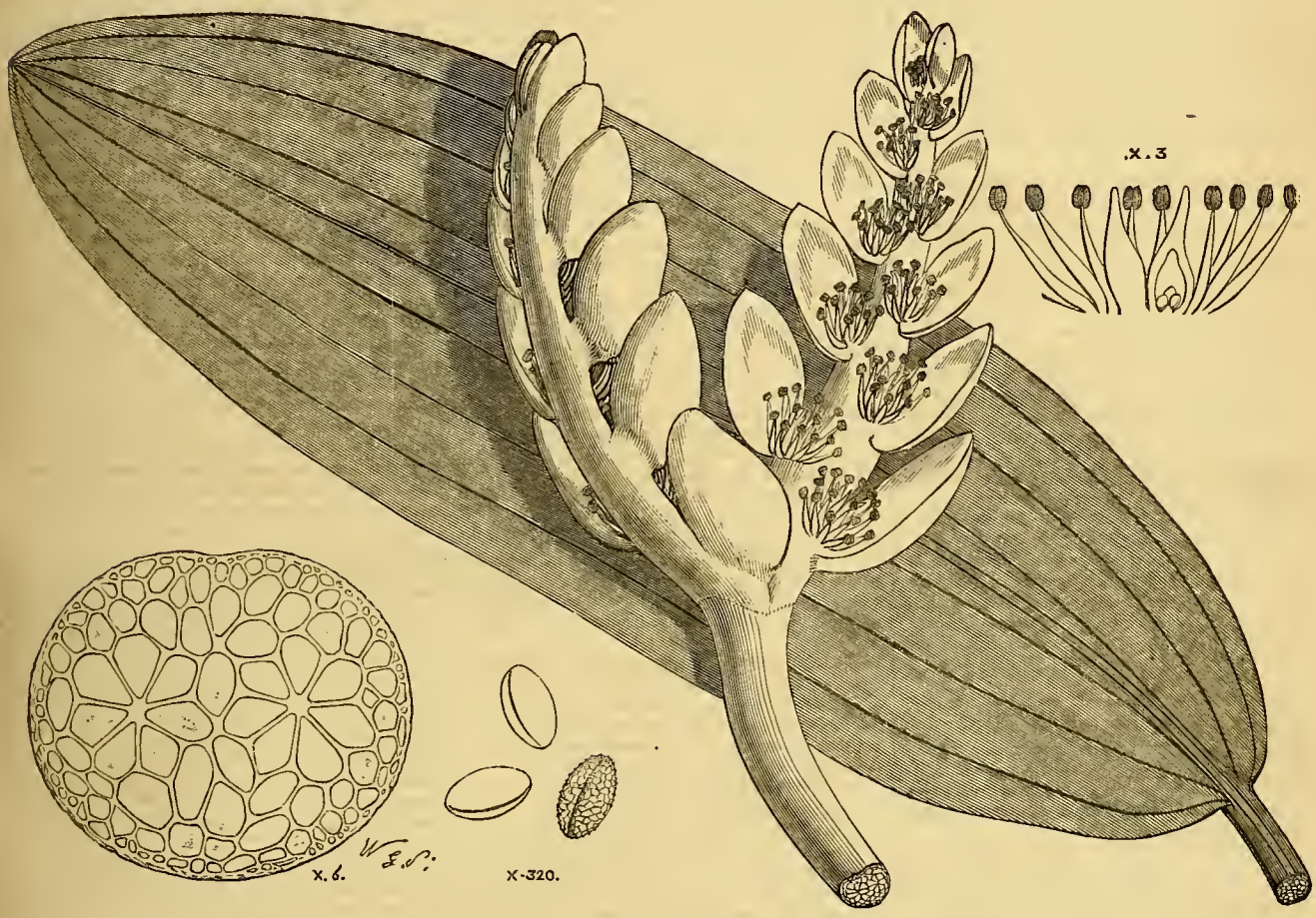

Fig. 127.—Aponogeton distachyon. Flower and leaf natural size, pollen grains and section of stem magnified.

CABBAGES AT CHISWICK.

The Royal Horticultural Society has done good work in the way of collecting and testing all the known varieties of Cabbage. This important trial was carried out at Chiswick during the past summer by Mr. A. F. Barron, with that care and attention which characterises all his experimental work; and the result was eminently satisfactory as an exhibition of types and varieties, satisfactory also in the sense that it enabled those interested in the trial to understand something of the number of old kinds constantly being put forward under new names, and claiming to be entirely distinct in character. The seedsmen, probably, reason in this way—the new plant producers and dealers are having on the whole a pretty good time of it; there is existing something akin to a rage for new things in the way of vegetables; there are plenty of buyers of them, and if we can make a good selection there is no reason why we should not reap any beneficial trade result accruing therefrom. The seedsman probably feels justified in going a step farther and may say, that while many new plants are put into commerce that fail to answer the high expectations formed of them, on the whole the new vegetables (which are in the main good selections) do not fail to satisfy; and this conclusion is somewhat borne out by the fact that nearly every variety of so-called new vegetables is favourably reported on by some cultivator in the columns of the gardening Press. The estimate formed of these testimonials by the gardening public is another matter.

An examination of this trial of Cabbages showed that certain types or varieties have a superiority over others for their obvious good qualities. One of the earliest and dwarfest of the Cabbages is Little Pixie; it takes up but little room and turns-in quickly, therefore it is suited to small gardens. It is like the Ox-heart of the French. The Early York has long been a favourite garden variety, for it is dwarf, early, and can be grown close together. There are two types of this, the glazed and the glaucous form; the first-named being the one usually grown. The small Superfine Early York is a capital Cabbage for small gardens. Atkins' Matchless, an old garden Cabbage, is small and compact in character, forming good hearts of a deep green colour. As a matter of course, much depends on the character of the stock of a particular variety; the particular one under notice was all that could be desired.

Taking the Nonpareil as a type, it was found to have many synonyms. Wheeler's Imperial is a good form of it. Monarch is of this form, so is the Cocoanut, with its rounded, erect leaves; and so is Carter's Heartwell. It is a type that is much grown, because so useful in many ways. The Sprotborough is a large Nonpareil, something in the way of the Enfield Market.

The Furnel, or *fernelle* of the French, is a very

early Cabbage, very soft in the heart, but turning-in quickly in spring. It is somewhat coarse-looking, and in that respect will scarcely find favour with English gardeners; the heart is somewhat large also. The Sugar-loaf Cabbage is always known by its peculiar shape. Old gardeners used to swear by it, but its cultivation has become somewhat restricted of late. It has always borne the character of being a delicious table variety.

The Coleworts form a distinct type, what is known as the Rosette being remarkable for its flat, compact, rosette shape. This would no doubt be preferred by gardeners, but the London market gardeners prefer the old form, and grow it accordingly.

The Winningstadt is a Cabbage that does not receive the attention at the hands of gardeners which it deserves; it is of peculiar shape, with little outside leaves, a large full heart, moderately early, and having great distinctness of character. The Quintal or Mason's Drumhead Cabbage is handsome in character, with a peculiar habit of growth, with glaucous leaves somewhat arched or reflexed, and much veined with white. Worse ornamental-leaved plants have been put into circulation. The St. John's Day Drumhead has its early and late forms, and both are good; for yielding a supply from September up to Christmas it is perhaps unequalled, and, moreover, it can lay claim to excellent quality, and grows close to the ground; there is scarcely room for a snail to hide under it.

The Pomeranian Cabbage is a singularly distinct one, with a tall, upright, and peculiar Filbert-like growth and shape, and a pointed heart, and appears to be very good in every respect; there is no mistake as to the quantity of stuff in a Cabbage, for the heart is almost hard enough for a cannon-ball. What a hardy type it appears to be!

Then there is the thick-leaved Coutances, the leaves greyish-green in colour, with white veins, and the leaves also curiously frilled on the edges, so that it has a decidedly ornamental character. Some day, when the Cabbage comes to be used in winter gardens, this will be the first that gardeners will seize on for the purpose.

The Enfield Market or Fulham Cabbage is so well known, and so generally grown, that it only remains to be stated that it was at Chiswick in good form, with its expansive growth and large heart.

The Couve Tronchuda, or Portugal Cabbage, must not be passed over. By the French it is classed among the Savoy Cabbages; by some it is grouped among the Borecoles; and it is the Asparagus Cabbage of some of the seed-houses. It is a most delicious vegetable, and should always find a place in large gardens.

A selection of Cabbages for small gardens for sowing in spring for use in autumn should include Early York, Little Pixie, St. John's Day Drumhead, Improved Nonpareil, Rosette Colewort, and the Winningstadt for the latest, because of its hardy character. For sowing in autumn for spring use the best sorts are the Fulham or Enfield Market type.

If any amateur gardener wishes to have sensational Cabbages for exhibition in October and November let him grow the Pomeranian and Winningstadt. Sowing in the spring and growing them well all the summer, they would prove both a surprise and a sensation, and put Giant Puff-balls and big Gourds quite in the shade. *R. D.*

KILLING TEMPERATURES.

WINTER is here again, and its track will be marked by dead or damaged plants before long. Winter's cold gets blamed for more than its proper share of the annual "massacre of the innocents." And we sometimes think that winter's damp gets even more blame than is just in plant destruction. We sometimes think that plants are damaged or even destroyed by too much heat in winter. This applies more generally to amateurs, but is sometimes applicable to professionals. When frost or damp necessitates the use of fire-heat in greenhouses there is a tendency, where the heating medium is ample, to run up to high temperatures, which results in numbers of the plants being excited into a tender constitutional growth which weakens the plants, so that they are ill able to withstand the long cold nights and the scarcely brighter days of a British December. Growth made during dark nights and dull days is about the worst thing that an amateur can produce during winter, and many are very successful in this way; 50° to 55° should never be exceeded in greenhouses in the absence of sun during the day, nor 40° to 45° at night, and, of two evils, it is better to go below these figures than above them. In all such structures a cool airiness should be aimed at, and, when fires are necessary to expel damp, advantage should be taken of bright days so that ventilation can be given to prevent an excess of temperature. Fires lighted under other conditions heighten and hasten the work of destruction.

Too high temperatures are not unknown in stoves. A forcing heat is always to be deprecated in any structure where the plants are at rest, as a majority of stove subjects are during winter. But there is a difference between rest and stagnation, and many plants that absolutely require rest, or cessation of actual growth for their well-being, will die outright in too low a temperature, and may yet be occasionally submitted to a lower temperature at times without injury than would suffice to kill if kept at such temperature for any length of time. For instance, most Pandanads will bear being subjected to a temperature below 40° repeatedly, with no injury whatever, if it is only for short periods, such as the hours before sunrise on very severe nights, if the temperature is got up as soon as possible during day to 60° or 65°. We have known them subjected to such treatment for days and even weeks in very severe winters, when there was even a difficulty to get the temperature up to 60° on some of the days, and yet no harm accrued. But for the majority of stove plants it is always safest to keep 55° in one's eye as a minimum, and from 65° upwards according to the weather; and in all cases when the night temperature goes down somewhere about 40° the heat should be got up to 65° or 70° with all speed, for it is stagnation that kills such stove subjects, and a comparatively high day temperature secures a circulation of the sap and a revivifying influence on the plants. While we have thus seen that Pandanads will stand an occasional cold bath of 40°—and we take this genus as an example, as what is true of it is also true of most tropical plants—we have known them die of cold when the temperature was carefully kept from going below 45°, but then, for the sake of the other inhabitants of the structure, the temperature was seldom above 55°, and for weeks together scarcely over 50° as a day temperature. It is stagnation rather than an occasional cold bath which kills many stove plants; and it should be borne in mind that plants which have received plenty of light and air, with a comparatively dry atmosphere, will bear checks much better than plants subjected to the opposite treatment.

In forcing-houses greater care is necessary in guarding against sudden depression of temperature, as, from the nature of forced growth, the plants are not so capable of standing extremes of temperature to the same extent as matured growth, even although the latter may be tenderer naturally.

Amateurs and young beginners often make mistakes in the management of cold frames, by keeping them far too close. Pansies, Auriculas, Cauliflowers, Lettuces, &c., cannot well have too much air in all weathers. Closeness favours growth, which is the main thing to be guarded against, as growth made during the dark days of midwinter is extremely susceptible to damp or frost. It is wonderful what an amount of frost the Pansy will stand if kept stout and dry by top and bottom ventilation day and night in all weathers. We have seen them utterly destroyed in frames where too much protection was given, when frost was almost altogether excluded by coverings, and we have seen them bear uninjured 20° of frost in a dry well ventilated frame. Pansies, and almost all plants of similar hardiness, invariably come through the winter strong, stubby, and robust when treated in this hardy way, while plants which may be kept living and growing by coddling are never so strong at planting time as others treated as we have indicated. Damp injures such things much more than frost, and so does a close warm (comparatively) atmosphere. Even Pelargoniums will stand a few degrees of frost much better than an atmosphere and a root medium somewhere near saturation point, and frost is always more destructive when things are damp than when dry. Plants will succumb to an amount of frost when damp that would not harm them when dry, and there is nothing that promotes dryness better than a constant circulation of air. Air, even when rain is falling, is seldom so near saturation point as the exhalations which rise from the ground, hence a close frame will become damp when an open one would keep its state of dryness even in dull weather, and will part better with its moisture when the weather is bright and dry. Outdoor plants which suffer from damp during winter may receive much assistance if the surface is hoed on dry days. A loose surface dries much quicker than a hard battered one, and allows the air to penetrate into the soil better. All decaying leaves should be kept removed from such plants as Broccoli and other winter greens, as these are often the cause of decay. The leaves of trees, when allowed to accumulate on grass or by the sides of Box edges, cause these to die much more effectually than hard frost or exceedingly low temperatures. *A. H. H.*

THE RESOURCES OF CALIFORNIA.

I HAVE great pleasure in again forwarding you, from my friend in California, Mr. J. R. Cross, another long and descriptive letter respecting the resources of his adopted country. I place it at your service, should you feel disposed to give it a place in the pages of the *Gardeners' Chronicle*, where I have no doubt it will be read by many, as were his former letters, with very great interest.

We are very much indebted to Mr. Cross for taking so much pains in sending so full an account of how things grow and are managed in those highly favoured regions of the Far West, where evidently horticulture is being pushed forward on a gigantic scale with a view to profit, and with a zeal quite equal to the spirit of the times of that great country. Nothing shows the improvement and elevation of a country more than the demands for and the encouragement it gives to the rise and progress of its horticulture. No doubt, like many more, through some reason of hope deferred in this country, Mr. Cross found courage enough to make up his mind and hie away in search of fairer fields and pastures new, and that he succeeded in finding those pastures and pellucid streams is placed beyond doubt by his own admission, and very probably, we may add, even far beyond his own expectation. During the sunless summers of England we might be excused imagining ourselves in the position of Mr. Cross—still in the prime of life, in, to him, a new country, with so glorious and genial a climate, wandering up and down midst groves of the choicest of both fruit trees and flowers, which can only be viewed to great disadvantage in this country when grown under glass with acquired skill, and at enormous expense beside. Follow Mr. Cross through this and former letters, and note the detailed account he gives of the planting of his own garden, what he has already done, what he is doing, and what he frankly tells us he proposes to do. Consider all this, and imagine what pleasures of hope must swell in his breast as he wanders up and down in his own western paradise, observing peacefully and with amazement the quick maturation and profitable results of his own handywork and plodding perseverance.

At his age these scenes must to him be like the opening up or dawning of a new life, and it is to be hoped he will be long spared to enjoy the hopes and pleasures of his own toil, and continue to send us home from time to time such goodly accounts of his doings.

The straightforward description given by Mr. Cross of his own and other garden practice westward in California, bearing with it the impress of truth and reality on every line, compares favourably with Milton's imaginative description of the garden eastward in Eden. Who knows but some future Milton from Europe may one day visit California, and write a poetic description of the gardens, rivers, &c., of that great country. True, he might find wanting an original Adam and Eve, but, like Milton, supposing him to have equal genius, he might supply the want by drawing with equal vigour upon his imagination for the shortcoming material!

It is pleasant to find Mr. Cross, although comfortably situated in the Far West, and separated from us by a great space of both sea and land, still mindful of his earlier associations in this country, for we find him making mention of such names as Paul, Veitch, Rivers, Cranston, Wood, Keynes, Turner, &c. These contemporary horticultural celebrities, no doubt, he looks upon as so many burning and shining lights in the horticulture of this great country, and, taking us all at our own estimation of ourselves,

there are many such. *W. Miller, Combe Abbey Gardens.*

"Montecito, Santa Barbara, California: *July* 6.—"I am sorry to say we are having a dry season generally throughout the State. The season is now too far gone for rain to be of use, except for corn; all cereals are so far advanced that rain now would be an injury to them. In this county we have had a few fractions less than 5 inches of rain, if we had been blessed with half as much more it would have been ample to have insured good hay crops. I hear and read of as many good crops of Wheat and Barley as bad ones; the reports are very variable, therefore we may conclude there will be enough for the demand. The Wheat crop in the Eastern States is said never to have been better, but with the war news prices here have advanced considerably. All through Southern California, in view of scanty pasturage, sheep farmers who hold them by thousands have slaughtered the lambs of this year, and in some instances the sheep, by one-half, merely for the tallow and pelt. A man can go into any of the butchers' shops in town and buy a carcase of splendid mutton for 1 dollar, but in a few months from now I expect it will be dear. Should we get early autumn rains (November we look for them), farming for the next two years in every branch will pay well; by the end of the year there cannot be any surplus stock of either animals or grain.

"The Santa Cruz Island, which I see as I am sitting writing, is wholly devoted to sheep raising: the proprietors of it have sacrificed 80,000 lambs this season. In many instances where hogs are raised largely, as they now are, so that farmers hold them by hundreds, sheep are killed and fed to them; some say, jokingly, they hope to take a clip of wool from the pig's back before next fall. As will be seen, there is an economy in a necessity: without the hogs the mutton must perish.

"Although my present means are tolerably limited I have been buying fruit trees pretty freely this season—Apples, Pears, Peaches, Nectarines, Plums, Figs, Walnuts, Apricots, Bananas, two varieties; Loquat, Guavas, Orange, Lemon, Lime, and Citron. Those of the Orange family I am just now engaged in planting: I have between 300 and 400 trees of two to five years' budding—these I am planting 20 feet apart, and in three years I hope to gather Oranges off the larger trees. June and July are considered the best months to plant the Orange—a period between the first and second growth. The operation of removing them from the nursery to here, a distance of three miles, is attended with some little trouble; each tree is dug around to a suitable ball as to size of plant, and whilst so standing a sack which will hold 100 lb. of grain is used, cutting it open and then wrapping it around the ball, and with needle and twine sewing tightly. One cut with the spade beneath the enclosed ball will sever the tap-root: lift aside, and proceed with the remainder in the same way; from twenty-five to thirty of these make a two-horse load. When planted and well-watered there are but few instances of even leaf-flagging perceptible. These will plant nearly 4 acres, which will form a nice feature as a beginning. I shall bud several hundreds on stocks of my own raising. The Chinese Lemon is generally used here as a stock for the Orange. I find by a discussion lately amongst the Los Angeles Orange growers, who have formed a Fruit-Growers' Association just recently, that they are about equally divided in opinion as to the practicability of growing the Orange by budding or seedling. Los Angeles as yet may be considered the home of the Orange in California; I hope to take a drive down there this summer, and see through the Orange groves of that county. One of its growers called on me during the winter, and stayed the night with us, which gave me a good opportunity for brain picking for my own benefit. I ordered several varieties of him, which I am expecting shortly. I intend working up a fine collection, as my place is admirably suited to an extensive cultivation of the whole family. I have a peculiar fondness for them, having had charge of a set of trees in tubs (slate) whilst in England. Now that I am situated in a country and climate each so enjoyable, I hope I may be permitted to carry out my pet scheme, and gather my Oranges by the barrel.

"From the fact of our getting so little rain this season I felt afraid to plant the land I had purposed for Grapes. I have raised plants that I had intended putting out—10 acres in Grapes of different kinds; feeling afraid to risk it, I only planted a few hundreds. These have done remarkably well, and I am only sorry now I did not put out the whole. Once watering at the time of planting is sufficient for them. In a work I have on the *Grape in California*, it is most strongly recommended to plant the cutting where it is to remain. This plan I will also adopt as a saving of labour. The Peach is also a favourite fruit of mine. Having brought in a collection of English and American kinds, I intend to work these on my own stocks for future planting. I find I can get all the kinds I knew in England of a very extensive grower in Massachusetts. I can have buds sent by mail by the hundred or thousand. He deals largely with Rivers and others. He holds a collection, as per his catalogue, of more than one hundred varieties. I have twenty-five kinds, the very best of his collection. I find the Nectarine is not sought after so much as the Peach—everybody eats the Peach. I expect we shall have Briggs' Early May Peach sent from the Santa Clara Valley in a few days. Apricots are already in of the small, round yellow kinds. The Apricot is a splendid fruit here. It grows in common with all other kinds of orchard fruit trees, bearing 3 to 4 bushels. I am told there is a native variety, so that the introduced kinds may well feel at home here. Cherries have been in market some time past in several varieties. These are grown very fine—much finer than I ever saw them at home. The Strawberry, as I believe I have written you before, may be said to be in at all times. The growers who supply the San Francisco market have this spring formed a Trade Protective Association; prices would at times get so low that they were not worth gathering. I see by market reports a uniform price has been maintained since then. I have had them in bearing since Christmas. I shall increase the area of them, as I intend to grow them entirely through the lines of Orange trees. I have raised several distinct kinds from seed of the English named sorts, which I think much of, whilst I have plants proving true to name from which the seed was taken. My first acquaintance with Strawberry culture here and in the States impressed me that we had far better varieties in England, hence the idea of obtaining seed from named kinds.

"I have obtained a few fine plants of the Banana, which is grown so extensively in Florida. This I find is very distinct from the one which has been introduced here from the Sandwich Islands. The dwarf Musa Cavendishii, the Florida variety, is more hardy, and fruits earlier and much finer. These, when sufficient can be propagated to plant by the acre, will nett a pretty good income alone. They are exceedingly ornamental grouped amongst flowering plants

"Our little town of Santa Barbara has been very gay in its almost numberless flower gardens this season. The Tea and Noisette Roses—and of these we have both the old and newer varieties of recent introduction—have been truly splendid. Maréchal Niel, Cloth of Gold, Lamarque, Gloire de Dijon, Reine du Portugal, Shirley Hibberd, Duchess of Edinburgh, Niphetos, Devoniensis, and Climbing Devoniensis, Souvenir d'un Ami, and hosts of other names in the same sections—plants covering immense trellises or the sides of houses, growing with the luxuriance of Willows, and, as may be supposed, flowering in the same generous profusion. Nothing can vie with the Rose here, as it is always in flower; therefore I must say it is the home of the Teas. There are a few Eastern firms who make the Rose their special business, as do your Pauls, Cranston, Wood, Keynes, Turner, &c., from whom by mail we get all the new Roses up to date of 1876. Everybody grows the Rose, and the cry is for the newest and best. As a companion the Gladiolus is a splendid border plant, requiring no other care than first planting. Some grow entire beds of named varieties, others grow them amongst Rose bushes. The finest effect is seeing them grouped amongst Dracænas stricta and australis, 10 to 12 feet in height; also several species of Palms. Those at present most common are the following:—Prichardia pacifica, P. (or Brahea) filamentosa, Ptychosperma Cunninghamii, Chamærops excelsa, C. humilis, C. Palmetto, C. Fortunei, Corypha australis, Caryota urens, Livistona borbonica, Phœnix dactylifera, P. sylvestris, Jubæa spectabilis, Cycas revoluta, Kentias, and several others whose names I have not now in mind. The above will, I think, show how rich, with floral subjects introduced, both small and large places may be made. Then again there is that most beautiful plant—probably the most imposing of the whole family of Coniferæ—Araucaria excelsa; the other tender kinds—A. Cookii, A. Bidwilli, and A. Cunninghamiis, are also here, doing splendidly.

"In climbing plants we have Stephanotis floribunda, Bougainvillea spectabilis, Hoya carnosa and H. bella, Tecoma jasminoides, Bignonia radicans, Masdevallia suaveolens, Tacsonia Van Volxemi, Allamanda Hendersoni, Clianthus Dampieri, Smilax, Clematis, Hardenbergias, Cobæa, Lophospermum, Jasminums. That the above are seen growing and flowering out-of-doors the whole year is tolerably conclusive proof of the nature of our genial climate. A few plants are grown as dwarf bushes, namely, Gardenia florida and Fortunei, Vinca rosea and rosea oculata, Clerodendron fragrans, Allamanda neriifolia, Cytisus racemosus, Euphorbia splendens, Polygala Dalmaisiana, P. cordifolia, Veronica imperialis, Plumbago capensis, P. Larpentæ, Cactus in varieties, Neriums, Lantanas, Statice Holfordii and S. sinuata, Begonias in varieties. The above are usually set out as single specimens, to attain in some instances large dimensions. I could enumerate a long list of plants, but the few I have chosen will suffice to show any practical person what may be grown here, and afford far greater pleasure in walking amongst them than in growing them under either glass or canvas. All Pelargoniums—show, fancy, and zonals—do admirably, and the size to which some attain is really immense. It is a flower not so generally appreciated as in England. The Cyclamen persicum, Amaryllis, Eucharis, Tuberose and Neapolitan Violets, are here beautiful.

"This dry season is bringing artesian wells, wind-power pumps, and iron piping into great requisition. This country is famed for some of the best designed pumps in the world; every conceivable idea is brought to bear to do with the least labour. I have a splendid spring of water in the mountains at the head of my place which I had designed at some future time to pipe down when more ample means permitted the thing being done in thorough order, but I am now at it rather by compulsion. The distance I have to convey it in iron pipe is 3080 yards. I am using 1½ inch and 1 inch screwed socket pipes. This will bring several hundred barrels daily, more even than I can make available at present. Eventually, when I shall have a great portion under Orange culture and the Florida Banana, I shall then require a vast amount of water at certain periods, so that the present cost will not be thrown away. When a person claims a spring, as I have done in this instance, a public record has to be made of it, and a written notice posted at the location for so many days, so that no person, by any circuitous route, can claim one drop of it. We have had great contentions this year for water rights. In an ordinary season but little notice is taken of them. We have had some fearfully destructive fires of late, running over thousands of acres of land, and from the dry nature of everything it has to burn itself out; in some instances it leaps along with such rapidity as to defy the possibility of cattle escaping. They originate usually by hunters and pleasure-seekers in the mountains. The letter of Mr. Veitch which you enclosed I read with much pleasure, and I will endeavour to get him the cones of the kinds named, and anything in seeds or bulbs I can collect I should feel a pleasure in forwarding to him. He should try and induce some of his well-to-do applicants for situations to take a trip here for a living, as California of to-day differs vastly, widely, from that of seven to ten years past. The remarks to my note which you sent to the *Gardeners' Chronicle* might have a deterrent effect on the half-nerved person in coming out here, but not on the fearless and not over-nice man, who can turn his hand generally to most kinds of work—and he is permitted to wear gloves, too, if it has been his wont. I may mention by the way the Americans perform all work possible with a gloved hand, so that no one with ordinary courage need fear the result of his venture. I hope in my next letter to give you a good account of my Orange ground. I shall go on buying and propagating the whole family, for I feel assured there is more money in them than in anything else. *J. R. Cross.*"

REV. CANON GEE ON FAMOUS TREES OF HERTFORDSHIRE.*

(*Concluded from p.* 586.)

The largest tree that I know of, and seemingly the oldest in Herts, is the Spanish Chestnut tree at Little Wymondley, near Baldock. It is now the wreck of a wreck. There is not a half of its circumference standing, though a print at High Elms, of the year 1790, shows the tree as then perfect. An original girth of 42 feet is claimed for this Chestnut and possibly may have been attained, but if so the tree must have projected on the fallen side and would not be anything like a circle with what is left. It is still a grand old tree, and one is ready to believe that it was standing at the time of the Conquest. There is no mention of it, however, in the Doomsday Book of the parish. Next to the old Chestnut at Wymondley, the largest girth that I know is of a pollard Oak in Moor Park, that measures 25 feet, and another near it measures 23 feet. There is also in this park a prostrate Lime mentioned in Johns' book as among the largest in England. It must have been a fine tree though, like the Codicote tree, its size lay in the space that it covered, rather than in its height or girth. Close behind it, and in the avenue or row skirting the park, is another Lime in full vigour, girthing 23 feet. This is a beautiful tree. There are two Beech trees in Cassiobury Park, going to the Swiss Cottage, both of which reached my standard of fame. Lord Verulam writes me word that the Kennel Oak, at Gorhambury, measures 23 feet. The Queen Oak measures 20 feet, and he has a Lime which measures 22 feet. He gives also as just below my standard (being 19 feet 10½ inches) the Kess Oak, the origin of which title his lordship thinks, is that the Oak was cased or fenced. By-the-bye, do you care to know that the many Gospel Oaks in the country had their names from the fact that, in perambulating the parishes, the Gospel for Rogation Day was formerly read when the beaters of the bounds reached that particular Oak. I will state there is no tree in my list, but

* Extracts from a paper read before the Watford Natural History Society.

examples of it exist somewhere, reaching at least my unit of fame—a girth of 20 feet.

How to Estimate Height.

Now with regard to height, you may say, "It is all very well to measure girth, but how are you going to measure height?" Who is to tell us whether a tree is 130 feet or 140 high? I can give you two rules of thumb, which will at least assist calculation. This is one. Supposing your tall friend to stand out well in the open; set by the side of him a stick of ascertained height, say of 6 feet. Watch at the proper hour the length of shadow cast, both by your 6-feet rod and by the tree. Then calculate in proportion the height of the shadow-casters; *e.g.*, if the tree's shadow be twelve times the length, take its height at 72 feet. Or, take three laths, join two of them at a right angle, and make each lath containing the angle to be of the same size. Then unite the equal sides with a third, subtending the angle. Now hold it level and opposite the tree. Walk away until your eye looks up the third and long side precisely to the summit of the tree. You may now consider yourself to be standing at the apex of an enlarged triangle, of which the ground line is one side and the erect tree another. You measure the ground line, and in so doing you measure the height, for it equals the perpendicular which you thus get. We then tried our triangle upon the tallest tree that I know about here—on the Spruce in the Cassiobury Woodwalks, and found the height to be some 135 feet. Timber trees are not very high, if Brown, in *The Forester*, be correct in giving the following as the mean average height of trees:—Oak, 45 feet; Ash, 38 feet; Beech, 45 feet; Birch, 47 feet; Elm, 44 feet; Lime, 44 feet; Poplar, 48 feet; Fir, 57 feet; Chestnut, 44 feet; Sycamore, 37 feet; Yew, 16 feet.

The Panshanger and Grimston Oaks.

I have reserved as an example of a tall tree the Panshanger Oak, which is now, I regret to say, "in a very poor way," and not long for its present lofty position. The ground appears to be undermined beneath it. The whole height, as given me by a timber dealer's measurement, is 73 feet, but I distrust his measuring to the very top of what he would call waste. Indeed, another measurement gives twice this, 140 feet, as the extreme height, but that again has not my confidence. The branches he states stretch southwards 60 feet, and northwards 35 feet, making a shelter of some 100 feet in diameter. All accounts agree that it increased rapidly in the later years of its growth. According to Clutterbuck, between 1719 and 1805 it added 480 cubic feet of timber to its contents. A certain Mr. Barker, timber measurer, of Bishop's Stortford, says that this growth had not ceased in 1795; further, that in fifteen years from 1710 it had increased only 1½ inch. The value of the tree, as containing seventeen loads of timber at £15 per load, with top and bark, the valuer, Mr. Ellis, in 1811, places at £225. There is another and a nearer tree, an Oak of this same character, which I wish to commend to you. It is the Grimston Oak at Oxhey. This tree, insufficiently known, stands a few yards from Oxhey Chapel, at the fence of Mr. Blackwell's farmhouse. This tree is 17 feet in circumference, 24 feet in "length," which means, I suppose, the length of its branches. I should have taken it to be about that number of feet to the branches. It is a very well-grown tree, very dear to the Gorhambury family, who, I am informed, have commended it to the care of the new proprietor of the estate. It was planted by James, second Viscount Grimston, who died in 1773, and who had married the daughter of James Askell Bucknall, Esq., the heiress of Oxhey. The tradition of the family, Lord Verulam tells me, is that his great-grandfather planted this tree with his own hands. Supposing him to have planted the tree some twenty years before his death—his eldest son was twenty-six years old at his death—you get a fair idea what a well-grown Oak would become in 120 years' time.

I would like to mention an Ash in my parish, not because of its extreme size, but because I do not happen to know a finer, and because it is a very well-grown tree. It stands at the Hyde Lane Farm, in Abbot's Langley parish, and is 12 feet round. It has a fine, clear, straight stem, appreciated only by standing directly underneath the tree. It once, I am told, had a narrow escape from the usual fate of trees, becoming the axle of a water-wheel. It then, many years ago, said the old top-sawyer, my informant, contained three loads of timber.

Queen Elizabeth's Oak.

I have now to speak of those trees which, without reference to height or girth, are famous from historical associations. Foremost among these stand out Queen Elizabeth's Oak at Hatfield. Half-way down the avenue leading from the house towards Hertford, and surrounded by a fence, and in not vigorous health, or of a very remarkable bulk, stands this tree, which I myself years ago visited with reverence and brought away a leaf (I would not have broken off a branch) to be preserved among such mementos of our history. I very nearly took off my hat to it. On the morning or afternoon of November 17, 1558, for poor Mary died between 4 and 5 A.M., Elizabeth was sitting under this tree when a deputation arrived from the Council to apprise her of her sister's demise and to offer her their homage. She fell on her knees, and exclaimed in Latin, "*Domino factum est illud, et est mirabile in oculis nostris.*" "It is the Lord's doing, and it is marvellous in our eyes." (Ps. cxviii.) And this motto she took as the stamp upon all her gold plate. It must not be supposed, however, that this formal intimation was a surprise to Elizabeth. My informant (Miss Strickland) says that Queen Mary had already sent her the Crown jewels and her dying request in behalf of her servants, and that Throckmorton, her confidential agent, had prematurely informed her of her sister's decease even before the event took place. Elizabeth, fearing some snare, had answered his news with a requirement that, if true, the black enamelled ring should be sent her which Mary was known to wear night and day. Afterwards—forty-four years later—when pressed to name her successor, she declared she would not send him such visitors as came to see her at Hatfield, numbers having for some days been passing and repassing on that "Great Northern Road." Most likely the burst of pious thankfulness was genuine, and was the expression of relief at the termination of a season of suspense, the tension of which "'Twixt Axe and Crown" had been unbearable.

The Boscobel and other Oaks.

Noting the late season of the year, November 17, at which this hardy Queen had seemingly sat out-of-doors, I hope that it will not be impertinent of me to correct here a mistake of which I have certainly heard a young lady guilty with regard to another famous Oak tree. "Ah!" said an accomplished fair one to me on a chilly May morning, when the spring was very backward, "King Charles could hardly have been hidden in the Oak on the 29th of this May." No, my dear miss, nor was he hidden on the 29th of any May. The battle of Worcester, as the battle of Dunbar—Cromwell's two crowning mercies—was fought on September 3, his dying day, and said to be also his birthday until Mr. Carlyle and others produced the entry showing that he was born and christened in St. John's parish, Huntingdon, in April, 1529. The entry into London took place on Charles own birthday, May 29, and then in memory of the Boscobel transaction the Oak leaves were worn. Of this Boscobel tree, let me say (before I leave the subject) a descendant is said to exist in Gadebridge Park, Sir A. Cooper's; but my inquiries after the truth of the tradition have been unsuccessful.

I have not quite done with Queen Elizabeth and her connection with Herts and Herts trees. There is another domain in Herts or its borders, only less closely connected with this royal lady than at Hatfield. Look into the index to Miss Strickland's *Biographies*, and you will find some half-dozen references to Ashridge. I have heard that the house at Ashridge stands partly in one county and partly in another. The parish church, Little Gaddesden, where the Bridgwater family lie buried, is in Herts. Of the Ashes which gave name to that ridge only one remains, as far as I could observe on my visit the other day. Under this tree, or one of its fellows, we may think the Princess Elizabeth also sat, and so very likely used to sit the "bons hommes" of Ashridge—the hermit priests who formerly owned that beautiful spot, and who lie in the church which the house itself includes. It will be next in chronological order to notice the Oak Wood in Gorhambury. This is a wood at the back of the house specially so called. When Lord Chancellor Bacon was in financial difficulties, it was suggested to him that he should cut down this particular wood. "What! man," said he, "would you have me pluck out my own feathers?" And so the trees escaped, and some, I believe, are now standing. The circumstance is told in most Lives of Lord Bacon, as if it applied to Oaks generally, and they are spelt with a little "o." Lord Verulam informs me that the tale hangs round the particular Oak Wood, as distinct from another, Brook Wood, &c. I come to Moor Park to notice two traditions with regard to trees there. Moor Park was owned once by Cardinal Wolsey, perhaps in virtue of his connection with St. Alban's as Abbot *in commendam*. There is a tree which, Lord Ebury tells me, goes still by the name of the Cardinal's Oak. He described to me its exact situation. Lord Ebury thinks that it had its name rather from the fact of the Cardinal's having sat under it than having planted it. It is too old, according to Dryden's lines, to have had its beginning only some 350 years ago. The other Moor Park tradition is as to the beheading of certain trees there. The estate undoubtedly belonged to the Duchess of Buccleuch, who is introduced into Scott's *Lay of the Last Minstrel* (canto i., introduction). This was Anne, Duchess of Buccleuch and Monmouth, representative of the ancient Lords of Buccleuch, and widow of James, Duke of Monmouth, who was beheaded in 1685. Of her Sir Walter says:—

> "She had known adversity,
> Though born in such a high degree;
> In pride of power, in beauty's bloom,
> Had wept o'er Monmouth's bloody tomb."

And, says the tradition, on her husband's execution, she beheaded sundry of the forest Oaks in the Park. This may have been done from morbid sentimentality, or from a wish to save them, as some supposed, from confiscation; or rather, perhaps, from a somewhat spiteful wish to prevent their ever being used as timber in that navy of which her husband's cruel uncle, James II., was so proud. Whatever the motive, which could scarcely be excusable, much less praiseworthy, the tradition holds good as to fact. And I understood Lord Ebury to say that it was with reference to this special legend that Froude, the historian, encouraged him to believe that wherever tradition is clear and strongly rooted, and consistent with common-sense, there is truth in the main fact asserted. I think, therefore, we may continue to believe that these Moor Park pollards had the historical origin attributed to them. There is another kind of tradition which has made some trees famous, or at least notorious. It respects those trees which grow up out of tombstones or from the crevices of vaults. Certainly some trees do seem to choose such spots. I imagine that a seed having found its way there and expanded in peace, was at first encouraged from the sentiment that it was pretty, and afterwards that it afforded a pleasant canopy to the tomb. Not until too late was it found that the intruder was master of the situation. With relentless force it crushed the monument into which it had intruded, and had altogether taken possession of the memorial. Just such an intruding Sycamore stands in Aldenham churchyard, and has made small account of stone slabs and of iron railings. But one, better known, is in Tewin churchyard, in the tomb of Lady Anne Grimstone. Our forefathers, who scarcely seem to have been wiser than ourselves, fitted on a startling legend to this tree. It is that Lady Anne was in lifetime an unbeliever, and that she arranged with some survivors (as sceptical as herself) that if there were another world a tree should grow out of her vault to announce the fact. She certainly conformed to the requirements of religion, and lived in all such ordinances blameless. Clearly she went to her parish church, and in her carefully kept account books we find that she put up her horses, as do her successors, at Gorhambury; only 200 years ago she seems to have done it somewhat more cheaply, *e.g.*, "March, 1602, for setting up on Sunday (twice), 8*d.*; for setting up the horses at church (Fryday), 6*d.* April 15, setting up the horses when Dr. Bell preached, 4*d.*; setting up the horses when my lady stay'd (for H. C.?) at Whitehall, 1*s.* July, 1680, setting up the coach horses and black nagg, morning and afternoon, at Michaelmas, on Sunday, 1*s.* 8*d.*;" and so on. It is rather hard, after a life of such regular profession as this, to be accounted an unbeliever 200 years subsequently to one's own time, upon account of the capricious growth of a tree. It is not every one whose friends could produce so much post-mortem evidence of having lived, at least, as well as other people.

I would try to enlist on your parts a feeling of conservative preference for the older kinds of trees.

I think that our old English trees have got such a character of their own, and give such a character to the landscape, that there is a loss when their monopoly of the fields is largely invaded. I grudge to see some of the foreigners prominently introduced into what I venture to call "our parks." I know a park a few miles hence where the Araucaria imbricata is pushing its hard puzzle-monkey branches into the air. Deodaras, Wellingtonias (or as they are now called Sequoias) are following up the invasion; and I can imagine these colonial gentry will look down upon Oaks and Elms in the days of our grandchildren. I am aware that this objection is narrow, and a like narrow-mindedness, 200 years ago, would have kept out Cedars. Happily a passing expression of complaint has little effect either way. I would only press my stricture so far as to urge that large planters shall not introduce these strangers in too large a proportion, and so alter the character of the English forest scenery. On a very small scale I try to keep this in mind in planting our churchyard, though I must confess to two Sequoias which are already becoming too large for us. I like to think of God's Acre in England as being English, and not New Zealand or Californian ground.

The one remaining reflection which I would ask to be permitted to make is as to the moral impression, or even a religious effect upon us, produced by considering the longevity and slow growth, and firm hold of the earth taken by these sons of the soil. It must strike us that there is here a singular contrast to the tree-planter's own limited continuance on this same scene. A man plants an Oak, he never hopes to sit under it. When his threescore and ten years shall be run out the tree will be not half way towards maturity. The most he can hope for is, as in the case of the Oxhey Oak, that his great-grandson, though not the possessor of the tree, may keep up the remembrance of this good work. I myself have a weak hope that some Vicar of Abbot's Langley (next but three, say, after me) may speak of my Lime avenue in our churchyard as they speak at Welwyn of the Limes planted by the writer of the *Night Thoughts*, and say of mine, "These were planted in old Mr. Gee's time," but the trees themselves everywhere to be noteworthy are so old that we must rather say that in our time and turn, we belong to them than that they belong to us. How many generations of old and young have told their tale of joy and sorrow under a kiss-Oak of 20 feet circumference. How must the old tree smile to see a new generation coming to it with the old, old story. I am myself inclined to think of such a tree as the old monk thought of Leonardo's great fresco in the refectory, opposite to which so many generations came, and ate and drank, and went away, and came no more. "Surely," said he, "the figures on the wall are the realities, we in the hall are the shadows." But no: surely this suggests a notion, or encourages and strengthens a belief, that the duration of man takes place somewhere else. If 1000 years be the continuance in the Maker's eyes of vegetable life, then the highest form of the higher, or the animal life, cannot be on an average one-twentieth of that term. There must be, as the Psalm says, "a planting in the house of the Lord of those who shall flourish for ever in the courts of our God."

I check myself in an honest tendency to improve the occasion in the direction of my own special vocation. I will end with a verse from him from whom you would scarcely expect a very high aspiration of immortality, and yet it says all I want to say. It is said that Lord Byron wrote the following epitaph for a tomb in Harrow Churchyard. The allusion will explain itself—

"Under these green trees pointing to the skies,
The planter of them, Isaac Greentree, lies.
The time will come when these green trees shall fall,
And Isaac Greentree rise above them all."

Fig. 128.—B, Queen Elizabeth's Oak at Hatfield; A and C, Oaks planted by the Queen and Prince Consort.

ÆSCULUS PARVIFLORA.

At this planting season it is well to remind those who are engaged in such operations of the wealth of beauty that is at their disposal. It is vexatious to know that the nurseries abound with fine ornamental trees and shrubs which are seldom or never asked for. As in other matters, planters get into a groove, and so we find common Limes, Planes, Poplars, Oaks over and over again where other and better things would answer just as well. We are not derogating at all from the qualities of the trees we have mentioned, we are simply pleading for the use in suitable situations of some of the many very beautiful trees and shrubs which are so unaccountably neglected. We have from time to time given illustrations or references to some among them, and now lay before our readers another example of a very beautiful flowering tree, whose merits are not nearly so widely known as they should be.

Æsculus parviflora (better known by its synonym of Pavia macrostachya) is a North American tree, of medium size, with leaves similar to those of the Horse Chestnut, but not so broad near the top, and more or less downy beneath. The inflorescence consists of a mass of flowers disposed in long elegant panicles, which make their appearance in July (fig. 129, p. 657). The petals are pure white, while the long thread-like stamens are of a chocolate-brown colour. The habit of the tree is pyramidal, and it forms an abundance of suckers or side-shoots round the base of the old stem, and by means of which it is readily propagated. The effect produced by the tree when in full bloom is singularly beautiful. Our illustration is from a specimen forwarded from Valentines, where there is a fine collection of deciduous trees, by Mr. W. Earley. Among other Horse Chestnuts we may allude to—

Æsculus (Pavia) flava, a tree generally attaining to a height of about 15 feet. It is known in America as the "Ohio Buck-eye," or "Yellow Horse Chestnut." It has downy pale green leaves and yellow flowers of such shape that it would require no very great stretch of fancy to call this the Tree Hedychium!

Æsculus (Pavia) rubra is another fine tree, native to the woods in Virginia and North Carolina. It is smaller and more slender generally than the former, and is called "the small Buck-eye." Its blooms are brownish-red in colour.

Pavia discolor is a tree which averages 4 to 5 feet in height, the blooms being red and yellow tinted.

Pavia pendula and Pavia azual are also notified as being "in the country," but we do not know them. There are also four or five superb hybrids in the hands of American nurserymen well worthy of introduction, notably Pavia rubra Whitleyii, possessing splendid foliage and brilliant red flowers.

They succeed planted in mixed shrubberies. Though grown as moderate-sized "clumps," separately and upon lawns, they afford a feature, when in bloom, quite unique and desirable even if we admit the drawback associated with their deciduous character. A plant of Thuja Lobbii for centre with a band of these around, not too near, though the Thuja requires little bottom room (even though it rivals the Sequoia (Wellingtonia) in height), would neutralise this in winter, and prove very effective during the whole of spring and summer, for the young shoots of Pavias are purple tinted in spring.

The Horse Chestnut itself, whose native country is only surmised, is a noble tree, familiar to every one, but there are many varieties of it in the nurseries which, if they do not rival the type form in massive beauty yet afford variety and interest. These variations affect principally the foliage, which presents all sorts of vagaries in these varieties. In no plant, indeed, is there more individual character shown, one Horse Chestnut will be systematically and regularly in leaf three or four weeks before its fellows, another will throw one branch, perhaps, on which the buds burst into life a week or two before those on other branches.

The double Horse Chestnut offers an advantage in that it has no spiny capsules to tempt stone-throwing boys, though it is possible the boys would look on the tree with about the same feeling as those did that Leech depicted lamenting the facts that spikes had been placed in all the posts.

Æsculus rubicunda has been known to sport like the purple Laburnum, and to bear spikes of pale yellow flowers, smaller in size and similar in colour to Æsculus flava (*Gardeners' Chronicle*, 1851, p. 407).

The Villa Garden.

Chrysanthemums.—Villa gardeners by the legion grow the Chrysanthemum for its beauty and usefulness in autumn and winter, and some grow it specially for show purposes. Whatever may be said in disparagement of "specialists," as the cultivators of certain pet flowers are termed, it is quite certain they are on the increase, and many Villa gardeners go on from growing to exhibiting the Chrysanthemum, for are not suburban and local shows springing up on every hand?

As a hardy flower the Chrysanthemum stands alone, for it comes in at a season of the year when decay spreads on every hand, and our gardens take on that mournful appearance natural to autumn, and when there is no other flower of a similar character to gild our gardens with pleasant hues. It sometimes happens that a frost comes and destroys the rich promise of bloom, but it is of infrequent occurrence; while it is not difficult in the case of outdoor plants in certain situations to set up some screen or covering that shall hold the flower safe from harm.

Outdoor Planting: where to Plant.—In planting Chrysanthemums, let them be placed against a dwelling-house, the garden wall, or any outhouse, provided it be in a warm sunny spot. It is of little use to plant Chrysanthemums on a north border, where it is cold and sunless, more especially if the soil be cold and late. If Chrysanthemums be planted in the open border, early flowering sorts should be selected for the purpose; and as these are well known to nurserymen, there is no difficulty in obtaining them. How often one sees the red-flowered Pompon variety Bob planted in the open border, and it is selected probably on account of its chestnut-red colour, but it is one of the latest to come into bloom.

A few early blooming varieties suitable for planting

in the open border will be found in the following selection of the large flowering type:—Album Formosum, Cassandra, Cassy, Formosum luteum, Gloria Mundi, Guernsey Nugget, Julia Lagravère, Mr. Geo. Glenny, Mrs. G. Rundle, Mrs. Sharpe, Orange Perfection, Princess Mary, and White Christine. Of Pompon varieties—Berrol, Cedo Nulli, La Sultana, La Vogue, Mdme. Eugène Domage, Mdlle. Marthe, Rose Trevenna, Salamon, White Trevenna, and all the varieties of Cedo Nulli.

If the plants can be put against a south wall, the choice varieties may be used: and there is this further advantage about a wall, that a screen can be formed of some kind to protect the plants from frost during October and November. A temporary wooden roof may be constructed with a few upright supports in front, and on the top of this roof a canvas covering may be stretched. This canvas roof should not be put over the plants before they come into flower unless actually required; for the cultivator must not expect them to make much headway under canvas. Glass is to be preferred as a temporary roofing, but it is expensive, cumbrous, and very likely to get out of order. The canvas roofing has its disadvantages also, for during the late gale a friend of ours had his screen blown clean away, in consequence of a sweeping gust of wind getting under it, and lifting it into the air. After the plants are well in bloom the canvas covering may be allowed to remain on, to keep the flowers from being spoilt by the rain, but taking care that air and light is abundantly ministered in favourable weather. A slight wooden trellis is the best thing to have against the wall to fasten the plants to by tying them; this is far better than nailing them against a wall.

HOW TO PLANT AGAINST THE WALL.—Let it never be forgotten that the Chrysanthemum is not only a strong growing but a moisture loving plant, and when it is planted out against a warm wall, it should be so done as that plenty of water can be administered during dry weather. In the first place the ground should be deeply dug and well manured, putting in a good layer of manure at the depth of 2 feet. Secondly, the plants should be put in a celery trench, after the fashion of Celery, and this trench should be at least 9 inches in depth. The advantage of this is obvious; in fact the main advantages flow from it, water and liquid manure can be administered by means of the trench, and a good mulching of manure about the roots can be given during the summer, and that too without exposing it too much to the drying influence of the weather. The best plants to put out against a wall are cuttings struck in March and then grown on in pots in heat if possible, stopped as required, and finally planted out in May, when sufficiently hardened off after a period of probation in a cold frame. Fine bushy plants can be formed in this manner; a good foundation is laid, and a strong quick bushy growth follows, producing well-matured wood, carrying many flowers.

PLANTS IN POTS FOR THE GREENHOUSE.—These should be struck and grown on in pots similarly with those recommended for walls, but instead of repotting in larger pots in May, we would recommend that they be planted out in a trench in rich soil, mulched with manure, and well watered when requisite. About the middle of August they can be lifted with good balls of soil about the fibrous roots, and potted into 10-inch pots, and then plunged to the rims of the pots in coal-ashes, cocoa-nut fibre, or Hops, till they begin to show signs of expanding the buds; then they should be taken to the conservatory, and watered twice or thrice a-week with cow-dung manure in a liquid form. This is one of the safest and most nourishing of liquid manures. While the plants are plunged the branches should be tied out into shape, and the leading shoots stopped as required. By pinching some back a little harder than the others, and especially by cultivating early and late varieties both, a good succession of bloom can be had.

The main reason why we recommend the custom of planting out in trenches in summer is, that many Villa gardeners are called from home during the day by the claims of business, and if the plants become dry for want of water a serious check is given to them, and they lose their leaves. By planting out as recommended this danger is to a great extent averted, and scarcely a perceptible check is received by the plants at the time of potting if they receive proper attention.

FORESTRY.

PRUNING (*continued from p.* 526).—With a belief in Mr. Cree's theory, short experience and limited practice, no wonder that many have erred and gone astray in regard to pruning, especially in the case of Conifers. And what has been charged against Pontey as the ruiner of English woods, may be charged against Cree as regards ruining the Scotch; but with this difference, that the former was done upon a more extensive scale than the latter.

Having had frequent opportunities of witnessing the injurious results of Mr. Cree's system of pruning Coniferæ, it may be well to describe what some of them have been, after a trial of over forty years. It may be repeated that his practice was to cut off one-half the length of all the branches from top to bottom of the tree, which, as he informs us, made their (the branch) growth afterwards much slower than before, and kept the branches in all future time slow of growth. In this the theory, practice, and results quite agree, for the branches, after being cut, cease to grow to any appreciable extent, for several years at least, and seldom ever again resume their natural or former vigour. This being the case with the branches, how is it with the stem and roots? How are they affected by the retarded and impeded growth of the branches? It need scarcely be explained that just in proporton as the growth of the branches is retarded or interrupted, so is the growth and development of the stem interrupted, though the time required for taking effect may differ considerably, owing to various circumstances, some of which are very remote, but not the less certain.

It is found on dissecting, or cutting up, any trees severely pruned, or pruned to such an extent as to produce visible effects, that such effects are all against and not in favour of pruning.

So visible is this, that on minutely examining a section of a tree severely pruned it can be correctly ascertained in what year the pruning took place; and one feature observable is, that the layers or zones are rarely so much affected the first as the second and subsequent years, showing that the injurious effects are not all at once fully experienced, but by slow degrees, modified no doubt by climate, shelter, condition of soil, and other circumstances. The object aimed at by reducing the quantity of branches, Mr. Cree informs us, is to lessen the superficies which the sap has otherwise to cover in the structure of the stem. It appears scarcely necessary to state, much less to prove, that this theory is quite baseless and false, from the well-known fact that the branches are the chief laboratories or manufactories of the sap; hence, if the laboratory be in any way injured or destroyed, that which it produces is correspondingly influenced in an unfavourable way; if the branches which perform such an important part as that of elaborating the sap are either cut off or mutilated, both the quantity and quality of the sap are thereby deteriorated, and the whole economy of the tree suffers. Pruning, therefore, cannot in a direct way increase and improve the growth of a tree. Branches not only assist in elaborating the sap, but are the principal means of conveying it in the form of cambium to every part of the tree, in a manner somewhat corresponding to that of the arteries in the animal conveying the blood to all parts of the body. The branches evidently also act in a mechanical as well as a chemical way in benefiting the tree by their influence in attracting or pumping the sap into their extremities and leaves through their motion by the winds and other elements, and the building up of the tree is in exact proportion to the health, quantity, and condition of the branches and foliage.

In regard to pruning, as a specific for diseased and unhealthy trees, by imparting vitality to them through enriching the dry unhealthy inner bark, this is only another imaginary benefit void of practical truth, suggested in all likelihood by the flush of spray, or young shoots, which bursts forth from any suddenly exposed part of them on interruption or derangement of the sap-vessels. It is quite a common thing to see trees at all stages of growth, from the sapling upwards, make a spasmodic effort to produce shoots and foliage apparently good and healthy the first season, but the next, sickliness and decay in every part—the fine healthy-looking spray and leaves, indeed, being only the product of a weak constitution stimulated by pruning, and Nature's last effort to prolong life at a dangerous and often deadly sacrifice.

Without further encroachment upon your space, and yet to preserve the thread of the subject, I close for the present, with a view of concluding in my next paper. *C. Y. Michie, Cullen House, Cullen, N.B.*

Natural History.

STORKS.—The figure of a stork's pole at p. 594, vol. vii, as seen in bulb gardens in Holland, recalled some little incidents of a stork I had some years back. Naturalists know that some kinds of birds and insects sham death while in danger—even the stork does this. A remarkable instance of this freak was played by my bird, which strayed into the farmyard and caused much hubbub among the hens. Even the boys stared at so "comical a fowel," and gave chase, and poor stork tumbled down the sand-pit. Hearing what had happened I taxed the boys with having stoned him, but it was "No, no." Yet there lay my pet lifeless, except a slight movement of his eyes. This led me to think he was only shamming, and I told the boy to take care how he handled him. After a shake he bawled out, "He's dead's a herring," and threw storky out, but he soon gathered up his long legs and scampered off homewards. My stork, though tame, was not a docile pet when hungry—less so than the heron, seldom taking notice of one except when hungry, then becoming clamorous, and gobbling up rats, mice, and any sort of carrion or garbage. Being gorged with food he used to stand on one foot moping and lifeless, somewhat like a heron on the bank of a river watching his fishy prey. In fact, the habits of both birds are similar, and so is their great power of swallowing food; even common-sized rats, after being well swaged in water, are soon gulped down their long-extended throats. A friend told me that during a most severe frost he shot a heron, and found a snipe in its stomach! Perhaps both were on a hungry errand amongst broken ice, and the weaker fell a prey to the stronger, yet in less severe weather the heron would have preferred an eel or a rat before a snipe. *J. Wighton, Cossey Park.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Heaths.—Where a sufficient number are provided of autumn and winter flowering Heaths, these assist materially in keeping up the display in greenhouses and conservatories. I make use of the term "provided" advisedly, as they are seldom grown up from the cutting-pots in private establishments, and in most cases it is better that it should be so, for the especial treatment and attention they require to grow them well up to the ordinary size they arrive at before suitable for decorative purposes can, even from an economic point of view, be best left to those who cultivate them for sale by the thousand or tens of thousands, as do a few growers who make a speciality of them. It frequently seems strange to me that they are not in more general demand, for at the present day they are evidently not so much used as at one time, as even if consigned to the rubbish-heap after flowering they are still, considering the length of time they last in bloom, the space they fill, and the effect they produce, no more costly than Hyacinths; and although it may be said, and no doubt justly, that the treatment they have received to bring them up to the high condition they are in when sold out from the most successful growers, has been more of a character to give them an effective appearance for the time being than conducive to their future well-being, still if the best and lightest situations in a conservatory or greenhouse are chosen for them during the winter, and their treatment as to air, temperature, and water, is such as to show that those in charge of them do not forget that they belong to a family that will not bear keeping too close in dark situations or to be carelessly supplied with moisture, a considerable portion can be made to do duty in years to come. Heaths, generally, whether grown in large or small quantities, require particular attention at this season when the weather, as it has been all on, is moist and mild. If there was any trace of mildew on them at the time they were taken in, and this was not detected, it will spread apace: it is necessary to impress this upon young hands in their cultivation as a few weeks' inattention frequently will cause the destruction of a considerable portion of the foliage of an otherwise healthy plant so far as to make it impossible by any subsequent treatment to rectify the mischief: when a plant is ever so little affected apply sulphur at

once—at this time of the year it may be allowed to remain on for a week or two. I do not approve of the slight indiscriminate application of sulphur over the whole collection, as is sometimes done, with the intention of preventing the attacks of mildew, as when so used it often reaches the surface of the soil, from whence when water is given it gets washed down to the roots, where its effects are most injurious. Keep them both day and night as cool, by the admission of plenty of air, as can be done without danger of actual frost reaching them; give water the first thing in the morning so as to allow time for any spilt about to dry up; be careful in applying it not to wet the foliage, and also see that there is no moisture reaches the heads of the plants through drip. Wherever heat is turned on to dry up and expel moisture, let this be done early in the morning, so as to admit of its being taken off sufficiently soon for the pipes to get quite cold before night.

The softer wooded kinds, as likewise the earliest of the spring-flowering sorts amongst the harder wooded section, naturally make a little more progress through the winter than the later summer blooming, hardest wooded kinds, consequently the soil with the former should not be kept quite so dry as in the case of the latter. The size of pot proportionate with the size of the individual plant that occupies it should always be taken into account. Healthy, free-growing specimens that are somewhat under-done for root-room suffer to a much greater extent if allowed to get over dry than when the roots occupy a large body of soil. Inattention to these and similar matters of detail often produces failure, to which frequently may be attributed the abandoning of the cultivation of these most distinct and useful decorative plants.

All hardy shrubs required for forcing should be taken up and potted. Where conservatories have to be kept gay, and there is an insufficiency of hard-wooded pot plants, these may be employed with advantage, as also where halls, corridors, and staircases are required to be furnished, as the hardy plants in question, being of less value, it is of less consequence should they be placed in positions not suited to their well-being. Rhododendrons have not generally set their buds well this year, consequently there may be a short supply of those miniature examples profusely studded with flower-buds so useful for pots. Their place may be supplied by Andromedas, Kalmia latifolia, Viburnum Opulus, Ghent Azaleas, and the fine mollis varieties. The latter are amongst the most beautiful subjects of comparatively recent introduction, not nearly so much known or grown as pot plants for this kind of winter work as they ultimately will be. They appear to be extremely free flowerers, little plants not more than 10 inches or a foot high being thickly set with buds. Lilacs are amongst the best plants that can be used for this purpose. I should recommend all that will be required of such things to be potted immediately and placed where they can be protected from frost or too much wet.

Soft-wooded Plants.—Tree Carnations and Pinks not required for immediate forcing should be kept in frames perfectly free from drip, on a bed of ashes to exclude worms, the soil not too wet, but moist enough to keep the roots slightly moving, with mats at hand to protect from frost. A sufficient quantity of Spiræa (Astiloe) barbata should at once be potted, to furnish a supply through the winter and spring. Where imported roots are used, it is much better to get them into pots immediately than to heel them in as is sometimes done, merely potting as required. The same applies to Dielytra spectabilis, the pink and white varieties of which are amongst the best hardy plants that can be forced, provided the flowering is not hurried by the application of too much heat. Polygonatum (Solomon's Seal) should with the last-named be used in quantity where cut flowers to any extent are required. This, and the Dielytra, are two of the most effective flowers in existence, when artistically arranged, for the filling of large stands; to their elegant drooping habit must be added their lasting properties when cut. Everything of this character should be placed in pots no larger than absolutely necessary to admit their roots without unduly cramping. Give a slight watering after potting, but by no means make the soil too wet; after which plunge the pots in ashes in cold frames. *T. Baines.*

FRUIT HOUSES.

Orchard-house.—The final arrangement of all pot fruit trees should now be completed without delay. If potting and top-dressing are still in arrear a single day should not be lost, as successful culture depends in a great measure upon the treatment the trees receive from the fall of the leaf until they are started into growth. Formerly, when the management of orchard-house trees was not so well understood as it is at the present time, many growers used to pack them close together under glass, keeping them quite dry through the winter, and, as a matter of course, the Peaches, Nectarines, and Apricots cast a large percentage of the most prominent and best buds on the first application of water to the roots in the early spring, whereas had they been well soaked with water prior to covering up and liberally ventilated, all these fine buds would have swelled into perfect blossoms. In some places it is the custom to clear the orchard-house of all pot trees except Figs to make room for Chrysanthemums, Cauliflowers, and other subjects requiring protection from autumn frost, and providing the wood is properly ripened I incline to the opinion that the trees are benefited by full exposure from the end of October until the beginning of January, when they should be taken back to their summer quarters. A properly potted tree is always well drained, and the soil, a free calcareous loam, is so firmly rammed as to preclude the possibility of its holding a superabundance of water through the resting period. The site for the trees should be high, dry, and open, with a good layer of ashes under and plenty of bracken or long litter round and over the tops of the pots for keeping out worms and protection from frost. Although the trees may appear quite clean when they are taken out of the house, every shoot should be carefully washed with soap and water, and all the stems and old wood painted with the composition in favour with the grower. Pruning may be deferred until the buds begin to swell, as Peaches and Nectarines which have been some years in pots make but few wood-buds; hence the shortening of a shoot, by the removal of the terminal bud, is often attended with the loss of all the bloom-buds down to the base. To obviate this it will be better for the amateur to defer pruning until the trees are taken into the house; but in well-managed trees autumn pruning is a very light affair, as summer disbudding and stopping should reduce the necessity for the use of the knife to the removal of old bearing shoots, which may be taken out as soon as the fruit is gathered. The Noblesse section, indeed nearly all the large-flowered Peaches, are not so well furnished with wood-buds as the small-flowered kinds, and on this account some gardeners are of opinion that they are are not so well adapted for forcing; but with us two of the very best Peaches, Early Grosse Mignonne and Abec, from which we commence gathering in May, belong to the large-flowered sections. These we thin out, tie in full length, and shorten back when the blossoms show colour. Where indifferent or exhausted kinds have not been replaced no time time should be lost in making the selection, as the demand this season is very great, and first-comers generally obtain the best trees. The choice of varieties requires great care, as many of the kinds which now swell the nurserymen's lists have little more than new names to recommend them. *W. Coleman.*

Pines.—The general appearance and character of the growth in these plants at this period proves conclusively that the climatal conditions have been during the autumnal months of such a nature as to be eminently suitable to the requirements of this particular section of plants. This is a fact which is worthy of notice, and the conditions in being at the time referred to, should therefore as far as practicable be assimilated whenever required. At the present time, however, with three consecutive months of inevitable murky and sunless weather in prospect, growth in successional plants and other young stock should not further be prolonged, but be reduced to a minimum state, and such conditions be maintained in the houses which contain these plants as will tend to consolidate the growth which has already been made. The temperature about such plants should be lowered to about 58° as a mean at night, and 55° where suckers are placed to be wintered for restarting again next spring; in both cases 65° during daylight will amply suffice, and above this point, if a little air is admitted even for an hour or two occasionally, it will be productive of much good. If these plants are placed in close compact structures, which are covered at night, but little fire-heat will be required to sustain the degrees as indicated, and consequently moisture will only be sparingly required as a medium state in this respect is now preferable. Give the utmost diligence to the watering of the plants at this season, and particularly to plants which are plunged in fermenting beds where but little heat exists, as in such places it is better to err on the right side by keeping them somewhat dry; an agreeable temperature of 80° at the roots is most consistent with the requirements if it can be preserved.

The plants in the fruiting department will throughout the winter months demand considerable attention, as a fair proportion of heat and moisture is absolutely necessary to furnish these fruits perfectly, and if there is a period in the whole year which above others tests the skill of the cultivator, it is that which intervenes between now and the end of March. A good light house is highly essential for this purpose, and the best adapted should therefore be employed. Let 70° rule as a standard temperature both by night and day, and, according to circumstances, it should be allowed to rise another 10° in the daytime and fall 5° at night under extreme external conditions out-of-doors. Keep a brisk bottom-heat of about 85°, and liberally water with tepid manure-water whenever necessary. In dry and airy houses syringe overhead occasionally at shutting up time, at which the heat should be at 80° or 85°, avoiding to wet those fruits which are in flower, and particularly so in the case of such as are not well up in the foliage. Amongst the indispensables which are required in the cultivation of these is a plentiful supply of heated water, and the best means which we have found of procuring it is by having a tank made specially suitable for the hot-water pipes to pass through it. *G. T. Miles, Wycombe Abbey.*

KITCHEN GARDEN.

Owing to the damp atmosphere caused by the recent heavy rains the winter stores of Lettuces, Endive, &c., will require frequent supervision by the constant removal of all decaying matters, and a daily attention to the giving of air; they may also have free exposure when the air is fine and dry, but only the lights tilted up when dampness prevails. In severe weather protection must be afforded, which need not be removed during those alternations of frost and thaw which are more destructive than the mere severity of the frost alone. Cauliflower plants in frames will require attention by the removal of dead leaves and surface-stirring of the soil, which may or may not be dressed with soot and lime according as the necessity arises. Air must also be freely given in fine weather; the same remarks will apply to the plants under handlights, which should be as much exposed as possible, otherwise, owing to the mild weather, they will grow too succulent and tender to stand very severe frost. Now is a good time to pot roots of Whitloof and Chicory, and put a first batch into some erection where there is a tolerably warm temperature; that of a Mushroom-house is excellent for the purpose and the least trouble, because there they will have the necessary darkness and moisture, which would have to be secured in a light place by a fair supply of water at intervals and covering with mats to ensure the necessary darkness for blanching. Dandelion roots are sometimes treated in the same way, for the sake of the blanched leaves to mix with other materials for salading, and are considered very wholesome, especially in dyspeptic cases; the flavour, however, is not agreeable to all persons, being very much stronger than that of either the Whitloof or Chicory. Some strong roots of Seakale should be at once potted and introduced into heat. A 10-inch pot will hold nine strong roots, and these, when well grown, will make a fair-sized dish; the demand, therefore, must regulate the supply, and a sufficient number of pots must be put to work every week to meet it; the necessary blanching is secured by inverting a pot of the same size over the roots and covering them up with mats. The heat at command will be the best guide as to when it may be expected to be ready to cut; by the application of strong heat it may be ready in a fortnight, but three weeks will bring stronger heads, and a month stronger still. Tepid water should be administered daily if necessary, but the soil must not be allowed to get dry, or the Kale will be tough instead of succulent. And this reminds me that although forcing in the manner described is a most invaluable adjunct during the depth of winter, when such luxuries are best appreciated, they do not in tenderness and flavour come nearly to that which is grown on the old system of covering with large Seakale pots and fermented dung and leaves—this requires more time and it must have a fairly strong and steady (but by no means a violent) heat to bring it in by six weeks, if forced harder it will come weak and spindly and all but worthless. See therefore that such materials are undergoing a course of preparation for the purpose, and cover up with them a portion of the permanent beds as soon as the very violent heat is exhausted. Rhubarb will come under nearly the same treatment. Strong roots may be potted up and introduced from time to time as may be necessary, into a gentle heat. I have found under the stage in heated structures a very economical place, but it may also be grown in the same manner as Seakale by covering the crowns with large pots made with a broad lid for the convenience of examining, and throwing over them dung and leaves a sufficient depth over the pots to keep out frosts, but not to produce a very strong heat, as it comes very weak if forced hard, and it is better to be a longer time about to insure strong and nicely-coloured sticks. The early scarlet-stemmed varieties are good for potting for very early work, but the stronger-growing and larger-stemmed sorts are best for later purposes and slow forcing. We have hitherto been highly favoured as regards frost, but as it is never certain at this season, it is best to be prepared with the necessary protecting material for Celery, and if there appears to be a likelihood of frost of great severity, place some tiles or boards upon the forwardest Endive which is not tied up, and cover them over with litter or bracken, or both mixed, which is better. This will both preserve and blanch them for use. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 24, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Nov. 26	Sale of Dutch Bulbs at Stevens' Rooms.
TUESDAY,	Nov. 27	Manchester Botanical and Horticultural Society's Meeting.
WEDNESDAY,	Nov. 28	Sale of Hardy Plants and Bulbs at Stevens' Rooms.
THURSDAY,	Nov. 29	Sale of Orchids at Stevens' Rooms.
SATURDAY,	Dec. 1	Sale of Dutch Bulbs at Stevens' Rooms.

FOR the present season, at any rate, we may dismiss the fear of the COLORADO BEETLE from our minds, but it will not be long ere we may be again vexed with the apprehension of this pernicious insect. Whether the scare, or panic, experienced last autumn was fully justified time will show; in the meantime some entomologists have endeavoured to allay our apprehensions. Mr. MCLACHLAN, at the Plymouth meeting of the British Association, plainly stated that the supposed danger was, in his opinion, exaggerated, and now we find the eminent entomologist of Liège, Dr. CANDÈZE, holding similar remarks in a paper read by him at a meeting of the Belgian Entomological Society held at Brusssels on October 13, and from which we take the following:—

"The Minister for the Interior has just published a pamphlet (of which 20,000 impressions were made), intituled, *The Potato Pest, Doryphora decemlineata.* This publication is, as indicated on the title-page, an extract from a work by Mr. CHARLES RILEY, Entomologist for the State of Missouri.

"One cannot do otherwise than applaud the zeal shown by the Department of the Interior in forewarning the country against an insect noxious to a culture so important as that of the Potato. It is of incontestable utility to make known to the inhabitants of the country districts all which concern the habits, transformations, time of appearance, and especially the means of destruction of noxious insects, about which there still exists, even with the educated public, many false and ill-judged notions.

"Having said this, we must allow ourselves to make certain criticisms which are addressed to Mr. RILEY, the true author of the pamphlet, more than to the Minister for the Interior, who has only put him under his patronage, and given in our own country considerable publicity to his views. We have always thought, and we think now more than ever, that the fear of seeing the Doryphora become a pest on this side of the Atlantic is, if not chimerical, at least much exaggerated. The laws which have been passed, the ministerial circulars and official placards which have been spread everywhere, not only in this country, but also among our neighbours, tend to nothing else but as showing that the arrival of Doryphora in Europe would be as fatal as a new invasion of cholera, or the reappearance of the cattle-plague.

"But it is far from being so!

"Without offence to Mr. RILEY we are not able to dismiss the idea that his writings convey the impress of certain exaggerations, the more so because we know that the motion caused in Europe by the cries and alarms of this entomologist, have produced surprise in his own country. Let us hasten always to say that we hold for real the greater part of the reproaches heaped upon the insect in question. We do not regard them as merely scarecrows. Certainly not! No doubt the insect is noxious. Still it is well, we will even say it is prudent, not to fall into exaggeration on the other side, and until it has been demonstrated to us by incontestable figures that this 'terrible devastator,' this 'redoubtable pest' has been the only cause of the rise in price of Potatos in the markets of Philadelphia and New York, we will maintain a reserve as to certain stories from over the seas which even represent it as menacing the existence of this precious commodity.

"There is apparently no doubt of an increase in the price of Potatos at St. Louis during 1873; but the author himself, in his pamphlet, attributes it as much to suppression of culture as to the ravages of Doryphora, many farmers, he says, not daring to plant Potatos. Let us hope that St. Louis is the town in which Mr. RILEY resides and publishes his articles.

"Certainly the Minister for the Interior would be very much surprised if the publications of his department, by frightening the farmers without reason, produced the same result here next season.

"Another fault we find with this pamphlet is that of extolling, for the destruction of the Doryphora, an agent of which the handling is most dangerous. Every one knows the grave accidents caused by Paris-green to those who breathe the dust; one is warned with just reason against its employment in industrial arts. Medical men have warmly discounselled its usage in the ornamentation of carpets and cloth. It is not then without surprise that we find it advised to powder the fields of Potatos with it broadcast, leaving its management in hundreds of inexperienced hands.

"It is a case in which the remedy is worse than the evil. Mr. RILEY assures us as a fact that arsenite of copper decomposes, and is not noxious once that it is deposited on the earth. But before that? He says that its judicious employment has no inconveniences. We are not of his opinion, and can we reckon on the judicious prudence of a farmer's boy to whom would be left, in most cases, the care of arsenicating the Potato fields?"

THROUGHOUT the Metropolitan Market district, and probably generally elsewhere, there is such a profusion of VEGETABLE PRODUCE that it is not remarkable to find growers complaining of the poor returns obtainable in the market, the prices now paid for Turnips, Cabbages, Savoys, Coleworts, &c., being so small as to be productive of anything but satisfaction; though the consumer has little cause for rejoicing at the prices he is called upon to pay. In the face of these facts it is still common to find writers and public speakers enlarging upon the desirability of greatly extending the area of land devoted to such cultivation, because we have now to purchase so largely from other sources. If we already produce garden crops in such abundance that their cultivation results in a doubtful profit to the grower, how far is it likely that an extended cultivation would prove a remedy? We usually purchase elsewhere products that are either not in season with us or cannot be cultivated at a profit in this uncertain climate. Potatos are an exception to the present marketable value of garden products, these have gone up with great rapidity, and are now selling at an average price of £10 per ton; this high rate, however, does not arise from a restricted cultivation of this popular root. The disease has to answer for the shortness of the crop, but if the crop had been sound and healthy the price would probably not have exceeded the fairly remunerative one of £6 per ton. It is noteworthy that the working classes of the metropolis constitute the largest vegetable consuming portion of the community, and therefore the state of the market largely hinges upon their willingness or capacity to buy. Bread, meat, Potatos and beer they will have, but the latter article forms such a formidable item of their weekly expenditure, and is productive of so much misery and privation, that there is little money available for the purchase of vegetables, except on Saturdays or early in the week. Were the working class section of the community more provident and the middlemen not so rapacious, the demand for garden vegetables would be immense, but until some permanent change is made in these habits, and retailers abate their inordinate charges, market gardeners may continue to cultivate crops and grumble at the small returns.

—— Though TOBACCO is grown to some extent IN BAHIA, and the crops of last season are reported as being very abundant, the preparation of the Tobacco for market is carried on in a most primitive manner. This is accounted for by the cultivation being confined to the poorer classes, who do not possess the means of properly drying and preparing it for a wider competition for the markets of the world, the bulk of it finding its way to Germany, in which country it is chiefly consumed. The country is described as being admirably adapted for Tobacco culture, and were it to be thoroughly taken in hand, and the drying process, which is a most important branch, carefully attended to, it is considered that the produce of Bahia would be little inferior to that of Havana.

—— Professor SADEBECK, writing on the CULTIVATION AND PROPAGATION OF FERNS in the *Monatsschrift*, reports the successful raising of Marattia plants from spores. The prothallia were cut up when eight weeks old, in such a way, however, that each piece retained a part or the whole of one of the deeply indented bays on the margin of the prothallium, and the thick tissue of the latter was as equally divided as possible in cutting it up. In this way nearly the whole of the fragments gave birth to young plants in four to six weeks, whereas otherwise, with the greatest care, six or eight months elapsed before the first frond appeared. This fact is all the more important, because hitherto the only way of propagating Marattias was from the "stipular scales" at the base of the fronds, which often in the most skilful hands is the work of a twelvemonth.

—— A NEW KIND OF FIBRE seems of late to have been extracted from the American Aloe (Agave americana), namely, from the flower-spike, and not from the leaves, which is the usual source. It is described as being exceedingly strong, yet very fine and gossamer-like. It is used for making into lace, known as Aloe lace. The art of making the lace is said to be very difficult to learn, and the splitting of the fibre still more difficult, consequent upon obtaining the requisite fineness. This art is carried on to perfection only by the inhabitants of a few small Spanish islands. This Aloe lace is highly prized and commands fancy prices in America, but in this country it is scarcely, if at all, known. Considering the source from whence the fibre is obtained, namely, the flower-spike, and the scarcity of the flowering of the Aloe, it does not seem probable that it can ever become an article of trade. Indeed, the entire supply is estimated not to exceed £1000 annually.

—— We learn that a seat at the Board of DIRECTORS OF THE WEST LONDON COMMERCIAL BANK, CHELSEA, rendered vacant a week or two back by the death of one of its oldest members, has been unanimously voted to Mr. GEO. DEAL, an active member of the firm of J. WEEKS & CO., Horticultural Engineers, Chelsea.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, November 26, when a discussion will be introduced by Mr. CHRISTOPHER STEPHENSON, on "The Pruning of Coniferous Trees." The chair to be taken at 8 o'clock.

—— From the *Monatsschrift des Vereines zur Beförderung des Gartenbaues, &c.*, we learn that the fruit of PYRUS PRUNIFOLIA has the name of producing the best fruit wine (*obstwein* or fruit wine, in contradistinction to true *wein*, or wine of the Grape), of the Continent. The demand for it is so great that the price has risen to nearly double the price of ordinary Apple trees. It is exceedingly hardy, growing and fruiting well in the most exposed situations. It flowers late and thus escapes frost.

—— The Council of the Scottish Horticultural Association have arranged for the awarding of the four prizes, offered by Mr. JOHN DOWNIE, for the best original plan of a flower garden. The competition is open to journeymen gardeners, members of the Association, and the plans are to be sent to the Secretary, under motto, by February 1, 1878, accompanied by a sealed envelope containing the competitor's name and address.

—— The reader of an interesting paper on HYBRIDISATION at last meeting of the Scottish Horticultural Association was Mr. ROBERTSON MUNRO, of the Abercorn Nursery, Edinburgh, and not Mr. ROBERTSON BROWN, as inadvertently stated in our columns lately.

—— We learn that the floral decorations at the BROMPTON ORATORY on the occasion of the Duke of NORFOLK'S wedding were carried out by Mr. WILLS. Some of the finest Nepenthes were used in the decoration; one specimen, over 7 feet high—Nepenthes Rafflesiana—had over sixty fine pitchers on it; other specimens, nearly as large, of Nepenthes Dominiana, having large numbers of fine pitchers. Odontoglossum Alexandræ was used in quantity, and upwards of 2000 white Camellia blooms, besides large quantities of choice white flowers.

—— We understand that Mr. JAMES DRUMMOND, gardener at Blair Drummond, has resigned his charge there. He has been a gardener fifty-nine years, forty-nine of which he has spent at Blair Drummond. During most of his time at Blair Drummond he has been a member of the committee of the Stirling Horticultural Society. He was also one of the founders of the Kilmadock and Kincardine Garden Society in 1837, and it has been pro-

FIG. 129.—PAVIA MACROSTACHYA. FLOWER-SPIKE AND LEAF NAT. SIZE. (SEE PAGE 653.)

posed to present him with his portrait or some other tangible token of respect, and his old friends and acquaintances are solicited to contribute in aid of the above. Subscriptions will be received by Mr. DANIEL KENNEDY, Slater, Doune, Perthshire.

—— The following Orchids are in flower in the fine collection belonging to J. H. WILSON, Esq., Lee Hall, Gateacre, Liverpool, under the skilful care of Mr. GLOVER:—Angræcum bilobum, Brassia brachiata, Cattleya labiata, C. marginata, C. Harrisoni, Cymbidium Mastersii, Cypripedium insigne, C. niveum, C. barbatum, Dendrobium japonicum, Epidendrum elongatum, Lælia Perrinii, L. major, Lycaste Skinneri, Masdevallia amabilis, M. octhodes, M. trochilus, Odontoglossum Bluntei, O. cristatum, O. hictonense cristatum, Cervantesii, O. decora, O. Rossii, O. grande, O. Uro-Skinneri, O. Lindleyanum, O. Insleayii, O. leopardinum; Oncidium crispum, several—one plant four spikes, 105 flowers; O. ornithorynchum, O. ornithorynchum majus, twenty spikes, very fine; O. pelicanum, O. Weltonii, O. xanthodon, O. tigrinum, O. flexuosum, O. cheirophorum, O. bicallosum cucullatum, O. virgatulum, O. cucullatum majus; Pleione Wallichiana, Lagenaria, Phalænopsis grandiflora, P. amabilis, P. rosea, Restrepia antennifera.

—— One of the prettiest of table-plants for use at this season of the year is the charming little scarlet-berried RIVINA HUMILIS, a capital instance of the successful culture of which we met with at Wimbledon House lately. Mr. OLLERHEAD strikes his cuttings in spring, shifts the plants on into 48's, and cuts them down three times during the season. By this means he gets good bushy plants, which produce berries with the greatest freedom. The elegant Cyperus laxus is also a favourite on the table at Wimbledon House.

—— WINTER FLOWERING TREE CARNATIONS are a prime feature among the host of florists' flowers, so well cultivated by Mr. TURNER at Slough, and we were glad to see, on the occasion of a recent visit, that Mr. TURNER still has an eye to their improvement, and right well do such useful subjects deserve his best attention. He has a fine batch of seedlings from that fine flower Prince of Orange, which as regards the "grass" present a great variety of form and substance, and some good novelties are expected when they come into bloom. The most free-flowering variety Mr. TURNER has at present is Sir Garnet Wolseley, a bright crimson suffused with fawn. It is a nicely formed and pleasing flower, with a rare "cut-and-come-again" sort of habit.

—— Those who grow the lovely spring-flowering white PINK LADY BLANCHE will be pleased to hear that Mr. TURNER has a new Continental variety which, as regards the qualities of floriferousness, size of flower and beauty of form, is in all respects a scarlet counterpart. Its name is A. ALEGATIÈRE, and the colour a bright scarlet. The habit of the plant is strong and robust, more resembling that of a Carnation than a Pink. Lady Blanche is a perfect gem, and so, indeed, is the new-comer.

—— An experience of CHRYSANTHEMUM SHOWS tends to prove that unless special prizes are offered for them there is a tendency to neglect the cultivation of the reflexed Chrysanthemum, the incurved flowers being more highly prized for exhibition purposes. The reflexed varieties, which are represented by such flowers as Annie Salter, Beauté du Nord, Chevalier Domage, Christine, Crimson Velvet, Dr. Sharpe, Garibaldi, Golden Christine, Julia Lagravère, Progne, Snowflake, White Christine, and others on the whole produce blossoms more freely than do the incurved varieties—and exhibition plants consist mainly of the reflexed forms. More than that, a reflexed variety can be permitted to carry more blooms than one of the incurved forms, which is of importance from a decorative point of view. Then there are a few of the Anemone-flowered Chrysanthemums that are also excellent decoration subjects, such as Fair Margaret, Fleur de Marie, King of Anemones, Marginatum, Miss Margaret, Prince of Anemones, Rose Marguerite, and St. Margaret; and of the Pompon Anemones Antonius, Astrea, Calliope, Madame Montell, Mr. Astic, Reine des Anemones, Sidonie, and Dick Turpin. These all require to be well grown to have their lovely flowers in perfection. So late is the Chrysanthemum in flowering this year that they, aided by the late-blooming Japanese varieties, will carry on the head of flower till the earliest of the spring flowers come forth to greet the opening early spring months. A letter just received from Lancashire states: "Chrysanthemums are very late here; it will be quite the middle of December before they are in flower."

—— While looking through a greenhouse a few days since some sickly-looking SHOW PELARGONIUMS cut back in August last and repotted in September, according to the usual custom, struck the eye. Their sad condition illustrated the oft-repeated tale: they had been repotted in a heavy tenacious soil with an insufficiency of drainage; they had been treated to more water than was necessary, and they had been occupying a cold, draughty, and sunless part of the house. Who could wonder that plants went wrong under such conditions? During the autumn months, and especially during November and December, large-flowered or show Pelargoniums require water but seldom, and it should not be given unless they absolutely require it. If the plants be out of reach of observation, a rap on the pot with the knuckle will soon demonstrate if water is required, as a hollow sound will be given forth. The plants require plenty of light also, and they do best on a raised stage near the glass. A valuable lesson can be learned at this season of the year from the growers of Pelargoniums for market, for they keep the plants fairly warm and near the glass, and never expose them to cold currents of air. It is at this time of the year, when the young growths are pliant, that a good "bottom," as it is termed, can be formed to the plants. This is done by first of all tying a strong piece of bast in the form of a band immediately under the rim of the pots. To this band the shoots are tied down, thus forming a framework of branches close to the pot. It is in this way that the skeletons of the fine examples of Pelargoniums seen at the shows are made. In tying down the shoots care must be taken not to snap them off, and the advantage in tying them at this season of the year is owing to the fact, that during the time the plants are kept in a fairly dry state, the shoots are more pliable. The plants should be in an airy house, with plenty of room in which to grow; and when a time of severe weather comes only sufficient fire-heat should be put on to keep out the frost.

—— The DWARF FRENCH MARIGOLD may be made useful for blooming in pots in an ordinary greenhouse during the autumn. Some plants in 24-pots are now carrying remarkable heads of bloom, the gold and crimson stripes being very striking and effective. If a few plants are kept pinched back a little in early summer, and then lifted, put into pots and put out under a shady wall till established, they would begin to put forth growth that would produce an abundance of bloom in October and November. The dwarf growing section of Marigolds must be selected for the purpose. The tall growing kinds are not at all suitable. The Marigold is keenly susceptible of frost, and when it threatens the plants should be in a temperature sufficiently high to be able to resist it.

—— Gardeners who, having to keep up a supply of cut flowers through the winter, are on the look-out for really good and useful plants for such work, should make a note of TROPÆOLUM BALL OF FIRE. We met with it at Slough the other day, and Mr. TURNER praised it very highly on account of its extreme floriferousness bright colour and usefulness for bouquet-making by reason of its long flower-stalks. If grown up the roof in a warm greenhouse it flowers with the greatest freedom, and provides a colour not otherwise easily obtainable during the dull months. A variety called the Double Orange Scarlet is also a neat grower, and flowers with tolerable freedom, but though useful on the score of variety it is not to be compared with Ball of Fire, a really invaluable plant.

—— The NATIVE COUNTRY OF THE ONION, according to Dr. REGEL (*Gartenflora*, 1877, p. 264) has been definitely determined to be the mountains of Central Asia. His son, M. ALBERT REGEL, collected bulbs of an Allium in the hills south of Kuldscha, which were distributed from the Botanic Garden of St. Petersburg under the name of Allium polyphyllum. It has since flowered at St. Petersburg, and Dr. REGEL regards it as the wild form of A. Cepa. It has long thin bulbs, and Dr. REGEL proposes calling it A. cepa sylvestris. Typical A. Cepa has been found in a wild state in the Himalaya Mountains. The latter region, then, and the Thian Shan Mountains, may be accepted as the native country of the Onion.

—— Among CHRYSANTHEMUMS deserving of culture as special decorative objects James Salter, a Japanese variety, takes a high place. The flowers are made up of ribbon-like petals of a clear lilac or mauve colour, folded over towards the centre in the form of a ball, and the particular colour is very soft and attractive. It is not only a free-flowering variety, but it blooms early as well, and there is little difficulty in having a succession to cut from.

—— In the T-range at Kew many plants of interest and beauty are in flower. In the stove is LINUM TRIGYNUM, an old and valuable winter-flowering plant, bearing, on a small specimen, over a dozen large golden-yellow flowers. That it has a limited cultivation is surprising when the fine display it makes is considered. Red-spider has great affection for its soft light green foliage, but this enemy is easily disposed of by the usual methods. Near this we find a new and curious species of Pavonia, P. Wioti, of which the epicalyx forms a striking and showy feature. It is composed of numerous linear bracteoles of bright red colour, and the longer overtop the black purple calyx and corolla, which they almost enclose. The leaves are oval, acuminate, and serrate, its habit is much the same as in Abutilon. Aphelandra Porteana is quite fiery, with a good show of orange-scarlet flowers. This genus is one of the most valuable in the order Acanthaceæ, whose flowers are far too fleeting as a rule; here, however, there is a close succession on the spike. A. nitens, with black-bronze foliage, will shortly be in bloom. Underneath, as if for the contrast of its silvery-barred foliage, stands a good specimen of Dracæna Goldieana, one of Mr. Bull's finest introductions. We are irresistibly drawn to compare the variegation with some of the finer forms of Sanseveira guineensis, to which, however, it is infinitely superior in that, and undoubtedly every other, particular. Alpinia vittata, Hort. Bull, has just flowered for the first time so far as it is known. The flowers are white and scarcely contribute much beauty, but enabling comparison to be made; it is found not referable to any named species. The name "vittata" is of course a horticultural reference to the beautifully variegated foliage. Æchmea (Chevalieria) Veitchii, recently figured in the *Botanical Magazine*, still continues in the same condition as for many weeks past, its flowers do not open, and are even suggestive of being cleistogamous, especially when, if we remember rightly, there is another species figured also with the flowers closed. Its beauty depends on the leafy scarlet bracts forming with the flowers a dense spike. In comparison with Pine-apple, being so nearly allied, and similar in many particulars, it excellently illustrates the formation of collective fruits. Centrosolenia ænea is yet another plant within a few feet requiring attention. It is suspended near the glass, where it forms a suitable basket plant. The leaves are ample, of bright bronze hue, underneath which are several pure white flowers. In the intermediate division we can but mention Begonia fuchsioides, one of the older and prettiest species, with another equally valuable winter flowering plant, Plumbago rosea. Here there is a great variety of Gesneraceæ, of which several distinct forms are in bloom. Alloplectus peltatus, Oliv., a new species from Costa Rica, contributed by the Messrs. VEITCH, is by far the most interesting, first from the leaves being peltate near the base, then on account of perhaps a more striking feature—the non-development of one of two opposite leaves. One of each pair is reduced almost to the size of a scale, though still having nearly the form of its fellows. The flowers are yellow, and appear chiefly in the axils of the lower leaves and on the older wood. A figure has been drawn for the *Botanical Magazine*. Nerine flexuosa and N. crispa have been effective in the cool division. The first is sometimes perhaps known as N. undulata, a synonym only for the latter. Plants with single stems of Clivea Gardeni are considerably ornamental. The flowers are often nearly obscured by the foliage when many stems grow in the same pot.

—— Mr. A. LODGE, late foreman at Eden Hall, Penrith, has been appointed head gardener to Lord BROUGHAM, Brougham Hall, Westmoreland.

—— The length of time that some tuberous roots and tuberised stems will retain their vitality is extraordinary, practically unlimited apparently in some of the plants inhabiting the dry regions of Africa and other countries. In fact it is difficult to kill some of them. We remember a herbarium specimen of the handsome Lewisia rediviva, which had been collected several years, and when it was transferred to the ground it revived and grew into a healthy plant. In the *Bullettino della Societa Toscana di Orticoltura*, No. 2, 1877, it is recorded that Mr. SANMARITANI brought tubers of Psarum alexandrinum, Boiss., from Egypt in 1839, and put them into his herbarium. After his death the herbarium came into the possession of the University of Pisa, and in 1874 Prof. CARUEL, noticing that they appeared to have life in them still, had them put into the ground, and they developed into perfect plants. The case of Narcissus monophyllus (*Gardeners' Chronicle*, 1874 p 307) is equally remarkable.

—— The collection of bulbous plants cultivated by Messrs. E. G. HENDERSON & SON at the Pine-apple Nursery has lately been enriched by a consignment of about 2500 new bulbs from Ecuador, which includes many Pyrolirions, the beautiful scarlet - flowered Stenomesson eucrosioides, and the single Tuberose, Polianthes tuberosa, by no means a common plant now.

—— The display of CHRYSANTHEMUMS AT VICTORIA PARK has never been better as regards the large-flowered varieties than it is this season, and the fact is the more remarkable, inasmuch as Mr. MCINTYRE, the Park Superintendent, has no convenience whatever for bringing them on under glass. The plants have to be grown out-of-doors, and virtually to be shown *al fresco* for the want of a suitable permanent structure to exhibit them in. The collection occupies its usual site, a strip of grass about 100 yards long, by the side of one of the paths, and protected by a canvas shed quite unworthy of the place and the plants, of which there are about 8000, consisting of 5000 large-flowered sorts and the remainder of Pompons. The last-named are not yet fully out, but of the former there is, in every sense, a grand show of blooms.

—— As a striking instance of what can be accomplished in Rose culture by successful practice, we may mention that Mr. TURNER showed us the other day a batch of Maréchal Niel, specially grown for planting in conservatories, with a view to producing immediate effect. They were grafted soon after last Christmas, and have now, many of them, attained the height of 12 feet.

—— Messrs. JAMES CARTER & CO. request us to state that they were awarded a Banksian Medal for the collection of Potatos exhibited by them at the meeting of the Royal Horticultural Society on the 6th inst.

—— Nurserymen have long felt the want of a neat, handy, and cheap ROSE AND TREE LABEL, that will last a fairly reasonable time, and we were glad to learn the other day from Mr. TURNER, of Slough, that a useful label of this kind has been introduced by the Waterproof Label Company, Canal Works, Willesden. They are made of various sizes and forms, of stout waterproof paper, with strong eyelets, and stringed with waterproof twine. The sample before us measures 4 inches in length and 1 inch in width, and if written on with patent indelible ink, is stated to last about eight months, and even to stand boiling.

—— The specimen of AGAVE MIRADORENSIS which Mr. CROUCHER mentioned in our columns some time ago as throwing up for flower has now got its spikes 6 feet through the roof, and though it has had to stand several degrees of frost is unhurt, and now expanding its flowers.

—— The expenditure upon the Windsor Parks and Woods exceeds the income from them by nearly £20,000, the New Forest yields a profit of £1300, the Forest of Dean one of over £6000, the High Meadows Wood over £4000, Alice Holt over £1000, Woolmer Forest and Bere Wood, Hants, nearly a £1000; Parkhurst Woods, Isle of Wight, yield a profit of £148—the total receipts from THE ROYAL FORESTS, says the *Journal of Forestry*, being £33,129 0*s.* 8*d.*, the expenditure £18,519 10*s.* 2*d.* Windsor Forest, being entirely exceptional, is not included in the foregoing total. Like our contemporary, we have no doubt that the revenue from the Crown Woods might, in course of time, be very materially increased, while the expenditure on Windsor Forest might probably be diminished, and the income increased without diminishing the beauty of the forest, the comfort of the Sovereign, or the pleasure of her subjects.

—— Mr. JOHN PRATT KENDALL, who has been foreman for the past five years in the gardens of Downshire House, Roehampton, has been promoted to the position of head gardener at that place, *vice* Mr. J. BURDEN, resigned.

—— The last number of the *Agricultural Student's Gazette* contains *inter alia* a short article on COMFREY (Symphytum asperrimum), a plant becoming known as a forage plant, its great advantage being its enormous yield; and another on the manufacture of Tea in Assam, which contains some valuable information on the subject.

—— According to a notification issued by the Government of India, Department of Revenue, Agriculture, and Commerce, dated Simla, August 31, 1877, the Government of India in 1870 offered a prize of £5000 to the inventor of the best machine or process for the preparation of the fibre of the Böhmeria nivea, popularly known under the names of RHEEA, RAMIE, and CHINA-GRASS; and the terms on which machines would be admitted to competition were widely notified in India, in Europe, and in America. Many persons declared their intention to compete, but ultimately only one machine was actually brought to the place of trial. The machine, having been carefully tested at Saháranpur in the autumn of 1872, was found imperfect in some important respects, and the inventor was adjudged not entitled to the full reward. He was, however, presented with £1500 in consideration of the partial measure of success he had attained after great perseverance. This machine has not since been adapted by the inventor to practical use, and no improved process of preparing the fibre of the Rheea has been yet discovered by other persons. Meanwhile the demand for Rheea continues, and the conditions which induced the Government of India in 1870 to offer a prize remain substantially unchanged; and it is accordingly hereby notified that a reward of 50,000 rupees will be paid to the inventor of the best machine or process which will separate the bark and fibre from the stem, and the fibre from the bark of the Böhmeria nivea. A smaller reward, not exceeding 10,000 rupees, will be given to the inventor of the next best machine or process, provided it is adjudged to possess merit, and to be capable without difficulty of adaptation to practical use. What is required is a machine or process capable of producing, by animal, water, or steam-power, a ton of dressed fibre of a quality which shall average in value not less than £45 per ton in the English market, at a total cost, including all processes of preparation and all needful allowance for wear and tear, of not more than £15 per ton, laid down at any port of shipment in India, and £30 in England, after payment of all the charges usual in trade before goods reach the hands of the manufacturer. The processes of preparation are to be understood to include all the operations required subsequent to the cutting of the stems from the plants in the field, until the fibre is in a condition fit to be packed for conveyance to the market. The machinery employed must be simple, strong, durable, and inexpensive, and should be suited for erection in the plantations where the Rheea is grown. It must be adapted for treatment of the fresh stems, as cut from the plant. The treatment of dried stems offers certain difficulties, and the fibre prepared from them must, moreover, always be much more costly than the fibre produced from green stems. Except during the hot dry weather preceding the rains in Upper India (where Rheea grows best), it is very difficult so to dry the stems that no fermentation or mildew shall occur. But during this season the stems are comparatively short and the crop poor and stunted, unless it is artificially irrigated, and such irrigation greatly increases the cost of cultivation. In the rainy season the plant is in fine condition, but at this season it is almost impossible to dry the stems in quantity without injuring the fibre, unless recourse be had to artificial means of desiccation, which greatly increase the cost of the material. It is, therefore, obvious that the attention of inventors should be given to the discovery of a process for the treatment of the green stems. All notices of intention to compete and applications for information should be addressed to the Secretary to the Government of India, Department of Revenue, Agriculture, and Commerce, Calcutta. A limited quantity of Rheea will be grown in the Botanic Gardens, Calcutta, and persons desirous of testing their machines before entering them for public competition may obtain green stems in such quantities, from the Superintendent of the Gardens, through this Department.

—— The UNIVERSITY OF CAMBRIDGE has this week known how to add to its own repute by conferring the honorary degree of Doctor of Laws on one of the most distinguished alumni that famous seat of learning ever had: we allude to Mr. DARWIN. Apart from his own individual work, no naturalist has exercised greater influence in stimulating thought and promoting original work in others.

—— One of the leading novelties in flowers at the present time at the Pine-apple Nursery is a hybrid evergreen NERINE, the result of a cross between N. flexuosa and N. rosea. The flowers are of the size and shape of its first-named parent, but of the colour of N. rosea.

—— Two of the best EVERGREEN CLIMBING PLANTS FOR A TOWN CONSERVATORY are Cissus antarctica and C. rhomboidea. The former is the well-known Kangaroo Vine, whose cordate, lanceolate, serrate leaves have a very effective appearance. C. rhomboidea has smaller trilobed leaves, of a dark glossy green above, and glabrous beneath. Both are highly ornamental subjects, and we noticed a nice stock of them in Messrs. E. G. HENDERSON & SON'S nursery the other day.

—— There will shortly be a fine display of BOUVARDIAS at the Pine-apple Nursery. Messrs. E. G. HENDERSON & SON have from 2000 to 3000 plants coming into flower. They are dwarf and bushy, and were struck in February, planted out for the summer's growth, and potted up during the first week in September. The principal varieties grown are Vreelandi, elegans, longiflora flammea, and Humboldtii corymbiflora, the latter of which is powerfully scented at night.

—— Mr. ADAM YOUNG, lately gardener to Sir SIMON MACDONALD LOCKHART, of Lee, Lanarkshire, has been appointed gardener to the Earl of BREADALBANE at Taymouth Castle, Perthshire.

Home Correspondence.

Notes on Lilies.—As requested by you I send one or two notes of experience lately gained when planting Lilies. For many years past I have urged friends who grew Lilies to allow plenty of room for the roots, especially for pot Lilies. We had pots specially made, deep in proportion to their diameter, and some two years ago, wishing to plant Lilies at the side of lawn beds where there were many trees, which, while they gave shade and shelter, would pull from their soil, I copied the pots used by my neighbour and friend Dr. Bennett to plunge his Palm-trees in summer round his lawn, and sunk some of these in which had been planted bulbs of L. auratum, L Krameri, and L. canadense. A few days back I took them up and found the roots much longer than even I expected; one not very large L. auratum bulb, when measured by a rod, showed exactly 4 feet from the top of the bulb to the end of the roots. This I think shows well that a great depth of soil is required to give Lily bulbs really fair play. If we could examine some of my friend Mr. McIntosh's giants, I suspect we should find some roots 6 feet long. Lilies are sometimes reproached, especially L. auratum, with dying and not coming up; and it is said that, notwithstanding the vast numbers yearly imported from Japan, the number of bulbs in this country does not increase; if they do often die, they at least furnish ample means for the race being perpetuated. In 1871 I sowed in two not very large boxes L. auratum seed which we had saved, and placed these in the garden, where they had no attention beyond an occasional watering in dry weather, and a mat screen in very hot weather. I lately broke up these boxes in which some of the bulbs had this year flowered, and took out 200 fair-sized bulbs to plant, besides a lot of small ones. Again, in 1874 I sowed seed of L. californicum, a great favourite of mine, the most richly painted of all the

North American Lilies, in two large seed-pans, and have just potted or rather boxed about 200 bulbs from them, some of them very good ones. When potting Lilies it is curious to notice how, without any apparent cause, some bulbs of the same species, planted at the same time in the same soil, and subjected to the same after-treatment, are found much more thriving than others. Last year, owing to so much of my time having been taken up with other and much less pleasant horticultural work, I had to leave many of my Lilies unpotted. I now find the above differences much exaggerated, owing to the longer time any mischief has had the power to act. In some pots all the bulbs are in perfect health, in others about half, in others most are dead. It is, of course, most unreasonable to expect, as some seem to do, that great Lily bulbs will go on flowering in perpetuity; after a certain time, under the most perfect conditions of health, they come to their natural end, in many cases leaving only offsets, such as require some years' growth before they can take their parent's full place. *George F. Wilson, Heatherbank, Weybridge Heath, Nov.* 19.

Arundo Donax (pp. 597, 628).—My experience agrees with that of Mr. Ellacombe. I have grown Arundo Donax for many years, and never seen it flower. The stalks, if not cut down, make young green shoots the next year from every joint, but these stalks usually become weak, and are, for the most part, blown down, so that I have never seen one which has gone on into a third year. *William Wickham, Binsted-Wyck, Alton, Nov.* 19.

Common *v.* Irish Ivy.—I entirely differ from your correspondent at p. 599, in reference to the superiority of the former kind of Ivy to the latter for many decorative purposes. For covering a large archway, for example, the common Ivy, as it is usually seen, could bear no comparison to the Irish for giving a fine coating of fine large green leaves to take the eye especially in winter. For covering a large stone or such as a ruin the common Ivy may be better, and this is about the only place I have seen the common sort superior. If the Irish Ivy would give too thick a coating of leaves on certain walls there is no doubt but a selection of the finer leaved kinds would repay the labour; this could be done too without inspecting the plants personally—by getting specimen average leaves from a respectable nurseryman who has a good selection. This plan I can recommend from having tried it. Your correspondent at p. 629 is, I think, rather too critical from a horticultural point of view, however accurate his remarks may be about where English Ivy begins and where Irish ends. Although Ivy differs very much in sporting, as well as other variation, still for different purposes I think varieties can be had sufficiently distinct to give each kind an independent character, if I may use that term. For example, a piece of wall here about 30 feet long a few years ago was planted with nine plants, five named kinds, and just now every one of them is sufficiently distinct to warrant them being used for different kinds of leafage. I will send you herewith a few of the leaves for your observation, each one near enough representing the clothing of the plant. The variety named dentata would give quite a distinct kind of covering; it might be heavy-looking, and perhaps at first would not be taken for an Ivy. This variety will sport into the common form at times, but by taking away such shoots the desired kind can easily be secured. For a great many purposes the variety named palmata is a very good one, and is decidedly superior to the variety sold in the trade as Irish Ivy. The common wild Ivy differs very much in different places, and that no doubt to some extent is affected by the soil, as well as by the situation. *R. Mackellar.*

Fourcroya longæva.—A plant of Fourcroya longæva which flowered in Mr. Peacock's collection at the Alexandra Palace, has produced young plants on the branches of the flower-stalks in such quantities—over a thousand—that I thought it might interest some of your readers to know it. I never saw a Fourcroya produce seed yet, has any one else? The other species also produce young plants, but not in such quantities; they came out in clusters and racemes. The old plant is quite dead. *J. Croucher, gr. to J. T. Peacock, Esq., Sudbury House.*

The National Rose Society. — Your correspondent, "A. B.," has drawn a very mournful picture of the National Rose Society and its committee. Will you allow us to say it exists only in his imagination? In the first place no report has been issued, the notice that appeared in your paper having no official authority; and in the second the Committee never asked the exhibitors to take one penny less than the full amount due to them. All the exhibitors were paid in full, with the exception of five; and when the committee met at what was considered to be a private meeting, to decide as to how the deficit was to be made up, these five gentlemen most generously proposed to take 50 per cent. off their prize-money: but we are firmly convinced that, with the exception of those immediately concerned, no single member of the committee had thought of, much less hinted at, so liberal an offer. *The Hon. Secretaries.*

Lasiandra macrantha floribunda.—This most useful plant for stove decoration at this season of the year is well grown at Lee Hall, Gateacre, Liverpool, and when grouped with the Orchids its deep lavender-coloured flowers are very showy and attractive. *A. O.*

Masdevallia floribunda and myriostigma.—Prof. Reichenbach in the *Gardeners' Chronicle* of the 17th inst. (p. 616) refers my Masdevallia myriostigma, as well as M. Galeottiana of Achille Richard, to M. floribunda of Lindley. In so doing the eminent orchidologist of Hamburg is perhaps right, but he might have noticed that I myself discussed the affinities of M. floribunda and M. myriostigma. Specimens from Leibold and from Galeotti were examined, and notable differences were seen between them and the living plant. My description of M. floribunda runs thus:—"A low-growing plant of 2—3 inches in height; its flowers not raised above the leaves; the calyx, not very open and comparatively small (*exigu*), has a small number of reddish brown spots; the petals are of a pale rose with a small tooth on one of their margins and a little point on the truncate extremity. The labellum is white, with a large number of rose-coloured spots, and its edges are crenulated. It was brought from Xalapa by Leibold and by Harris. Galeotti gathered it in the neighbourhood of Vera Cruz, No. 5075." The living plant I had before me, and which was well cultivated, attains ten centimetres in height (nearly 4 inches), and its flowers are conspicuously raised above the foliage; the calyx widely open is dotted over with an infinite number of small reddish-brown spots; the petals are white, notched at the summit, the lyre-shaped lip is uniformly white. The plant was brought in a living condition from Cordova by M. Omer de Malzine, and it was successfully grown by MM. Jacob-Makoy. Time will show whether the plants of Lindley, of Galeotti, and of Malzine, belong really to one and the same species. At the present time only one or two Masdevallias are known from Mexico, and the only species in cultivation from that country is the one just described. I do not undertake to enter into any controversy with M. Reichenbach on matters connected with Orchids—that ground is his, but it is permissible for me to glean here and there after the harvest of the proprietor. I have in Belgium several friends who are ardent Orchidophiles — MM. Jacob-Makoy, Oscar Lamarche de Rossius, Ferdinand and Dieudonné Massange, of Louvrex, Ferdinand Kegeljan, &c. Sometimes a newly introduced plant flowers in the collection of one or other of these gentlemen which it is not possible always to refer with certainty to described species, or it may be that the species are described in an imperfect or fantastic manner. If perchance I fall into error under such circumstances, I shall receive with deference the instruction of a specialist like M. Reichenbach, but the art of instruction demands absolute veracity, and is also quite consistent with courtesy. M. Reichenbach criticises the plate published in the *Belgique Horticole*, and contests its accuracy. In that he is mistaken; our draughtsman has not the talent of Fitch, but he is always to be depended on (*toujours de bonne foi*). I assert that the representation is true to Nature, and my affirmation is corroborated by that of MM. Jacob-Makoy and O. Lamarche. Every year since 1873 Masdevallia myriostigma has flowered with these gentlemen as it is figured in the *Belgique Horticole.* To see in this figure an umbel or a terminal corymb one must, if not blind, have a vision distorted by imagination. If, as M. Reichenbach asserts, the flowers figured differ entirely from those of M. floribunda, it is because my M. myriostigma differs from M. floribunda, and if this be so I have won my cause. The plates of the *Belgique Horticole* have, at least, the merit of faithfulness; they are drawn under my direction, by competent artists—Mdlle. P. de Sartorius, M. de Tollenaere, or M. L. Stroobant. M. Reichenbach has also given me a little lesson in Greek: he has pointed out the correct orthography of the word myriostigma; I confounded the Greek letter ς with σ. On this head I have to express my acknowledgments. *Ed. Morren, Liège.*

Laurustinus and Arbutus Unedo.—As seaside plants for shrubberies the above are unsurpassed. All round the neighbourhood of Colwyn Bay, North Wales, and not many yards from the shore, they grow splendidly, and flower most profusely, the former are fast coming into bloom, and some plants noticed are beginning to present quite a white appearance. It is almost impossible to find a shoot on large bushes that has not a truss of bloom upon it. I might also make mention of Escallonia macrantha in a situation very much exposed to the winds and close to the shore, growing and blooming as well as could be desired. *Wm. Bardney, Colwyn Bay, North Wales.*

Bones.—I read the article on the above subject by Mr. Forsyth, in your issue of November 10, with attention, and, I must add, with a good deal of astonishment. He says, if I understand him aright, that the reason generally given why bone-earth or bones produce "marvellous effects" on certain old pastures—that they restore what has been removed—is "nonsense." His train of reasoning about pasture lands not producing cheese, but only the grass on which the cows who gave the milk which made the cheese feed, is altogether beyond my comprehension. So far from the fact of bones supplying what has been carried off in the form of cheese being nonsense, it is ascertained scientific fact. I beg to draw Mr. Forsyth's attention to the following facts and figures. It has been calculated that the average yield of cow's milk off good pasture land is equal to 750 gallons a year (Professor Johnston), and that every 10 gallons contain enough bone-forming matter to yield 7 ounces of dry bone. Hence, the milk of one cow removes equal to 33 lb. of dry bone in one year. Let us say that this is taken from 1 acre—or any extent whatever—but this is very near the truth, and is handy: then add to this the bones of one calf, which is equal to 10 lb. on an average; then one cow removes yearly from 1 acre of land as much bone-earth (chiefly calcium phosphate) as is contained in 50 lb. of bone-dust, calculating the amount of moisture contained in the bone-dust. By this means bone-earth equal to what is contained in 1 ton of bones is removed every forty-five years off 1 imperial acre, or 1 ton of calcium phosphate once in a century. Now in order to prove that the addition of bones exhausted pasture lands (thereby causing luxuriant growth in place of comparative barrenness) owes its "marvellous effect" to replacement of what had been removed in the cheese, is "nonsense," Mr. Forsyth must show that it is all a mistake about milk containing calcium phosphate (bone-earth), or that soils contain it in inexhaustible abundance. And he has got to show that its presence is a matter of indifference to the growth of the grasses. I considered it fully proved that the reason of pastures failing to produce cheese-yielding grasses (the term cannot be applied to all grasses) was owing to the failing supplies of bone-earth, as these peculiar grasses required it as an essential to their well-doing, and I had held it fully proved that the artificial application of it was the cause of the "marvellous" growth of which your correspondent speaks. Will your correspondent enlighten my ignorance? Will he show me how pastures can go on yielding grass which will yield cheese when the essentials are not forthcoming? *A. H. H.*

Gladĭolus or Glădiŏlus.—Not so very long ago I was taken to task by an eminent classical scholar and dignitary of the Church for pronouncing Gladiolus, as Mr. Grindon directs us, viz., Gladĭolus. I was told the only admissible way was Glădiŏlus. Who is right? *H. Harpur-Crewe.* [The dictionaries and grammars make it Gladĭŏlus, but Mr. Grindon was following popular usage probably. Eds.]

Mushroom Spawn.—One hears of patent, selected, improved, Milltrack, Cutbush's, &c. We have tried all sorts, but for many years found nothing to equal the Milltrack; and have a bed in bearing just now that surpasses anything we have had before both in quantity and quality. As the proof of the pudding is in the eating, I send you a dish for your opinion. *W. Hill, Rich Hall Gardens, Nov.* 13. [Very good indeed. Eds.]

Germination of the Parsnip Chervil.—As no practical gardener has replied to Mr. P. Barr's inquiry (see p. 566), I will tell him what I know. Being in want some time back of some information respecting the vital force of the weeds of different commonly cultivated plants, I applied to my friend Mr. Stenger; I asked for the period, or number of years, that various ordinary vegetable and flower seeds retained their germinating power, and were regarded as "good" for sale. Through him the firm of Vilmorin-Andrieux of Paris, kindly forwarded me the information I needed. Among other seeds mentioned was that of the tuberous Chervil: respecting this the writer says "it must be sown (new) in September or October, to grow in the spring, and it lies four to five months in the ground without giving any sign of life." *W. B. Hemsley.*

The Euphorbias.—These plants inhabit a large area, being found in different parts of the world, and comprise a very large number of species and varieties. There is one very common in gardens known as Miskwort, and also a few others of a hardy nature are cultivated. They produce generally very small flowers, the inflorescence being not very attractive in many kinds, but some are very interesting and

showy, such as E. splendens, Bojeri, jacquiniæflora, &c. The large-growing succulent kinds are cultivated chiefly for their odd and strange appearance—as some are very large, some very thin, others tall-growing, branching and spreading out in a remarkable manner, and many armed with very sharp spines or thorns, while others are dwarf and more compact. They are very interesting when grouped with other succulents, and are often mistaken for Cactaceæ. There are, I believe, many hundreds of species and varieties. They seed freely enough, and grow easily from seed, and the seedlings are quite distinct oftentimes from the parent plant producing it, hence so many kinds. I will just name a few very handsome kinds, large growers:—E. polygona, abyssinica or grandis, arborea, natalensis, and officinalis; E. grandicornis is very remarkable; and in dwarfs E. Caput-Medusæ is very fine, and some others of the same character, and I cannot say but that all of them are more or less interesting to the cultivator. *J. S. Corderoy.*

Crotons.—Croton Weismanni is quite deserving of all you said of it in your last week's issue, as it is, without doubt, one of the very best of the old varieties, both as a show plant and for table decoration, purposes for which it is particularly adapted. Beautiful as this Croton is, however, it is quite eclipsed by one I saw at the Messrs. Veitch's a month or so back, named Lord Derby, which from its rich colour and fine form was conspicuous among a whole houseful of others and caught the eye immediately on entering. Not only was this the case with the large plants, but the smallest, even to fresh rooted cuttings, more especially bright in their markings, and so grand is it at all points that I have no doubt it will become a greater favourite than any. C. Heertii is likewise a very desirable variety, and one that should be in every stove. *J. S.*

Libertia ixioides and grandiflora.—These are charming Iridaceous plants, and although generally treated as cool greenhouse or frame plants, are perfectly hardy. The flowers are pure white, well thrown up above the foliage, but rather sparingly produced for so vigorous a plant. The foliage is copious and densely tufted, of a very firm texture, and of the deepest possible green. It is perhaps the densely tufted habit of its fine foliage which constitutes the value of the plant, as a few plants of it will give a life and a freshness to the herbaceous border all through the winter—in fact I cannot call to mind any hardy herbaceous plant that carries through ever season such masses of fine evergreen foliage. The plants are allies of the Sisyrinchiums, but are far more persistent in all its parts than those plants. It is probable the plants may be known to some persons as "Reanalmia," as I have heard it erroneously called so. *Thos. Williams, Ormskirk.*

The Culture of Schizanthus.—I think many would-be cultivators are often deterred from attempting certain things by the too elaborate processes recommended. Now we do Schizanthus pretty well here, it is really a hardy annual, and there is usually quite heat enough for its germination anywhere in August. We usually sow it towards the end of the month in a cold frame, out-of-doors, or in fact anywhere; it is easy to raise, and as soon as the plants have become large enough to handle they are potted off singly into thumb-pots, shaded for about two days, and as soon as fairly established they are placed on a shelf as close as possible to the glass in a cold house, where they remain through the winter, getting a little water now and then to keep them from flagging. About the end of January or beginning of February they are soaked with water, and the next day they are potted into 6-inch (their flowering) pots. They want no water for several days, and by the time they do they have become re-established. They are such vigorous free-growing plants that from this onward all they want is plenty of air, light, water, and room. This latter is essential, for if they stand too close together, as soon as the sun begins to shine they grow so rapidly they will become drawn in a very few days. I have tried stopping them, but always fancied that a stopped plant bore no sort of comparison to one grown naturally—the latter a perfect candelabrum, the former, well, not so elegant. If they get the few essentials I have mentioned they will not require many sticks until they are fully in flower, as then they become a little top-heavy. I can fully endorse all your correspondent says about the value of the flowers for cutting purposes. We grow a stock of pinnatus selected for many years, and comprising every shade of colour, from pure white with the most hieroglyphical markings all through to the deepest purple, almost black, with individual flowers nearly 1 inch in diameter. We usually have a row along each side of the central path of a span-roof house, and looking down it when they are in full bloom it has just the appearance of an avenue of butterflies (the markings of the flowers are much like those on the wings of some moths and butterflies). It would very much oblige me at least if your correspondent would give us short descriptions characteristic of the various species or varieties he mentions, as, in the case of any of them being distinct, I should like to add them to what I have. I have from time to time procured packets of seeds under various names, but in every case Cæsar and Pompey were much alike, and all had to go to the rubbish-heap. One curious fact should be noted—these Schizanthus are mostly covered with hairs, and each hair is tipped with a little globule of an intensely acid matter; so acid is this that to touch the tongue even slightly is sufficient to cause quite a sensation, and to this circumstance I attribute the plant's perfect immunity from insects. *T. Smith.* [Possibly it dissolves and digests the insects! as is found to be the case to some extent with other plants having hairs of a similar character. The Schizanthus is well done every year at Kew and at Chiswick. Eds.].

A Case for Carrying or Keeping Eggs.—Eggs are the most fragile of things, and to be carried or even stored safely they need to be packed in the most

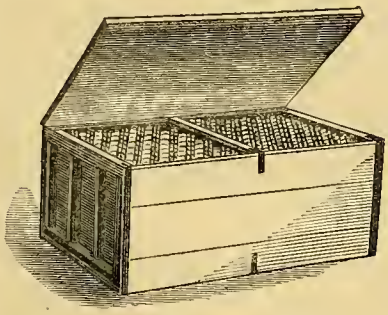

Fig. 130.—Egg-case.

careful manner. Many devices have been used for this purpose, but although some of them have been found available for business purposes, none of them have been adapted to domestic uses for the storage of eggs. A "Safety Egg-carrier," devised and patented by A. R. Sprout, of Lycoming Co., Pa., here illustrated, seems to meet both of these requirements in the most effective manner. Fig. 130 shows the box, with the trays, of which it contains eight, and holds altogether thirty-six dozen eggs. The eggs are held

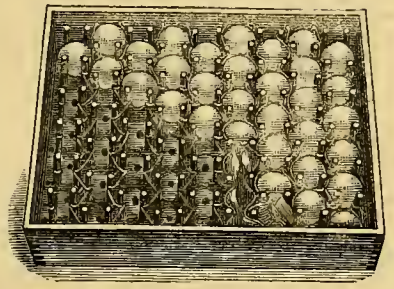

Fig. 131.—Tray for carrying eggs.

in place by means of pins inserted in the bottom of each tray, and forming a circular supporting wall around each egg, as shown at fig. 131. Some soft material is wound around each pin, forming an elastic padding, by which the eggs are held firmly and securely. The trays, when filled, are placed in the package, one above the other, the bottom of one forming the cover of the one below it; the lid of the box holds all tightly in place. Small holes are bored through the bottom of each tray, the small end of each egg rests, and is thus held, in the position which is the best for long and safe keeping. Each tray of eggs may be inspected at any time, by holding it to the light to determine their soundness. For household use each tray forms an independent receptacle for eggs, the package or box being provided only for the purpose of the shipper or dealer. *American Agriculturist.*

Renovating Old Fruit Trees.—I beg to make a few remarks on your correspondent's admirable paper, p. 551. Although I do not agree with him in every point, yet it is a most interesting subject to me. First, as to manure, my impression is that it ought to be thoroughly incorporated with the soil, and to this end it should be moderately dry, so that it may be more easily and thoroughly mixed; of course some judgment should be exercised not to use it in excess. Mulching is no doubt good in some soils and situations, but let it be given in addition to manure in the soil, or, if you practise "lifting" and mulch, use your mulching of the past one or two seasons for mixing with the soil. Sewage is a good manure, or, indeed, liquid manure of any description, especially in dry weather, but let it be in addition to the manure in the soil. I differ from some as to the state of decomposition of the manure when used, I prefer manure that not only acts as a fertiliser, but that helps to keep the soil open, and that the soil may not only be porous at the time of planting or lifting but remain so; I prefer dry weather, and I am very averse to treading the soil after planting or lifting, and may add that I have practised this with the very best results. I differ again as to the depth of soil, except for drainage, or to be used occasionally in lieu of the surface soil. I advocate keeping the roots near the surface—a depth of 2 feet I consider sufficient for large trees. Some of my trees that I practised "lifting" upon were between 20 and 30 feet high, with a spread of from 12 to 20 feet, and the deepest roots were only about 18 inches. The remark of your correspondent on root-pruning being done by some person "accustomed to it" is a most judicious one, "root-pruning and root mutilation are indeed two very different things." I, too, in lifting invariably leave some roots undisturbed; I, too, advocate doing it early. I make no remarks on Mr. Hinds' paper, my own views are so in accordance with his that I cannot add anything to them. *George Lee, F.R.H.S.*

Verbena venosa.—It is somewhat remarkable that such a good old trusty bedding plant as Verbena venosa should now be so seldom seen, but with this, as with most other favourites—they have their day; and then get banished for a time, to return again and, if there is real merit attached, become more popular than ever as is the case with the above-named Verbena. I had it this season in beds on a terrace garden with others filled with Purple King, and the latter would bear no comparison to it either for constancy throughout or the display it made at any one time. During the whole season V. venosa was a mass of bloom, and so soft in colour as to form a pleasing contrast to the variegated Pelargoniums with which it was edged. Do what one will with Purple King, it is sure to become mildewed and shabby long before summer is over, but whether wet or dry V. venosa is always bright, and continues to bloom freely till cut down by the frost. Another advantage with it is that being nearly hardy there is little labour or room required to propagate and winter it, for if laid in leaf-soil, or the beds mulched with the same, they are quite secure, and may be increased in spring almost to any extent by dividing and cutting up the roots into lengths. Purple is a colour that cannot well be done without in a flower garden, and there is nothing better for affording it than Verbena venosa, except perhaps some of the Violas, and these do not succeed in light dry soils. *J. S.*

Root-pruning v. Finger-and-Thumb Pinching.—I have great pleasure in supplementing the latter part of Mr. Hind's letter at p. 597 with reference to pinching the shoots early or not at all. In taking charge of gardens a few years ago I found some pyramidal Pear and Apple trees in the enclosed kitchen garden, and my employer told me they had not borne fruit for years: and there were no fruit-bearing spurs on the trees. Why was that? it may be asked. My answer is—if fruit trees are allowed to grow at will during the summer months, and that growth is cut off in winter year after year, such fruit trees will produce very little fruit-bearing wood. My employer allowed me to do as I thought fit with the trees in question, after remarking that he had been recommended to have them root-pruned. Well, I adopted the finger-and-thumb pinching, with great success. The second year our trees were covered with bloom, and a good crop of fruit followed. I need not detail here the practice of pinching, because it is described in the *Gardeners' Chronicle* every year. I may as well say that I did not confine myself to Pear and Apple trees, but extended the practice to wall and young standard Plum trees with the same success. I am unable to understand why this ystem of pruning is not more practised. It is advocated year after year; yet on looking round neighbouring gardens I find it is seldom followed, the general plan being to cut off the summer's growth at the end of August, which, in my opinion, is of no use whatever in producing fruitfulness. I agree with your correspondent, Mr. Lee (p. 596), that if "F." (p. 521), thinks that root-pruning in autumn will in any way bring about maturity in the wood of past seasons he will find it a mistake, far better pinch the tops of the shoots off in early summer, and continue to do so all through the summer months, when I think your correspondent "F." and others will not want to root-prune much, if at all. In taking charge of the gardens here a short time ago my employer told me I should find the fruit trees very much neglected, and I am sorry to say

it was so. Here again I have another opportunity of introducing finger-and-thumb pinching to bring about fruitfulness, for I find very little fruit-bearing wood; but, on the other hand, long naked wood fit to make walking-sticks with, scarcely a spur on some of the shoots of the pyramidal Pear-trees, which are large and in good health. If you would like to hear of the results in the present case, I shall have pleasure in forwarding them in due course. [Please do so. Eds.] My motto is "Prune in summer for fruit, and in winter for wood." *R. Smith.*

On Covering Early Vine Borders.—I notice at p. 598 the letter of "S. W.," whose ideas are quite in keeping with my own. I have never yet been able to see the use of placing upon Vine borders a quantity of material such as is so generally used, but in point of fact I consider it does a great deal of harm. I think few gardeners would be so bold as to say that it could possibly do any good to heat the surface of the border to the depth of only a few inches, and have the remaining 2 feet or so quite cold and wet. And I fancy it would also puzzle them to tell us how we were to heat the whole 2 feet 6 inches through by placing fermenting material on the top without roasting or boiling the roots nearest the surface. Some years ago, when foreman in a nobleman's garden a few miles from London, where Vines were forced early, I had frequent arguments with the head gardener on the subject of placing heating materials on the border, he being strongly in favour of, and I just as strongly against, the system. At length, however, he gave his consent for me to try one year without it: I did so, simply placing on the Vine border a good covering of leaves, and over them a thin covering of straw to prevent the leaves being blown away. The Vines were started in the second week in November as usual; and we commenced to cut from them in the first week in May, just the same as we had done in former years, but with this difference, that the berries were both larger and much better coloured. Still for all that he refused to be convinced, only admitting that they certainly seemed to do as well without the manure as with it, and attributed the fact of the improvement in the size and colour of the berries to my having taken more care with regard to the ventilation, &c. Some years after, when I went to my first situation as head gardener, I found the vineries (two in number) in anything but first-class condition. They had not been used as early and late, but had both been allowed to come in together, so that in order to have the supply of Grapes extended over a more lengthened period I decided to make one an early house. Accordingly, I provided as many wooden shutters as, together with some spare sashes not then in use, would cover the border of the house intended to be started first. This I did in the early part of October, in order to protect the border from the cold rains of autumn, and in the last week of November I took them off, put on leaves and a slight covering of straw, and pruned and started the Vines. I cut the first bunches on April 28, being a week in advance of a neighbouring gardener who started his early house at the same time and who used fermenting material, and had the advantage of having forced the same house several times before. I continued to do the same thing for several years, until an addition to our flower garden compelled me to keep my vinery cooler, in order to suit bedding plants. These two instances I think go far to prove that fermenting material is not an absolute necessity on a Vine border in order to produce early Grapes. I attach more importance, however, to keeping the cold rains of autumn off the border, either by means of shutters resting on bricks or something of the kind, especially in the case of young Vines. When Vines three and four years old are growing very strong and robust, there is even a greater danger than when not making such vigorous growth, because the roots they make late in the summer will be thick and fleshy, something like quills, and unless protected from the cold rains of autumn and early winter will nearly every one rot off, and when the Vines are started they will be found unequal to the task required of them on account of the loss they have sustained. The consequence is, they struggle on in some sort of a way until they get to the stoning period, which half of them never get through satisfactorily, and in the end they never swell to anything like their proper size; something like one-third of the bunches have a large number of shanked berries, and none of them colour as they ought to do. People wonder how it is—"such splendid wood that they made last year," and this year "such poor fruit." *G.*

Do Roots Digest?—May I offer a few remarks on the interesting letter of "Observer" in your last issue? The exudation of carbon dioxide by the roots is thus referred to in the English translation of Sachs' *Lehrbuch*, p. 625:—"This power of the roots of taking up, by means of the acid sap which permeates the walls of even their superficial cells, substances which are insoluble in pure water, presents itself in an extremely evident manner, as I was the first to show, when polished plates of marble, dolomite, or osteolite (calcium phosphate) are covered with sand to the depth of a few inches, and seeds are then sown in the sand. The roots which strike downwards soon meet the polished surface of the mineral, and grow upon and in close contact with it. After a few days an impression of the root-system is found corroded in rough lines into the smooth surface; every root has dissolved at the points of contact a small portion of the mineral by means of the acid-water which permeates its outer cell-walls." I have little doubt that Sachs, by using sand, meant to exclude carbonaceous matter from the experimental soil. The useful word "digest" has unfortunately of late become ambiguous in physiological writings, having at one time the chemical connotation of solution by excreted fluids, at another the meaning of assimilation, a very different matter. Must we cease to use it altogether? As I am particularly interested just now in questions of plant-nutrition I shall be glad if "Observer" will communicate directly with *G. S. Boulger, Hemel Hempstead, Herts.*

The Best Winter Cucumber.—I can fully endorse all Mr. Batters has said in reference to Telegraph Cucumber (p. 565), especially for winter work, and I am sure the details of his method of growing it would be interesting, especially as they only have 2 or 3 inches in depth of soil to grow in. I should have no hesitation in adopting his method if I had to supply Cucumbers in winter. The last time I saw the Cucumbers at Chilworth Manor they had just passed through the dull months of winter, and were quite healthy and full of fruit. *O. Orpet, Further Barton, Cirencester.*

Temperature of Outside Early Vine Borders.—In reviving the discussion of last winter on this subject "S. W." seems to think the application of heat to outside early forced borders as "productive of more harm than good;" that "bottom-heat is a mistake," and that "roots simply respond to the call made on them by the application of heat to their tops in the way they do after spring fairly sets in," and that "Vines that are started early every year are prepared for it, as they get part of their season's rest while others are in active growth, and therefore require no extra inducement to get them to start." It appears to me the question here crops up, Does Nature supply bottom-heat to plants started naturally with the advent of spring and summer? And if so, how much and in what proportion? Last winter I averaged the mean temperature of the soil at 1 foot in depth, as taken from records at Dunrobin, Sutherland, and Thirlestane Castle, Berwickshire, for the years 1874 and 1875. The monthly mean over the two years will give a fair average for Scotland, and will give us something in the way of hard facts as a reply to the foregoing questions. The figures were given in the *Gardeners' Chronicle* for February 10, but for convenience I may be allowed to note them here:—

Natural Mean Temperature of the Soil at 1 Foot Depth.

	°		°
January	35.1	July	59.4
February	35.2	August	58.0
March	38.7	September	54.2
April	45.1	October	47.2
May	50.2	November	40.2
June	55.8	December	34.6

From these figures it will be seen that Nature does not call upon roots to "respond to the call made upon them by the application of heat to the tops," without at the same time providing a substantial and progressive increase of heat in the soil to encourage and stimulate the action of the roots. Though the ground in spring appears cold and wet, still, with the advancing year, Nature is steadily raising the temperature of the earth up to the autumn time, when it steadily declines to a resting-point. I believe the rise of the temperature in the soil has as much to do with starting plant life in spring as the increase of heat to stem and branch. For comparison let us suppose two houses of Vines each with all their roots in an outside border, No. 1 to be started December 2, No. 2 to start naturally, say, April 1, and in each case to have been shut up and syringed, with sun-heat in the afternoons for a fortnight previous to starting. The annexed table will show the difference of temperature in the border without protection in each case.

Natural Mean Temperature of the Soil at 1 Foot Underground.

No 2, started April 1.			No. 1, started Dec. 1.			Deficiency of heat in border No. 1.	
		°			°		°
1st month,	April	45.1	1st month,	Dec.	34.6	December ..	10.5
2d ,,	May	50.2	2d ,,	Jan.	35.1	January ..	15.1
3d ,,	June	55.8	3d ,,	Feb.	35.2	February ..	20.6
4th ,,	July	59.4	4th ,,	March	38.7	March ..	20.7
5th ,,	Aug.	58.0	5th ,,	April	45.1	April	12.9
6th ,,	Sept.	54.2	6th ,,	May	50.2	May	4.0

The deficiency of temperature in the border for the early house from the above figures is considerable, amounting to 20°.6 and 20°.7 in February and March respectively, and that, too, at one of the most critical periods of the forcing. Although a slight covering of leaves or bracken might reduce the deficiency by a few degrees, still it would be almost expecting too much from the Vine to look for healthy root action with the roots in soil only a little above freezing point, and the stem, branch, and foliage luxuriating in a carefully regulated temperature, ranging from 60° to 80°. That fermenting material has been so long used, and is still used at nine places out of ten, for the purpose of heating early outside borders, is (considering the standard necessary to pass muster in these times) a strong argument in favour of its beneficial effects where carefully applied. When the fermenting material is allowed to overheat and so destroy the roots near the surface of the border, there can be no question as to its being "productive of more harm than good," but the abuse is no argument against the use of anything. We may as well discontinue the use of steam, because some one allowed it to accumulate in a boiler with the safety-valve tightly shut down till it burst and blew the work and its surroundings to atoms. It has been said, and I quite believe it, that several good men have grown early Grapes without heat applied to the outside border; I believe it to be a fact also that Paganini could fiddle with one string, but then most folks prefer to work with four. The gardener who puts fermenting material on his Vine border does so with the aim of giving the roots while at work out of their proper season as near as possible the same temperature in the soil as they would enjoy had Nature been allowed to take her course. In doing so he is following Nature's example, and is, in my opinion, in a fair way towards success. There is no reason for standing still and resting content with the litter covering, however, if we can find anything better calculated to serve the purpose, and more cleanly and less laborious; the best plan I have hitherto seen to secure this end was that adopted by our of our best fruit growers in a large establishment in the South. Rafters were fitted up over the border about 2 feet from the surface, spare sashes were then utilised, and the border covered with glass, a flow and return pipe being run along the front in connection with the pipes inside; this plan secures sun and air, it can be closed early in the afternoon and encloses the sun-heat to heat the border; spare heat from the boiler can be used for the same purpose. The border is heated in the same way as Nature does the work, viz., by a covering of warmer air; this seems to give most of the advantages of the old method of covering with litter without its disadvantages. It does away with the littery appearance objected to by some, is not so subject to over-heating, and is in every way a great improvement upon the old litter covering. *D. M., Dunrobin.*

Reports of Societies.

Southampton Horticultural: *Nov.* 16.—The first winter exhibition of this Society was held on Friday, the 16th inst., at the Victoria Skating Rink, Portland Terrace, and proved in every respect a greater success than even the most sanguine friends of the Society expected or anticipated, indeed so much so that there is no doubt but that the committee will in future always include a Chrysanthemum, fruit, and vegetable show in their annual arrangements. There was a keen competition in many of the classes, whilst others were all but *nil;* and another year the committee will do well to revise their schedule considerably, and instead of splitting it up into as many as thirty classes have but half the number with advanced prizes, and a still better show will probably result. In the open classes for the best collection of Chrysanthemums grown in pots, arranged in a space of 50 square feet, quality and general effect to be the leading feature, the 1st prize was awarded to Mr. E. Wills, gr. to Mrs. Pearce, Bassett; and the 2d to Mr. T. Avery, gr. to the Mayor (A. L. McCalmont, Esq.), Highfield; both collections being very meritorious considering how late Chrysanthemums are in blooming this season. In the nurserymen's class for eighteen plants, not less than nine varieties, there were but two entries, and the awards were Messrs. Jackson & Son, Kingston-on-Thames, 1st, and Mr. G. Pullinger, Shirley, 3d. In the gentlemen's gardeners' class for the same number there was but one entry, and the 1st prize was deservedly awarded them; they were shown by Mr. T. Avery. In the open class for twenty-four cut blooms, distinct, there were three entries; and the 1st prize went to Mr. Hennell, gr. to F. A. Davis, Esq., Kingston-on-Thames: this stand was so excellent that the judges were not content merely to award the 1st prize but also highly commended them. The best flowers were Empress of India, Elaine, Mrs. George Rundle, George Glenny, Chang, Oracle, and Fair Maid of Guernsey. The 2d award again went to Mr. T. Avery, for very good flowers. In the gentlemen's gardeners' class for twenty-four blooms, not less than twelve kinds, there were three entries, and the 1st award went to Mr. E. Wills; 2d, Mr. T. Avery; and 3d to

Mr. Badd, gr. to F. G. Dalgety, Esq., Lockerby Hall. For group of miscellaneous plants, arranged in a space of 70 square feet, quality and general effect to be the leading feature, there were five entries, but Messrs. Jackson & Son were a long way ahead of all the other exhibitors, having some fine Crotons, Dracænas, Palms, and Japanese Chrysanthemums. The 2d prize went to Mr. E Wills, and 3d to Mr. Ladhams, nurseryman, Shirley. In the classes for berried plants, Cyclamens and Primulas, there was nothing of particular merit, if we except the Primulas from Mr. Osborne, gr. to H. T. Buchan, Esq., Wilton House, and the Cyclamens from Mr. Browning, gr. to F. Holloway, Esq., Marchwood Park.

For a Southampton show the display of fruit was excellent, and should induce the committee another year to offer more liberal prizes. All were open classes, and the 1st award "for six dishes of Apples and six dishes of Pears, six fruits of each," went to Mr. Browning; the 2d to Mr. Jones, gr. to Lady Barker Mill, Mottisfont Abbey; and the 3d to Mr. H. Vickery, gr. to Colonel Bruce, Testwood Park, Felton. There were seven competitors, and all showed exceedingly good fruit. In the class for three dishes of dessert Apples there were ten competitors, and in the class for a like number of kitchen Apples no fewer than twelve; and we may safely say there was not a bad dish in the lot, and many of superior merit. Grapes were but second-rate, though there was a goodly competition. Exhibitors in this class should make a note of how Grapes are shown at the London exhibitions, for if we except the 1st prize lots in each class—*i.e.*, black and white—all had been terribly rubbed either by placing them on the stand or in taking them to the place of exhibition. In the class for "one Pine-apple," a magnificent fruit of Charlotte Rothschild was shown by Mr. H. Benham, gr. to H. J. Woods, Esq., Warnford Park, Bishops Waltham, a very good Queen by Mr. Browning, and a Smooth Cayenne by Mr. O. Batters, gr. to Mrs. Willis Fleming, Chilworth Manor, the awards going in the order named. In the class for three dishes of Pears there were seven competitors, and the first award was made to Mr. Browning, for excellent specimens of Duchesse d'Angoulême, Van Mons Leon le Clerc, and Beurré Diel; 2d, Mr. Budd; 3d, Mr. Jones; and 4th, Mr. Avery. The latter gentleman showed also a fine collection of thirty-six varieties of Apples, not for competition, but they were deservedly awarded an extra prize. The display of vegetables was magnificent, as is always the case at Southampton. There were twelve competitors, all showing very excellent produce, and the awards went to Mr. H. Vickery, Mr. T. Avery, Mr. Batters, and Mr. Amys, in the order named. For collection of salading Mr. Batters took 1st honours, as he invariably does in this class; 2d, Mr. Browning; and 3d, Mr. Chard, Clarendon Park.

There were several extra awards made for groups of plants, the most noticeable being those shown by Mr. Amys, gr. to the President of the Society, the Hon. Eliot York, Netley Fort, and the group of Orchids shown by Mr. Osborne, gr. to H. J. Buchan, Esq., Wilton House, amongst which were specimens equal to those usually seen at the metropolitan shows. There were some most perfect specimens of wax flowers shown by Mrs. Fox, of Market Street, Brighton—so perfect that one required to look very closely to be certain as to whether they were not real. The exhibition was visited by all the *élite* of Southampton during the afternoon, and in the evening the place was crowded, so that we may safely congratulate the Society on having scored another success, which is due in no small measure to the energetic secretary, Mr. C. S. Fuidge. (*From a Correspondent.*)

Ealing District Chrysanthemum: *Nov.* 17.—The date of this exhibition was put on for a week owing to the tardiness of the plants to flower, and even with the postponement it was too early for some of the local cultivators. Compared with previous shows there was a decided falling off in plants in the competition classes, but the cut flowers were better than they have ever been before. Nevertheless, power should be given to the committee to exclude unworthy specimens; some should never have been admitted to such a show. In the gardeners' classes the best plants came from Mr. John Hart, gr. to T. Nye, Esq., Castle Bar Hill; and in the cottagers' classes Messrs. James Norcott and James Wilson exhibited some very creditable specimens. The best specimen Japanese Chrysanthemum in pot was James Salter, from G. S. Hinchclift, Esq., of Acton.

In the leading class for twelve cut blooms, Mr. G. Lang was 1st, having capital examples of John Salter, White Globe, Venus, Beverley, Prince Alfred, Prince of Wales, Jardin des Plantes, Mrs. Dixon, White Venus, and Annie Holbonn; 2d, Mr. T. Nye, with Miss Mary Morgan, Blush Queen, Prince Alfred, Guernsey Nugget, George Glenny, Jardin des Plantes, Lady Talfourd, and Isabella Bott; 3d, C. N. Peal, Esq. Mr. Lang was also 1st with six blooms of large flowering varieties, and six Japanese, having in the latter case Fair Maid of Guernsey, Beauté Parfait, Magnum Bonum, Cossack, Elaine, and James Salter. Mr. Nye was 2d with three of the above named, and in addition Chang, Florence Nightingale, and Gloire de Toulouse.

In the classes for twelve bunches of Pompon varieties, Mr. J. Hart, gr. to T. Nye, Esq., staged some charming flowers, and was placed 1st in each case. The leading varieties were Madlle. Marthe, Adèle Pressit, Antonius, Marabout, Aigle d'Or, White Cedo Nulli, Madame Montels, and Madame Chalons. Messrs. C. Hutchings and C. N. Peal were placed equal 2d with some nice blooms. In one of the classes in which Mr. Hart exhibited, a special high commendation was given in addition to the 1st prize.

Messrs. Charles Lee & Son sent a very fine lot of Chrysanthemums in plants and cut blooms, grown at their Ealing nurseries by their manager, Mr. George Cameron. The plants carried remarkably good flowers. The leading varieties were:—James Salter, Elaine, Prince Alfred, Dr. Sharp, Gloria Mundi, Mrs. G. Rundle, Felicity, a beautiful reflexed white variety; Miss Mary Morgan, Fingal, and Prince of Anemones. The cut blooms comprised Dr. Sharp, Grand Lodge, Rival, James Salter, Queen of England, Virgin Queen, Gloria Mundi, Fair Maid of Guernsey, Gloire de Toulouse, Mr. Brunlees, Mrs. G. Rundle, Lady Margaret, Gluck, Annie Salter, Empress of India, Elaine, Bronze Jardin des Plantes, Prince of Wales, Cossack, Lady Talfourd, George Glenny, Cry Kang, Prince Alfred, White Beverley, and Beethoven. Mr. W. B. Smith, Ealing Dean Nursery, sent a collection of charming Cyclamens, and Mr. George Weeden some pretty Primulas.

The Right Hon. S. H. Walpole, M.P., the President of the Society, distributed the prizes in the afternoon, and advocated the holding of an exhibition of spring-flowering plants in a populous district like Ealing, where gardening was so generally followed. Steps have already been taken to give effect to this suggestion.

The Woolwich, Plumstead, and West Kent Chrysanthemum Society's annual show was held as usual on the 16th inst., and a very creditable little show was the result. For twelve cut blooms, incurved, grown under glass, Mr. E. Marshall was 1st with, amongst others, good blooms of Lord Derby, George Glenny, and Mrs. Dixon; the 2d in this class going to Mr. Hall, and the 3rd to Mr. Colebrook, amongst whose exhibits were fine White Globe and Lady Hardinge. For six incurved Mr. Marshall was again 1st, Mr. J. Amos making a good 2d. Amongst their exhibits were good Prince of Wales, Prince Alfred, &c.

In the classes for outdoor culture, twelve Anemones gained Mr. R. Adams the prize, having good Acquisition, Lady Margaret, &c. Twelve incurved gained Mr. D. Spary like honours, as did also six incurved, showing fine Cherub, White Globe, Golden Beverley, &c. Good blooms of Golden Christine, Progne, Chevalier Domage, &c., gained Mr. E. Marshall another 1st for twelve reflexed; Mr. Spary was 2d, showing among others a good bloom of Captivation. Mr. R. Adams took 1st for twelve trusses of Pompons, having good Calliope, Antonius, &c. In the open class Mr. Tomalin, Crayford, gained the higher award for twelve incurved, his best blooms being Mr. Gladstone, St. Patrick, and General Slade.

In the classes for plants a well-flowered and trained G. Glenny gained Mr. T. Caines a 1st for a single dwarf trained specimen, Mr. Caines being also 1st for four and two dwarf Pompons, having good Mr. Astie, Mrs. Dix, Calliope, &c. Among the standards Mr. R. Adams was 1st for two, and Mr. E. Hall for four large flowered good plants of Peter the Great, Mrs. Sharp, &c., being exhibited. Mr. R. Adams was again to the front with four standard Pompons, having good Fanny, St. Thains, &c.; Mr. Hall making an excellent 2d. Mr. Caines was also the higher prize, taker for two and four pyramid Pompons, and for two standards Mr. Adams was 1st: in these exhibits we noticed good Fanny, President, Antonius, &c.

In the miscellaneous exhibits Mr. Cannell was awarded a special certificate of merit for a stand of twenty-four Pelargoniums, and also for Pelargonium New Life. Mr. Wright had a neat collection of Ferns, as also did Mr. Tomalin. Mr. Wright was also 1st for three and six ornamental-foliage plants, &c.

The Stoke Newington Chrysanthemum Society's Show was held on the same day as the above, and though the number of exhibits was comparatively small, the quality, especially of the good blooms, was far superior to any we had previously seen. Mr. Hammond, gr. to H. Hunt, Esq., Stamford Hill, was 1st for twelve blooms, with fine Mrs. Heales, White Venus, Nil Desperandum, Prince Alfred, &c.; the 2d being Mr. T. Beale, gr. to W. Laschelles, Esq., of Tottenham, with good Jardin des Plantes, John Salter, &c. In the various classes for six blooms the prizes fell to Mr. H. Butcher, gr. to F. P. Lambert, Esq., Stanstead Hill; Mr. C. Hammond, Mr. H. Butcher, and Mr. T. T. Godwin, Clapton, among whose exhibits were good John Salter, Queen of England, White Globe, White Venus, and Prince of Wales. A half-dozen fine Elaine came from Mr. Oubridge; Mr. G. Landon showed twenty-four cut blooms, having in his collection good J. Dix, Dr. Brock, Princess Teck, Venus, &c.

The pot plants, though not so good as the cut blooms, were well bloomed, prizes falling to J. Monk, gr. to H. Head, Esq., for six plants and for four plants. For four standards Mr. G. Landon, gr. to Dr. Monro, and Mr. F. Wills, gr. to A. Smee, Esq., were 1st in the various classes, as also was Mr. J. Monk for a collection of ten plants of Cyclamens. Decorative plants, Solanums, &c., were also exhibited.

The Borough of Hackney Chrysanthemum Society: *Nov.* 20 *and* 21.—This show was held at the Aquarium, Westminster, and was probably the best of the season, although the display, especially of cut blooms, was made to look rather meagre by the large amount of space allotted to the show. The plants made the most effective display. For six plants Mr. Hall was 1st, showing excellent Guernsey Nugget, Lady Hardinge, Faust, &c.; Mr. J. Rainbow, of Lower Clapton, being a very good 2d. For four plants Mr. J. Rainbow, jun., was 1st. For four Pompons Mr. Hall, Tulse Hill, was 1st; Mr. Benger, gr. to G. Fletch, Esq., Upper Clapton, making a good 2d, both staging very good plants. For four standards Mr. Benger was 1st, showing, amongst others, a good George Glenny, Venus, &c.; Mr. J. Holmes, gr. to J. Hicks, taking the 2d. Other good exhibits were staged by Messrs. Langdon, Batters, Saunderson, Pocock, &c. Messrs. E. G. Henderson, Pine-apple Nursery, had a good collection. Mr. Turner, Slough, was awarded an extra prize for group of grafted plants.

Messrs. Dixon, of Hackney, showed an interesting display of foliage plants and Chrysanthemums. For twelve blooms, Japanese, Mr. R. Adams, Plumstead, and Mr. C. Huggins were 1st; and Mr. J. Bryant, gr. to J. Stirling and Mr. Henderson 2d respectively, showing good blooms of Grandiflora, Bronze Dragon, Diamond, Jupiter, &c. Mr. Williams was 1st for twenty-four blooms, having White Globe, Nil Desperandum, Barbara, &c.; Mr. Holmes, South Hackney, being 2d, with White Globe, General Slade, &c. Mr. Langdon was 1st for twelve blooms, being well seconded by Mr. J. Holmes, gr. to J. Hicks, Esq. Among these exhibits were noticeable John Salter, Lady Hardinge, Hero of Stoke Newington, Mrs. Heales, &c. Six blooms placed Mr. J. Holmes 1st; Mr. Langdon taking 2d honours, showing good J. Dix, Barbara, Queen of England, &c. In the classes for amateurs Mr. W. Butters was 1st, showing Prince of Wales, Mrs. Heales, &c., Mr. C. Butters being placed 2d. In the open classes Mr. Sanderson gained 1st for twenty-four blooms with good Lady Morgan, Golden Eagle, Le Grand, J. Dix, &c. Mr. Sanderson was also 1st, for twelve and for six blooms, noticeable being Cherub, Lady Hardinge, Nonpareil, &c. Mr. Pocock also took 1st for six blooms, having Jardin des Plantes, Princess of Wales, &c.; Mr. J. Bryant, gr. to J. R. Starling, Esq., Guonersbury, making a good 2d. Many other exhibits gained much attention, but are not worth an extended notice.

Kingston and Surbiton Chrysanthemum Society: *Nov.* 21 *and* 22.—The first show of this Society was held in the Drill Hall, Kingston, and resulted in an excellent display. Mr. F. Wildman, Camberwell, was placed 1st for twenty-four cut blooms incurved, having fine examples of Prince Alfred, Mrs. Dixon, George Glenny, Queen of England; the 2d prize being well won by Mr. G. Cornhill, gr. to J. Virtue, Esq. For twelve incurved flowers Mr. Hinnell, Anglesea House, Surbiton, was 1st, and Mr. J. Bentley, gr. Edgcombe Hall, Wimbledon, 2d; in these exhibits were good examples of Mrs. Cunningham, Venus, Princess of Wales, &c. Mr. Nagle, Kingston, was 1st for six incurved, having, among others, fine blooms of Mrs. Cunningham and G. Glenny. For twenty-four Japanese, Mr. Hinnell was again 1st, with fine blooms of Bronze Dragon, Grandiflora, &c.; the 2d falling to Mr. Moorman, gr. to the Misses Christy, Kingston. Twelve fine blooms of Japanese gained first honours for Mr. Beckitt, gr., Moor Place, Esher, the 2d going to Mr. McPherson: here we noticed in fine form Sultan, Striata, Oracle, &c. Mr. P. F. Sutton, Kingston, was fortunate among amateurs, being 1st for twelve blooms (Pompons excluded), and for six bunches of Pompons, with very good specimens. For twelve bunches of Pompons Mr. R. Press, of Kingston, was 1st. For twelve bunches of Pompons and twelve Anemones Mr. G. Masters, gr. to F. Day, Esq., Oatland Park, and Mr. Cornhill, were 1st respectively: in their exhibits were good examples of Marabout, President, Princess Louise, &c.; and for twelve reflexed Mr. Moorman was 1st with Cloth of Gold, Blonde Beauty, &c.

The most noticable features among the pot plants were the collections which gained Mr. W. Bates, Twickenham, 1st, and Mr. Moorman, 2d honours,

both showing very effective banks of finely flowered plants, noticeable among them being Gluck, Mrs. G. Rundle, Elaine, &c. The four dwarf-trained plants which gained Mr. Bexall a 1st prize were also good, Julia Lagravère, Hereward, &c., being noticeable. For six large-flowered Mr. E. Beckett, Esher, was 1st, and Mr. G. Cornhill 2d. In these exhibits were good Bronze Jardin des Plantes, Fingal, &c. Mr. G. Masters was 1st also for six dwarf-trained and four standard Pompons, with good Aurea, Cedo Nulli, &c. For six berried Solanums Mr. Beckett was again 1st, showing heavily berried plants of Capsicum Prince of Wales, Solanum picturatum, and Solanum Capsicastrum. The plants for table decoration and the fruit were fair, though not of extraordinary merit.

Fine banks of flowering and foliage plants were contributed by Messrs. Jackson & Son, nurserymen, Kingston, and Mr. Hinnell—Messrs. Jackson also showing stands of Chrysanthemums, &c., not for competition.

FLORISTS' FLOWERS

The Chrysanthemums at Slough. — Never since Mr. Turner included the Chrysanthemum amongst his florists' specialities has he had such a grand display as greets the visitor to his famous nursery at the present time; and it is a matter for regret that no favourable opportunity has been afforded for exhibiting a selection of them in town. Such being the case there is nothing for it but to go to Slough; the journey is not a long one, and an inspection of the flowers will amply repay a visit even from greater distances. Mr. Turner does not aim at getting the bulk of his collection in bloom at once, but rather to prolong the season as long as possible, by growing them in successive batches, so that from this time up to Christmas he may be able to meet the heavy requisitions made upon him for cut blooms for church decoration, and consequently any one going to Slough before the festive season comes round will be sure to find plenty of good things in bloom. For the cut bloom trade the white-flowered varieties are the most in demand, so that it does not surprise one to find these in by far the greatest abundance. The number of plants annually grown here has gradually crept up to the enormous number of 10,000, which quantity has been grown to meet this year's supply. The majority of the plants are grown on the natural system, in pots ranging from 6 to 8 inches in size, and by means of liberal culture a fine head of good blooms is obtained. A certain number of the plants are grown as standards, in which form a few would be useful in most places for standing about in conservatories. The plants are run up on single stems to the height of 2½ or 3 feet, and then grafted; and by careful handling are grown into heads from 18 to 24 feet through. The show-house is one of the best that could be devised for such a purpose—being a span-roofed structure 100 feet long and 14 feet wide—in fact the Rose-house, from which so many of the glories of Slough have gone out to do battle in the peaceful wars of the Roses. The plants are arranged in one gigantic bank with their faces to the north, and being kept down to a reasonable height, are easily seen without too much stretching of the neck from the path in front.

As we said before, the white-flowered varieties largely preponderate, consequently we make our selections from them first. Empress of India is of fine size and good build; Isabella Bott is a fine large flower, and tinted with rose; Mrs. G. Rundle, too well known for its purity and exquisitely incurved form to need comment; Mrs. George Parnell, a sport from the last-named, is considered superior to its parents by some growers, but here they were too nearly alike; Princess of Wales, a pretty rose-tinted flower; Queen of England, a fine blush white; White Globe, a large incurved flower; and White Beverley, still one of the very best of the incurved section. A variety named Bridesmaid appears to be the same.

Amongst the coloured flowers we noticed a curiosity in Fingal, a purplish crimson flower, in the way of Prince Alfred, and the petals of which remain quilled for some time before opening. The best of the others still appear to be the well-known Bronze Jardin des Plants, Dr. Sharpe, St. Patrick, a fine ruby red; Mr. Howe, a beautiful bronze, tipped with orange; Mount Etna, also a fine red; Prince Alfred, Mrs. Brunlees, Grand Lodge Rival, brown, with orange centre; and the Golden Beverley, Golden Empress of India, Golden Queen of England, and Golden John Salter; Julia Lagravère, still maintains its own, and so does John Salter, cinnamon-red; Lady Hardinge, delicate rose; Guernsey Nugget, primrose-yellow; and George Glenny, the yellow sport from Mrs. Rundle.

Of the showy Japanese varieties Mr. Turner grows about three dozen sorts, most conspicuous amongst which were grand flowers of the large double-white early-flowering Elaine, and the equally fine white Fair Maid of Guernsey, the showy Gloire de Toulouse, rose, with a white centre, and worth classing with the very best; James Salter, a large and handsome lilac flower; To Kio, orange-scarlet, very showy; La Nymphe, rosy lilac, and very nice; The Daimio, pale pink, &c.

The Pompon section are unusually late this year almost everywhere, consequently but a very few of the four dozen varieties catalogued were to be seen in flower. Amongst these, however, we singled out three very fine things, which deserve all that can be said in their praise. The first one is Mr. Murray, a purple-flowered variety of a larger size than the ordinary run of Pompons, and an exceedingly nice flower; Mdlle. Marthe, a very handsome white; and Sœur Melanie, also a fine white, very free in habit, and early to boot. Mdlle. Marthe has the most perfect flower of the two, but for growing in quantity for cutting or for market work we most strongly commend Sœur Melanie.

Violas.—During the past summer I have grown some twenty sorts of these useful bedding-plants, and send you the following notes, thinking they may be useful to some of your Northern readers, as, owing to the cooler summers, they grow and bloom better there than in the South of England. Generally, for bedding purposes, I hold that only distinct telling colours are requisite, and the following notes were entirely made with that aim in view.

Whites.—I grew White Swan, White Queen, White Bedder, and Mrs. Henry Pease (new); of these White Swan was the best, being very profuse in bloom, of good substance, close compact habit, and in colour a fairly good white. Mrs. Henry Pease is a stronger grower, but not so compact.

Yellows.—Golden Gem, Golden Perpetual, Cloth of Gold, and Crown Jewel, which last proved much the best; the habit is close and dense, flowers well formed, of good substance, and the colour a fine rich yellow; it is a free seeder, and should be carefully picked over, otherwise it will cease blooming.

Light Sulphur-Yellow or Straw Colour. — I only had Queen and Corisande, the latter a most telling colour; the habit is rather strong—too strong a grower for a front row or edging—but it blooms very freely, and the flowers are of fairly good form and substance.

Light Mauve.—Princess Teck, Hon. Miss Beatson (new), and Duchess of Sutherland (new); the two last are very much alike. Princess Teck, however, is my favourite, being of a beautiful compact habit—a very profuse and continuous bloomer—a novel and most telling colour. Either of the others are very good, and being stronger growers may prove most useful for the South.

Lilacs.—Enchantress, Perfection, Modesty, and Lilacina (Dean), the two last being much alike, but I prefer the last—it is a profuse and continuous bloomer, and a most excellent bedding plant.

Purples.—Forerunner (new), Waverley, Max Kolb (new), Duke of Edinburgh, and Bluebell. The last, better described as a light purple, is an excellent sort, a most profuse and continuous bloomer and a good compact grower. Forerunner, however, although more of a violet, is the most telling in this class, and must become a most popular sort; it is of good habit, a free bloomer, and the flowers are of good form and substance.

Blues.—Lothair, Royal Blue Pansy, Imperial Blue Pansy, and Royal Blue Viola (Dean). The last is a new and useful colour, being a really blue Viola. It is a free and continuous bloomer, perhaps the flowers are a little thin, but of good form; an excellent addition.

Darks.—Mulberry and Crimson Gem (new). This last is much the best of the two, and although the name is something of a misnomer, yet it is of a most pleasing light mulberry, with a fine yellow eye; is of good habit and blooms freely and continuously. However, in bedding arrangements this class can, as far as I have yet seen, be well dispensed with; the colours are too dead and heavy for real bedding purposes, at any rate in the North, where there is a lack of bright subjects for bedding purposes (compared with the neighbourhood of London), where dull, heavy weather is much in the ascendant, and where something cheerful and bright from a horticultural point of view is indispensable. *Y.*

THE WEATHER

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Nov. 21, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Nov.	In.	In.	°	°	°	°	°	°			In.
15	30.10	+0.34	54.6	43.5	11.1	49.4	+ 7.1	47.9	95	S.W.	0.08
16	30.16	+0.41	58.0	41.2	16.8	49.2	+ 7.0	44.2	83	WSW.; WNW	0.03
17	30.17	+0.44	49.7	33.7	16.0	40.9	− 1.1	37.8	89	WNW.; NNW	0.00
18	29.91	+0.20	50.0	39.0	11.0	45.2	+ 3.3	41.3	87	S.S.W.	0.00
19	29.57	−0.14	50.2	33.8	16.4	42.6	+ 0.8	39.2	87	S.W.; S.	0.24
20	29.48	−0.22	45.7	35.3	10.4	40.3	− 1.4	35.3	83	S.W.; W.; WNW	0.00
21	29.39	−0.30	53.0	34.1	18.9	43.9	+ 2.2	41.3	90	S.W.; S.	0.12
Mean	29.83	+0.10	51.6	37.2	14.4	44.5	+ 2.6	41.0	88	S.W.	sum 0.47

Nov. 15.—Overcast and dull throughout. Thin rain fell. Mild.
— 16.—A fine day, partially cloudy. Mild. Slight rain fell before 8 A.M.
— 17.—A fine day. Gloomy and foggy at times.
— 18.—A fine day. Cloudy till night, then cloudless.
— 19.—Fine till noon. Overcast and wet from noon till 6 P.M. Fine after. Cloudless at night.
— 20.—A fine bright day. Clear and cold.
— 21.—Fine and bright till 11 A.M. Very cloudy and wet after.

London: *Barometer.*—During the week ending Saturday, November 17, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.43 inches at the beginning of the week to 28.73 inches by 11 h. 40 m. P.M. on the 11th, rapidly increased to 30.33 inches by the morning of the 15th, decreased to 30.26 inches by the evening of the same day, increased to 30.45 inches by the evening of the 16th, and decreased to 30.30 inches by the end of the week. The mean reading for the week at sea level was 29.83 inches, being 0.13 inch above that of the preceding week, and 0.13 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 58° on the 16th to 47¾° on the 13th; the mean value for the week was 52¼°. The lowest temperatures of the air observed by night ranged from 33¾° on the 17th to 46¼° on the 11th; the mean value for the week was 39¾°. The mean daily range of temperature of the air for the week was 12½°, the greatest range in the day being 16¾° on the 16th, and the least 6¼° on the 11th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—11th, 49°.6, + 6°.4; 12th, 44°, + 1°.1; 13th, 44°, + 1°.3; 14th, 42°.8, + 0°.3; 15th, 49°.4, + 7°.1; 16th, 49°.2, + 7°; 17th, 40°.9, — 1°.1. The mean temperature of the air for the week was 45°.7, being 3°.2 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 100¼° on the 12th, and 92½° on the 14th, and 77¾° on the 16th; on the 11th the reading did not rise above 53°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 27¾° on the 17th, and 29½° on the 14th; the mean value for the week was 34°.

Wind.—The direction of the wind was S.W., and its strength strong. The weather during the week was tolerably fine and mild, but the sky was generally cloudy. A violent gale of wind prevailed during the whole of the 11th and early morning hours of the 12th, when it suddenly dropped.

Rain fell on five days during the week, the amount collected was 1.01 inch.

England: *Temperature.*—The highest tempera-

tures of the air observed by day were 63° at Plymouth, 61° at Eccles, and 60° at Liverpool and Leeds; the highest temperature at Wolverhampton was 56°, and at Leicester 56½°; the mean value from all stations was 58½°. The lowest temperatures of the air observed by night were 29¼° at Eccles, 29½° at Wolverhampton, and 30° at Nottingham; the lowest temperature at Sunderland was 40°, and at both Brighton and Liverpool 38½°; the general mean from all stations was 34¼°. The range of temperature in the week was the greatest at Eccles, 32°, and the least at Sunderland, 18°; the mean range from all stations was 24¼°.

The mean of the seven high day temperatures was the highest at Truro, 56°, and Plymouth, 55½°, and the lowest at Hull, 49½°, and Leicester, 50½°; the mean from all stations was 52½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34¾°, and at Nottingham, 37°; and the highest at Portsmouth, 43½°, and at Brighton, 43°; the mean value from all stations was 40¼°. The mean daily range of temperature in the week was the greatest at Wolverhampton, 16½°, and the least at Sunderland, 9°; the mean daily range from all stations was 12½°.

The mean temperature of the air for the week from all stations was 46°, being 1½° lower than the value for the corresponding week in 1876. The highest were at Portsmouth, 48¼°, Plymouth, 48°, and Brighton and Truro, both 47¾°, and the lowest were at Wolverhampton, 42½°, and Hull, 44°.

Rain fell generally on five or six days in the week, but at Hull rain fell on one day only. The amounts measured varied from 2 inches at Plymouth and 1¾ inch at Truro to two-tenths of an inch at Hull. The average fall over the country was three-quarters of an inch.

The weather during the week was generally fine and mild, but the sky cloudy. A violent gale of wind prevailed all over the country on the 11th inst., and resulted in great loss of property, and even loss of life in some parts.

Scotland: *Temperature.*—The highest temperatures of the air observed by day varied from 59° at Leith to 54° at Paisley; the mean value from all stations was 56¾°. The lowest temperatures of the air observed by night ranged from 33° at Dundee to 39° at both Glasgow and Greenock; the mean value from all stations was 37°. The mean range of temperature from all stations was 19¾°.

The mean temperature of the air for the week from all stations was 45¾°, being 1½° higher than the value for the corresponding week in 1876. The highest was 47¼°, at Leith, and the lowest 41¾°, at Dundee and Paisley.

Rain fell at Greenock to the amounts of 3¼ inches, and at Paisley 3 inches were measured. At Dundee and Aberdeen four-tenths of an inch only was recorded. The average fall over the country was 1 inch and four-tenths.

Dublin.—The highest temperature of the air was 59°, the lowest 29¼°, the range 29¾°, the mean 45½°, and the fall of rain 0.70 inch.

JAMES GLAISHER.

Law Notes.

Railway Liability.—At the Bloomsbury County Court on the 16th inst. the case of the London and North-Western Railway Company against Dick Radclyffe and others was heard before Mr. Judge Russell, in which the company sued the defendants, horticulturists and seed merchants, carrying on business in High Holborn, to recover the sum of £4 odd, alleged to be due under the following circumstances:—

Mr. Harmsworth, who appeared as counsel for the plaintiffs, stated that the defendants in July, 1875, in attending an agricultural show at Manchester, forwarded a van containing a selection of articles intended for exhibition at the show by the Midland Railway to that place, and subsequently the same van was forwarded from Manchester to Leeds, where another show was to take place, at the termination of which the defendant expressly ordered the van in question to be forwarded to London by the plaintiff' line of railway.

The goods manager, the check clerk, and booking clerks from the Leeds station were then called, each of whom corroborated the learned counsel's statement as to the order given for forwarding the van to town by the London and North-Western Railway. This evidence, completing the case for the plaintiffs,

Mr. Charles Williams, who appeared as solicitor for the defendants, urged there must have been a misapprehension on the part of the plaintiffs, as he should be in a position to prove by his client's evidence that no contract was entered into with the plaintiffs at all, but that the Midland Railway Company were the parties with whom the defendant had dealt throughout.

Mr. Dick Radclyffe, called, stated he never authorised his van to be sent by the plaintiffs' line, he had contracted with the Midland Company throughout the whole affair; his van had been shunted and left behind *en route* for Leeds at Huddersfield, and the company agreed to compensate him for the inconvenience he had been put to, and therefore he arranged with that company to return his van to London, and when he was asked by the station-master at Leeds if it was to go by the London and North-Western route, he distinctly told the official that he had arranged with the Midland Company; however, the van had been returned by the London and North-Western line, and he consequently refused to pay.

This being the defendant's case, the learned Judge said that looking to the probabilities of the case, he had no hesitation in ruling in favour of the defendant.

Mr. C. Williams applied for costs, which the Court awarded.

Judgment entered accordingly for the defendant, with costs.

Obituary.

On Friday night, November 16, at his town residence, 14, Rutland Gate, Hyde Park, Septimus Holmes Godson, Esq., Barrister-at-Law, of Court House, Tenbury, Worcestershire, in his seventy-ninth year. Mr. Godson was one of the oldest Fellows of the Royal Horticultural Society, and a trenchant critic of its financial proceedings. He sat for many years at the Council board; and will be missed at the annual meetings of the Society.

Variorum.

Comparative Anatomy and the History of Germs.—Systematic zoology and botany cannot to-day do without the theory of descent, because only by its light the mysterious relations of the numberless organic forms amongst each other can be really explained, *i.e.*, reduced to mechanical causes, their similarity results as the natural consequence of inheritance from common parental forms, their variation as the necessary effect of adaptation to different conditions of life. Only by the theory of descent can the facts of palæontology, of chorology, and of œcology be explained in a way as simple as it is natural; only by this theory we understand the existence of the remarkable rudimentary organs, of eyes which do not see, the wings which do not fly, the muscles which do not move—nothing but useless parts of the body, which refute in the most emphatic manner the old-fashioned teleology, because they prove in the clearest manner that the utility in the structure of organic forms is neither general nor perfect; that it is not the result of a plan of creation worked with an object in view, but necessarily caused by the accidental coincidence of mechanical causes. . . . If the botanist followed the formation of the plant from the seed, the zoologist that of the animal from the ovum, they considered their morphological task accomplished by the perfect observation of the history of these germs. The greatest men in the domain of the history of evolution, Wolff, Baer, Remack, Schleiden, and the whole school of embryologists formed by them, understood by it, until a short time ago, the individual ontogeny exclusively. It is quite different to-day, when the mysteries of the wonderful history of germs confront us no longer as unintelligible riddles, but have clearly revealed their deep significance; because according to the laws of inheritance, the changes of form which the germ passes through in the shortest time, under our eyes, are a compressed and abbreviated repetition of the corresponding changes of form which the ancestors of the organism in question have passed through in the course of many millions of years. If to-day we place a hen's egg into the breeding-machine, and if twenty-one days later we see a little chicken creep from it, we no longer remain in mute astonishment at the wonderful changes which lead from the simple cell in the egg to the two-leaved gastrula, from this to the worm-shaped and skull-less germ, and thence to further germ-forms, which on the whole show the organisation of a fish, an amphibian, a reptile, and only lastly, that of a bird. On the contrary, we draw conclusions from this, regarding the corresponding series of forms of the ancestors, which have led from the unicellular amœba to the parental form of the gastræa, and further on through the classes of worms, acephala, fishes, amphibia, reptiles, down to birds. The series of germ-forms of the chicken thus gives us a sketch of the series of it real ancestors. . . . Only by the critical consideration of the historical archives, by a speculation which is just as circumspect as it is daring, an approximate understanding here becomes indirectly possible. Phylogeny uses these historical archives in the same manner and according to the same method as other historical disciples do. Just as the historian, by the help of chronicles, biographies, and letters, draws up a detailed representation of an event long past; as the archæologist by the study of inscriptions, pieces of sculpture, utensils, obtains the knowledge of the state of civilisation of a race long extinct; as the linguist by comparative investigation of all related living languages and their older written documents proves their development and origin from a common ancestral language, just in the same manner the naturalist of to-day, by the critical use of the phylogenetic archives, of comparative anatomy, ontogeny, and palæontology, arrives at an approximate understanding of the events which, in the course of unmeasured periods, have caused the change of forms in the organic life upon our globe. The history of the parental forms of organisms, or phylogeny, can therefore be proved by an exact method or by experiment just as little as this is the case with her older and more favoured sister geology. But the high scientific value of the latter is nevertheless now generally acknowledged. Only the ignorant to-day smile incredulously at the explanation that the colossal mountain chains of the Alps, the snow-covered summits of which we see glistening in the far distance, are nothing else but the hardened deposits of the sea. The structure of these stratified mountains and the nature of the fossils they enclose do not admit of another explanation; and yet it cannot be proved in an exact way. In the same manner all geologists now unanimously suppose a certain systematic succession of the mountain strata, corresponding to their different ages; and yet this system of strata is nowhere perfectly present upon the earth. But our phylogenetic hypotheses may claim the same value as is given to these generally recognised geological hypotheses. The only difference is that the enormous structure of hypotheses in geology is far more perfect, simple, and easier to understand than that of youthful phylogeny. *From "The Present Position of the Evolution Theory." Address by Professor Haeckel at the Munich meeting of the German Association. "Nature," Oct. 4.*

Tact.—A little tact often overcomes difficulties which much earnest endeavour fails to remove. Just as, a tiny bolt withdrawn, a gate opens which it would have taken many strong-armed men to cast down, so a word rightly spoken, though in itself a thing little enough, does that which volumes would not accomplish at another time. Tact is in no sense difficult of attainment; it needs, however, that its pupils should dispossess themselves of any self-opinionated manners, which make them contemptible and objectionable to others. If persons will persist in carrying with them an ungainly self-consciousness, a determination to be heard by every one, and to be believed in by every one, and to lord it over every one, they will soon be consigned to the limbo of unprepossessing and unpopular people, who forget that the outside world contains wiser and better people than themselves. Tact is quick to learn, quick to discern when it ought to be silent, as well as when it ought to speak. In this sense it is consistent with true humility, and with a wise recognition of individual imperfection. The victories of several of the greatest generals in history have been achieved by the sense of knowing when they were, for the time, beaten, and having the tact to retreat for the hour, and gather up their broken forces, rather than risk all upon a last struggle with superior strength; and some of the most successful statesmen have been characterised by a tact which knew how to speak right words at right seasons, who possess very slender powers of oratory indeed. Some there are who slight tact, because of its seeming lack of superiority over the endowments of others. They never like to overcome difficulties so much by skill as by force. A victory is nothing to them unless it be achieved by a hotly contested battle; a success loses its honour unless it be the result of strong competitive forces; but in reality they are mistaken, for in quiet skill there is as much manifestation of power as there is in hand-to-hand tussles with our compeers. Some there are who not only depreciate tact, but positively despise it. They are, for the most part, what may be called plain-spoken persons, and a very offensive class they are. It is particularly obvious that they bruise people's feelings without compunction, and it is equally clear that they have a particular dislike to being themselves treated to homilies by other plain-spoken persons. They are happier as speakers than hearers! Tact! what do they care for tact?—they have truth to tell, and isn't it right to tell it? With suchlike sophisms they smother over the fact that even truth must be spoken in love, and that the how and when to speak it are amongst the most important considerations that can occupy the minds of kind and thoughtful persons. There is a tact

even in telling the most disagreeable truths, and that man is little to be envied who despises a skill which, whilst it preserves the manliness which dares to speak the truth, also preserves the gentleness which desires to spare the feelings. *From "Cassell's New Popular Educator" for November.*

Answers to Correspondents.

APIARY (BEESWAX): *S. J. Conway.* No. 2: Take the combs and boil them in a coarse bag. After simmering about half-an-hour press the wax out into a pan of cold water, then melt it in the oven in a saucer. All the dregs will settle to the bottom, the rest will be the best wax. No. 3: Make a syrup, 3 lb. of lump sugar and 1½ lb. of water, just boiled to dissove the sugar, and feed them on the top of the hive with a pickle-bottle, with a piece of muslin tied over the mouth.

ARE TODEAS TREE FERNS? *E. Barrow.* According to the accepted classification Todea superba is horticulturally a Tree Fern, since it occurs with erect woody stems of considerable height—2 feet at least.

BOOKS: *C. D. E.* Williams' *Ornamental Stove and Greenhouse Plants* (Williams, Victoria Nursery, Upper Holloway), of which there are two small volumes, one devoted to flowering plants, the other to foliage plants, will exactly suit you. These are for indoor plants. Thomson's *Handybook of the Flower Garden* will supply the information respecting outdoor plants. Neither of them are expensive.

CALANTHES: *F. B., Ferndene.* We do not for a moment suppose that the nature of the soil has anything to do with the diseased condition of the Calanthe bulbs, from the fact of its having grown them fairly up to the point when disease began to show itself. The disease might be brought about by different means, the exact cause not being easy to hit upon without seeing the conditions under which they were grown, or fuller details. The most likely causes that occur to us are a soft condition of the growth brought about by a very humid atmosphere, insufficient air, and a position too far from the glass in the early stages of their growth, followed by a too moist state of the soil at the time the flower stems were about to appear, which has caused the roots (although these die annually) to decay before their time. The best examples of these we have ever had or seen were grown in shallow pans, suspended close to the roof; so treated the bulbs attained more than double their usual size, the biggest throwing up from three to four spikes each, often in addition to the two usually produced at the base, one or two from near the top as well. The largest spike from the base of one of these largest bulbs carried over a hundred and twenty flowers. They will grow in almost any description of soil, provided they get plenty of light, but, of course, must be slightly shaded from the sun.

CHRYSANTHEMUMS: *N. W.* See p. 562. Anticipated.

CUCUMBERS: *H. G.* The general treatment appears to have been correct. We should think the fruit has suffered from a cold draught, which has checked their growth; or possibly from a chilliog of the roots from the accidental use of cold water.

CHAMERANTHEMUM: *Duffer.* They are easily grown as stove herbaceous plants in a warm, moist pit, and increase readily by cuttings. They flower freely, and frequently bear fertile seed, by which they can also be increased.

FORCING LILACS: *M. M.* You should select good bushy plants of the common variety, pot them up, and force into flower in any hot, damp, and dark place.

HEATING: *Duffer.* If we understand your sketch, we would suggest as your best plan of accomplishing the object in view to distribute sufficient flow-pipe to heat the vinery, and then to add length enough of the return into the adjoining fernery to warm it to the temperature required.

HELIOTROPE: *P. W.* The seedling Heliotrope appears to be of a deep but bright purple, and forms a good-sized truss. Beyond this we can form no idea of its merit, as so much depends on habit and on its blooming properties. If you have presentable plants of it, you should send one to the next Floral Committee meeting at South Kensington, which will take place on December 4.

INSECTS: *G. R. S.* The caterpillar of the Goat Moth, Cossus ligniperda.—*J. v. Volx.* We found a few very minute, moderately active larvæ of a species of thrips on your Anthurium leaf. Repeated fumigations are, we believe, the surest remedy. *I. O. W.*

LATE GRAPES: *Derbyshire.* The best late keeping black Grape is the Lady Downe's Seedling, but we should, for our own use, grow only the Black Hamburgh and the White Muscat of Alexandria.

MARKET GARDENING: *A. E. A.* 1. Yes. If you invested the money judiciously and made the most of the ground. 2. It is impossible to answer this question without knowing more than you tell us. Very much depends upon the nature and quality of the ground, upon the measure of skill you can put into its management, and even upon the sort of thiogs you can find a market for. 3 and 4. It is also impossible to answer these questions without knowing what you intend to grow, and the cost of labour in your district. 5. Cuthill on *Market Gardening* (Groombridge), brief but practical and trustworthy. You might also gain some useful hints from Burbidge's *Horticulture*, published in Stanford's Industrial series.

MELONS: *C. Tyler.* Melon "Pine Cream" was certificated at a meeting held at Chiswick on October 10, 1877.

NAMES OF PLANTS: *H. M. K.* Euonymus europæus. —*E. E. E.* The Bouvardia appears to be B. jasminoides, which, however, we have not at hand for comparison. 1, Selaginella Poulteri; 2, S. stenophylla. There was no No. 3.—*H. G.* Lomaria gibba.—*M. R.* 3, Cereus flagelliformis; 4, Opuntia microdasys.—*Hayes.* Bocconia cordata. — *J. M. W.* Arundo Donax.

POLYPODIUM VULGARE VARIETY: *J. M.* Your variety is a very good one, and apparently distinct. It might be called variabile cristatum.

STEALING MUSHROOMS: *J. M.* asks, "If a person goes on another person's private ground and gathers Mushrooms, can he be prosecuted for stealing Mushrooms." Yes, certainly; but we should prefer to prosecute for trespass.

TERMS OF ENGAGEMENT: *W. B.* 1, Yes. You ought to have had a copy of the agreement at the time of signing; 2, Yes. You will be legally entitled to a quarter's notice or a quarter's pay, if the agreement is stamped, but not otherwise.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED. — Messrs. Cranston & Co. (King's Acre, near Hereford), Descriptive Catalogue of Selected Roses, and Catalogue of Forest and Fruit Trees, Conifers, Shrubs, &c.—R. Dean (Ranelagh Road, Ealing, London, W.), Catalogue of Florists' Flowers, Potatos, &c.—Messrs. C. Verdier (28, Rue Baudricourt, Paris), Trade List of Gladiolus, Lilium and other Bulbs, also List of Roses, Trees and Shrubs.

COMMUNICATIONS RECEIVED.—W. S. (next week).—J. S.—A. F. (next week).—E. J. H.—R. J.—S. and S.—T. W.—J. A. C.—A. D.—M. D.—L. H. D. (many thanks, kept for future use).—R. C. E.—E. W.—J. S.—F. A. F.—F. B.—A Constant Reader.—E. M.—S. M.—J. T. B.—C. S.—A. F. J. D.—F. S. & Co.—G. D.—H. M. Van Dorp.—R. L.

DIED.—On the 15th inst., at his residence, Rochford, Essex, GEORGE WOOD, Esq., solicitor, aged seventy-three years. Friends will please accept this intimation.

Markets.

COVENT GARDEN, November 22.

There are no alterations to note this week, trade being still quiet, with a short supply. Late Grapes, such as Alicante and Lady Downe's, are putting in an appearance, and are only cleared at low prices. Cobs very quiet. *James Webber, Wholesale Apple Market.*

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Azalea, 12 sprays ..	1 0– 3 0	Mignonette, 12 bun.	2 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, (Paper White), per doz...	2 0– 4 0
Calceolaria, p bun.	0 6– 1 0	Pelargoniums, 12 spr.	1 0– 3 0
Camellia blms., doz.	2 0–12 0	— zonal, 12 sprays	0 6– 1 6
Carnations, 12 blooms	1 6– 4 0	Primula, double, per bunch	1 0– 2 0
Chrysanth, 12 bun.	6 0–18 0	Pyrethrum	0 6– 1 0
Cornflower, 12 bun.	6 0– 9 0	Roses (indoor), doz.	1 6–12 0
Epiphyllum, 12 blms.	1 0– 3 0	Stephanotis, 12 spr.	6 0–12 0
Eucharis, per doz. ..	4 0–12 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz. ..	5 0–12 0	Tuberoses, 12 blms.	1 6– 4 0
Heartsease, 12 bun.	1 6– 6 0	Violets, 12 bunches	1 0– 3 0
Heliotropes, 12 spr.	0 6– 1 0		
Hyacieths, Rom. doz.	2 0– 4 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azalea, per dozen ..	30 0–60 0	Ferns, in var., p. doz.	4 0–18 0
Begonias, per doz. ..	6 0–12 0	Ficus elastica, each	2 6–15 0
Bouvardias, do. ..	12 0–24 0	Foliage Plants, various, each	2 0–10 6
Camellia, var., doz.	30 0–60 0	Fuchsias, per dozen..	6 0–12 0
Chrysanth., per doz.	5 0–12 0	Liliums in var., each	1 6– 6 0
Clematis	12 0–24 0	Mignonette, per doz.	6 0– 9 0
Coleus, per dozen ..	6 0– 9 0	Myrtles, do... ..	3 0– 9 0
Cyclamen, per doz...	12 0–24 0	Palms in variety, each	3 6–21 0
Cyperus, do... ..	4 0–12 0	Pelargon., scarlet, p. dozen	6 0– 9 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Valotta purpur., doz.	9 0–18 0
Erica Hyemalis, doz.	18 0–42 0		
— gracilis, per doz.	6 0–18 0		
Euonymus, var., doz.	6 0–24 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz. ..	2 0– 4 0	Herbs, per bunch ..	0 2– 0 4
Asparagus, Sprue, per bundle.. ..	1 6– ..	Horse Radish, p. bun.	4 0– ..
Beans, French, per packet	1 0– ..	Leeks, per bunch ..	0 2– 0 4
Beet, per doz. ..	1 0– 2 0	Lettuces, per score..	2 0– ..
Brussels Sprouts, p. bush.	6 0– ..	Mint, green, bunch	0 6– ..
Cabbages, per doz. ..	1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Carrots, per bunch..	0 4– 0 6	Onions, per bushel..	3 6– ..
Cauliflowers, per doz.	1 6– 4 0	— young, per bun.	0 6– ..
Celery, per bundle..	1 6– 2 0	Parsley, per bunch..	0 9– ..
Chilis, per 100 ..	3 0– ..	Radishes, per bunch.	0 1– 0 3
Cucumbers, each ..	1 0– 6 0	— Spanish, doz. ..	1 0– ..
Endive, per doz. ..	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	1 6– ..	Salsafy, per bundle	1 0– ..
Garlic, per lb. ..	0 6– ..	Seakale, per punnet	2 0– ..
		Shallots, per lb. ..	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz. ..	1 0– 2 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6– 5 0	Peaches, per doz. ..	20 0– ..
Grapes, per lb. ..	0 9– 6 0	Pears, per doz. ..	2 0– 4 0
Lemons, per 100 ..	8 0–12 0	Pine-apples, per lb...	3 0– 6 0
Melons, each ..	2 0– 5 0	Figs, green, doz. ..	1 0– 3 0
Nuts, Cobs, per lb...	0 4– 0 6	Walnuts, per bushel	5 0– 8 0
Oranges, per 100 ..	6 0–16 0		

SEEDS.

LONDON: *Nov.* 21.—The seed markets have lately been better attended, and more disposition has been manifested to operate in Clover seeds. As regards red Clover the chief demand has run upon fine qualities, and for these holders in France are endeavouring to obtain more money. As yet there is no supply to hand of English red; for the few samples which have been shown no values have been fixed. At present there is no bulk of seed pressing from the United States; the American home demand has this season been unusually large, and as the growers there appear in no hurry to market their produce at the rates now current, no accumulation of stock at any of the western depots has taken place. At latest mail advices the supply in the important centre of Toledo was less than 2000 bags. The recent advance in Alsike is estimated at from £8 to £10 per ton. White Clovers have also lately hardened in value to the extent of 2s. to 3s. per cwt. In Trefoil there is for the moment scarcely any business doing. Mustard and Rape seed have moved off slowly on former currencies. The low quotations for Canary seed have induced a certain amount of speculative buying. Owing to the milder weather the sale for blue Peas has somewhat fallen off. Linseed keeps steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday, although there was perhaps more inquiry for certain classes of grain, there was an absence of life in the trade, and prices, which were under the influence of heavy foreign importations, showed no distinct tendency to recover. Indeed, as regards Wheat and flour, sales were here and there pressed, at some decline from the reduced prices of last week. Barley was well held, especially fine malting produce. Malt was dull on previous terms. Oats were a slow sale, while prices were as before. Maize realised the full prices of last week without difficulty. Beans and Peas were unaltered.—Trade on Wednesday was dull. No new feature presented itself. Unsettled weather and heavy foreign importations offered a certain check to business, and in the absence of any general pressure to sell quotations were much the same as on Monday. The tone as regards spring corn was moderately firm.—Average prices of corn for the week ending November 17:—Wheat, 51s. 8d.; Barley, 43s. 8d.; Oats, 24s. 9d. For the corresponding week last year:—Wheat, 48s. 1d.; Barley, 39s. 3d.; Oats, 25s. 5d.

CATTLE.

At the Metropolitan market on Monday there was a larger number of beasts on offer than for some time past; the quality, however, was, on the whole, inferior. Some few of choicest descriptions realised 6s. 2d. per 8 lb., but these were very scarce, and our quotations more fairly represent the average. There were a few more sheep; there was, however, a demand for them, but late rates were not so freely given. Trade was dull for calves. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 6d. to 6s.; calves, 4s. 6d. to 6s.; sheep, 5s. 4d. to 5s. 8s., and 6s. 4d. to 7s.; pigs, 4s. to 5s. — Thursday's cattle trade was much as above reported. For fine breeds, both of beasts and sheep, the market was fairly steady, and Monday's prices were well supported, otherwise the tone was rather quiet, and quotations remain about the same. Calves were in moderate supply.

HAY.

The Whitechapel report for Tuesday states that trade was dull at barely previous quotations. The supply was fair. Prime Clover, 100s. to 137s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 105s.; inferior, 75s. to 85s.; and straw, 44s. to 54s. per load.—With only a moderate supply at market, trade on Thursday ruled rather quiet at the above prices.—Cumberland Market quotations:—Superior meadow hay, 105s. to 112s.; inferior, 80s. to 92s.; superior Clover, 132s. to 140s.; inferior, 100s. to 110s.; and straw, 54s. to 58s. per load.

POTATOS.

The Borough and Spitalfields markets reports note that good Potatos, of which the supply is not over-plentiful, meet with a steady demand at previous rates. Inferior Potatos remain dull. Kent Regents, 160s. to 190s.; Essex do., 110s. to 160s.; rocks, 110s. to 125s.; Victorias, 160s. to 180s.; flukes, 160s. to 170s.; and kidneys, 120s. to 140s. per ton.—The imports into London last week consisted of 83,991 bags from Hamburg, 20,483 bags 215 tons Antwerp, 7103 Bremen, 6106 Stettin, 4063 Ghent, 1358 Harlingen, 1801 Dunkirk, 1213 Rotterdam, 3470 Dantzig, 531 Brussels, 241 Boulogne, 134 Chaote, and 115 tons Rouen.

COALS.

At market both on Monday and Wednesday there was a good demand for house coals. The last quotations to hand are:—Walls End—Hetton, 20s.; Hetton Lyons, 17s. 9d.; Lambton, 19s. 6d.; Wear, 17s. 6d.; Tunstall, 17s. 9d.; East Hartlepool, 19s. 9d.

Estd. 1844.

For the best List of Choice Hyacinths, Tulips, Crocuses, Narcissus, &c., see our Beautifully Illustrated

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DUTCH FLOWER ROOTS
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For outdoor or open border decoration, contains the following liberal assortment:—

25 Hyacieths, choice mixed
18 Polyanthus Narcissus, mixed
12 Narcissus Poeticus
12 ,, double white
6 Campernelle Jonquils
25 Anemones, fine double
25 ,, fine single
50 Persian Ranunculi, mixed
50 Turban Ranunculi, in 4 varieties
150 Crocus, in 6 vars.
100 Snowdrops
12 Tulips, scarlet Van Thol
12 ,, Cottage Maid
12 ,, Yellow Prince
25 ,, double, mixed
12 ,, Rex Rubrorum
12 ,, late, mixed
12 Scilla amœna
2 Lilium candidum
12 Spanish Iris
9 Herbaceous and Alpine Plants,

WITH FULL CULTURAL DIRECTIONS.

Case, Packing, and Carriage Free to any Railway Station in England and Wales.

Other Collections, for Greenhouse or Conservatory, &c., 12s. 6d., 21s., 42s., 63s., and 84s. each.

From Mr. H. BENNETT, *Belle Vue Crescent, Clifton, Bristol. March* 10, 1877.

"I am glad to tell you that the Hyacinths, Tulips, and Crocus I had in the Autumn have given entire satisfaction; the flowers are splendid."

From R. PRONYCE, Esq., *Bathgate, N.B. February* 7, 1877.

"The Bulbs received from you in the Autumn have been particularly fine; some of the Hyacinths and Tulips now in bloom are large and beautiful, and have far exceeded any that I have had before."

DANIELS BROS.,
THE QUEEN'S SEEDSMEN, NORWICH.

Sole English Medallists for the Best Hot-Water Apparatus at the United States International Centennial Exhibition, Philadelphia.

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ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

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By Her Majesty's *Royal Letters Patent*

NEW PRICE LIST.

Boiler Number.	Length.	Width.	Height.	No. of Top Sections.	Surface Exposed to the Flame.	Calculated Heating Power. 4-in. pipe.	Recommended for 4-in. pipe.	Price.
	ft. in.	ft. in.	ft. in.		ft.	ft.	ft.	£ s. d.
1 A	2 0	1 6	1 10	2	13	520	400	10 0 0
2 A	2 0	1 6	2 2	3	17½	700	500	11 10 0
3 A	2 0	1 6	2 6	4	22	880	600	13 0 0
4 A	2 0	1 6	2 10	5	26½	1,060	700	14 10 0
5 A	2 0	1 6	3 2	6	31	1,240	..	16 0 0
6 A	2 0	1 6	3 6	7	35½	1,420	..	17 10 0
1 B	2 6	2 0	2 4	2	20	800	650	14 10 0
2 B	2 6	2 0	2 9	3	27½	1,100	750	17 0 0
3 B	2 6	2 0	3 2	4	35	1,400	850	19 10 0
4 B	2 6	2 0	3 7	5	42½	1,700	950	22 0 0
5 B	2 6	2 0	4 0	6	50	2,000	..	24 10 0
6 B	2 6	2 0	4 5	7	57½	2,300	..	27 0 0
0 C	3 0	2 0	1 11	1	18	720	700	16 10 0
1 C	3 0	2 0	2 4	2	27	1,080	1,000	20 0 0
2 C	3 0	2 0	2 9	3	36	1,440	1,300	23 10 0
3 C	3 0	2 0	3 2	4	45	1,800	1,600	27 0 0
4 C	3 0	2 0	3 7	5	54	2,160	1,900	30 10 0
5 C	3 0	2 0	4 0	6	63	2,620	..	34 0 0
6 C	3 0	2 0	4 5	7	72	2,880	..	37 10 0
0 D	3 6	2 6	1 11	1	24½	980	850	20 0 0
1 D	3 6	2 6	2 4	2	37½	1,500	1,500	25 0 0
2 D	3 6	2 6	2 9	3	50½	2,200	2,200	30 0 0
3 D	3 6	2 6	3 2	4	63½	2,540	2,540	35 0 0
4 D	3 6	2 6	3 7	5	76½	3,000	3,000	40 0 0
5 D	3 6	2 6	4 0	6	89½	3,580	..	45 0 0
6 D	3 6	2 6	4 5	7	102½	4,100	..	50 0 0
0 E	4 0	3 0	1 11	1	30	1,200	1,100	27 10 0
1 E	4 0	3 0	2 4	2	48	1,920	1,900	35 0 0
2 E	4 0	3 0	2 9	3	66	2,640	2,600	42 10 0
3 E	4 0	3 0	3 2	4	83½	3,340	3,300	50 0 0
4 E	4 0	3 0	3 7	5	101½	4,060	4,000	57 10 0
5 E	4 0	3 0	4 0	6	119½	4,780	..	65 0 0
6 E	4 0	3 0	4 5	7	137	5,480	..	72 10 0

We can supply Foundation Plates—which form Ash-pit—and Smokestacks, if wanted, thereby doing away with the necessity for even a single brick in their erection.

	A	B	C	D	E
	s. d.	s. d.	s. d.	s. d.	s. d.
Foundation Plate	35 0	45 0	60 0	75 0	90 0
Smokestack, Damper, and Soot-Door	30 0	30 0	40 0	40 0	40 0
Furnace and Ash-Pit, Frame and Doors; also Furnace Bars, Bearers, Dumb-Plate, &c. ..	30 0	40 0	50 0	60 0	70 0

Foundation Plates are arranged to heat the air before it is sent into the ash-pit at back, and furnace-doors to heat the air before its admission into the furnace, furnishing in fact two "hot-air" blasts to the furnace; the admission of large volumes of cold air being most injurious to the economical working of the furnace.

In preparation an entirely NEW SERIES of SEVENTY BOILERS, embracing a large variety suitable for small places, &c., and all specially adapted for low situations where shallow boilers are a necessity. Particulars on application.

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DWARF ROSES, on the cultivated Seedling Brier, of the leading Exhibition varieties, 9s. per dozen, package free. Cash to accompany order.
JOHN HOUSE, F.R.H.S., Eastgate Nurseries, Peterborough.

JOHN LUFF, St. Helen's Nursery, Hastings, offers as under, at low prices for Cash, to clear ground for other Stock; the plants have been twice and thrice transplanted, and are growing on high and exposed ground, and will move well. Samples at same rates:—
LIMES, 4 to 6 feet, 4s. per dozen; 6 to 8 feet, 9s. per dozen.
ELMS, 4 to 6, 40s. per 100; 6 to 8 feet, 50s. per 100.
SYCAMORE, 5 to 7 feet, 30s. per 100; 8 to 9 feet, 50s. per 100.
HORNBEAM, 4 to 6 feet, 10s. per 100.
NORWAY MAPLE, 4 to 6 feet, 15s. per 100; 6 to 9 feet, 30s. per 100.
FIR, Silver, 3 to 4 feet, 3s. per dozen; 4 to 5 feet, 6s. per dozen; 5 to 6 feet, 9s. per dozen.
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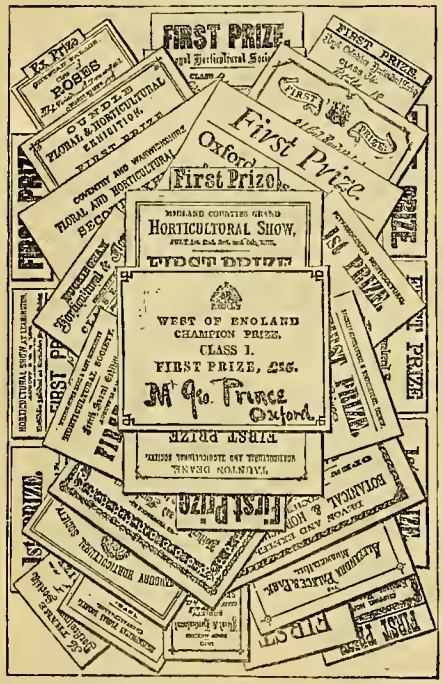

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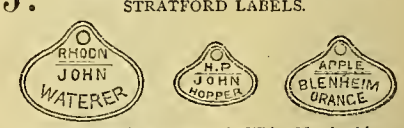

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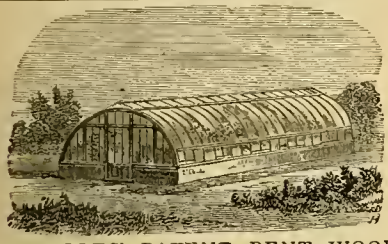

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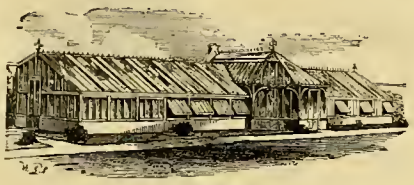

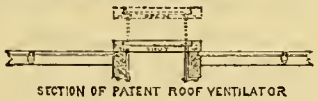

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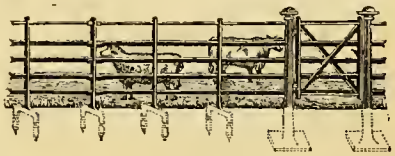

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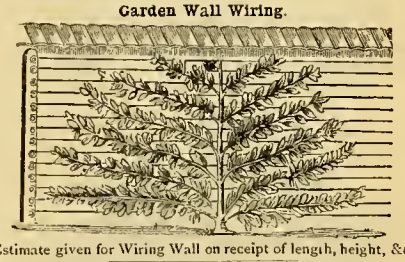

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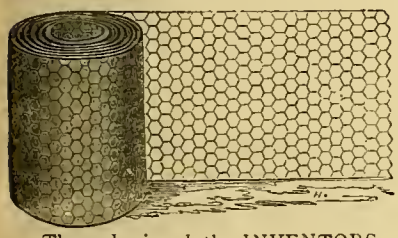

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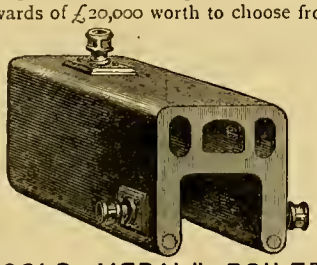

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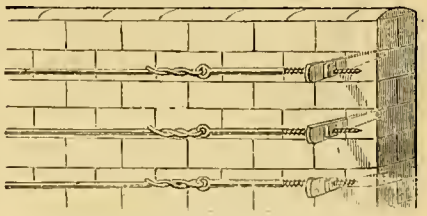

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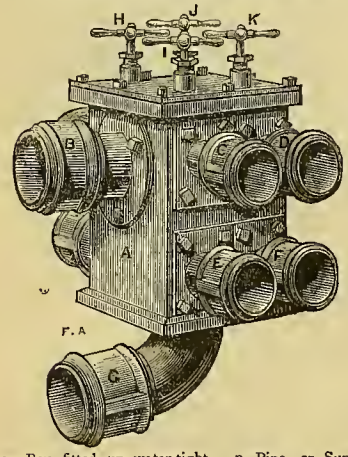

A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

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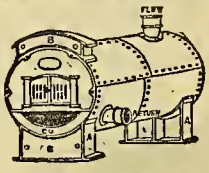

Copy of a Testimonial.

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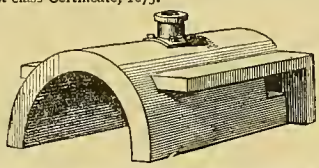

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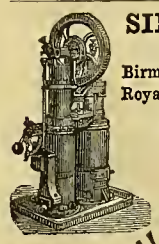

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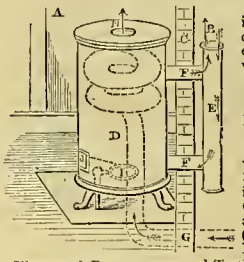

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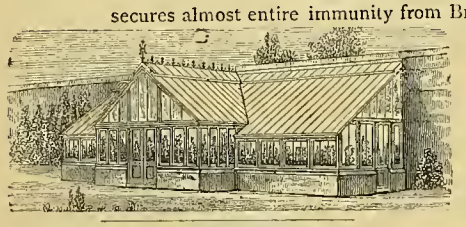

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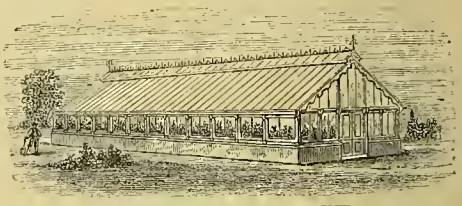

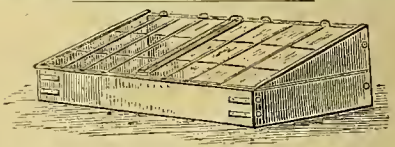

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 *are* 1*s. each.*

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on TUESDAY NEXT, December 4, in the Council Room, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS at 3 o'Clock.

WINTER GARDENS, SOUTHPORT.—GRAND SPRING FLOWER SHOW, MARCH 20 and 21. For Schedules apply to
A. CAMPBELL, Horticultural Superintendent.

LILIES.—Being an Importer of many thousands annually of choice Lilies direct from their native habitats, Mr. WILLIAM BULL can supply all the rare sorts in large or small quantities.
Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

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PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

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DOWNIE AND LAIRD have much pleasure in offering Show and Fancy Pansy Seed, saved from the finest named Flowers. Price on application.
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CHARLES TURNER is now prepared to execute orders for Standard and Dwarf ROSES in great variety. A Descriptive CATALOGUE on application.
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CRANSTON AND CO., King's Acre, Hereford.

WANTED, ENGLISH OAK, 2 to 2½ feet, and larger; SPANISH CHESTNUT, 2 to 2½ feet, and larger; PINUS LARICIO (true); all stout, transplanted, clean grown, and well rooted. Give sizes, quantity, and all particulars, to
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Planting Season, 1877-78.
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JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium, CATALOGUES free on application.
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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 6, at half-past 12 o'Clock precisely, a large importation of ONCIDIUM CRISPUM, O. VERRUCOSUM ROGERSI, O. SARCODES; some fine established plants of CATTLEYA SCHILLERIANA, C. MARGINATA, C. INTERMEDIA, C. LEOPOLDI; and choice LÆLIAS; several small collections of Established ORCHIDS; 700 tuberous rooted BEGONIAS from Ghent, cases of Araucarias, &c.

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Catalogues had of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

City Auction Rooms, 38 & 39, Gracechurch Street, E.C.

IMPORTANT SALE of a CHOICE COLLECTION of 300 Double CAMELLIAS and AZALEA INDICA, compact plants, 1 to 3 feet, well set with bloom-buds; 300 handsome Standard and Dwarf ROSES, of the best varieties; selected FRUIT TREES, hardy AMERICAN PLANTS, CONIFERÆ and EVERGREEN SHRUBS, ERICAS, EPACRIS, PRIMULAS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, E.C., on TUESDAY, December 4, at half-past 12 o'Clock precisely.

May be viewed the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Gospel Oak, N.W.

Mansfield Road Nursery, adjoining the Gospel Oak Railway Station.

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MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, on FRIDAY, December 14, at 11 for 12 o'Clock precisely, the whole of the NURSERY STOCK, consisting of a selection of Evergreen and Fruit Trees, a large quantity of choice Alpine and Herbaceous Plants, for which the Nursery has been celebrated; Camellias and Azaleas; 2 small GREENHOUSES. The LEASE of the NURSERY, 18 years unexpired, will be offered on the Premises prior to the Sale of the Stock. To any one with a small amount of capital at command desirous of embarking into the Nursery and Florist Business, this sale offers an excellent opportunity.

May be viewed. Catalogues and further particulars may be obtained of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

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CHRISTMAS TREES, 6 to 9 and 12 feet; LARCH, 2½ to 4½ feet; ASH; strong QUICK, and other strong Quick.

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Camellias and Azaleas, well set for Bloom,
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Prices on application.

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Bay Laurels and Hardy Heaths.

W. J. WATSON has about 8000 of each of the above to offer, extra fine plants, £8 to £10 per 1000. Free on Rails or Steamer.

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To Exhibitors and Others.

STOVE PLANTS.—A Private Grower, not having space enough, wishes to Sell some large plants, which are in excellent condition, viz.:—2 PANDANUS UTILIS, 1 CHAMÆROPS HUMILIS, 1 LATANIA BORBONICA, 2 CROTON VARIEGATA; all in No. 1 pots. Application, by letter or personal, will be attended to.

E. S. STILLWELL, Esq., Sion House, Ladywell, Kent, S.E.

TREES.—For Sale (from a Private Nursery, overstocked), at a low price for Cash:—

3000 ELM, 5 to 7 feet high.
500 SYCAMORE, 5 to 8 feet high.
500 MAPLE, 7 to 8 feet high.
700 LIME, 2 to 3 feet high.
700 LARCH, 3 to 4 feet high.
500 YEW, 3 to 4 feet high.
500 BOX, 2 to 3 feet high.

Mr. W. S. HOSLEY, Audley End, Saffron Walden, Essex.

Avenue Trees.

R. TUCKER has a large quantity to offer, cheap and good. HORSE CHESTNUTS, 8 to 10 feet, 9s. per dozen, 60s. per 100; LIMES, 8 to 10 feet, 10s. per dozen, 75s. per 100; 10 to 12 feet, 18s. per dozen. The above have good bushy heads. POPLARS, HORNBEAM, Silver BIRCH, SYCAMORE, English OAKS, Mountain ASH and ALDER, 8 to 10 feet, 4s. to 6s. per dozen. Also a large quantity of strong ASH and all other FOREST TREES, of which a Priced Catalogue will be sent, post-free, on application.

The Nurseries, Faringdon, Berks.

W. BALL AND CO. beg to offer the undermentioned PLANTS, all of which are strong and well established:—

AURICULAS, finest mixed Alpine, in 54-pots, 4s per dozen, 20s. per 100, very strong.
ALYSSUM SAXATILE COMPACTA, 6s. per 100
CLOVES, The Bride and The Ghost, pure white, sweetly scented, in 60-pots, very strong, 22s. 6d. per 100.
PANSY, Blue King, 8s. per 100.
" Cliveden Blue, 8s. per 100.
" Cliveden Purple, 8s. per 100.
" Cliveden Yellow, 6s. per 100.
" Dean's White, 6s. per 100.
PINKS, in twelve named varieties, in 60-pots, 25s. per 100.
PRIMROSES, double Yellow, 20s. per 100.
" single Lilac, 12s. per 100.
ROCKETS, double Purple, 2s. 6d. per dozen, 18s. per 100.
" double White, 2s. per dozen, 15s. per 100.
SILENE PENDULA COMPACTA, 2s. 6d. per 100.
STOCKS, Scarlet Queen, 2s. per 100.
TRITOMA UVARIA, 4s. per dozen, 28s. per 100.

All the above cheaper by the 1000. Orders amounting to 20s. boxes and packing free.

The Nurseries, Bedford Road, Northampton.

SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16s. per 100, £7 per 1000, or £60 per 10,000.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

CHRISTMAS ROSES, 20,000.
HEPATICA CŒRULEA, 8,000.
May be had from

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPIGELIA MARYLANDICA.—Beautiful perennial, of gay appearance. Strong flowering plants, with many crowns, at 64s. per 100.

J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

PANDANUS UTILIS.—Extensive stock of this splendid ornamental plant, at 20s. per 100, 180s. per 1000. Extremely healthy, 6, 8 and 10 inches high and upwards.

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N.B. English CATALOGUE post-free.

To Nurserymen and the Trade.

SEAKALE and ASPARAGUS for Forcing, Planting, &c. Finest in the Trade. Also fine TARRAGON. Price, &c., to

C. PAGE (late Henry Page), St. John's Nurseries, Walham Green, Fulham, S.W.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many Novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.

CATALOGUES post-free on application,
Lion Walk, Colchester.

GLADIOLI—GLADIOLI.
Fine English-grown Bulbs.

To secure some of these splendid exhibition varieties apply at once for T. W. D.'s 20s. Collection (all named). Sent carriage-free on receipt of cash. Post-office Order made payable at Yeovil.

T. W. DALEY, Nurseryman and Seedsman, Hendford, Yeovil.

Camellias and Azaleas, well Set for Bloom, of VARIOUS SIZES.

CHARLES TURNER has a fine healthy stock to offer of the above.

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DWARF ROSES, on the cultivated Seedling Brier, of the leading Exhibition varieties, 9s. per dozen, package free. Cash to accompany order.

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Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application

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Fruit Trees, Deciduous and Evergreen Shrubs, CONIFERÆ, &c.

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To the Trade, &c.

ROSES, Tea and Noisette, in pots; immense stock of fine plants.

EWING AND CO., The Royal Norfolk Nurseries, Newmarket Road, Eaton, near Norwich.

SEAKALE.—Extra fine Forcing, very strong clean roots, with good crowns, 8s. and 10s. per 100. Unknown correspondents are requested to remit cash with order.

GEO. CLARKE, Nurseries, Streatham Place, Brixton Hill, London, S.W.

Cucumber, Rollisson's Telegraph.

H. J. HARDY begs to offer, to the Trade, SEED of his SELECTED STOCK of the above, by the 100 Seeds or the Ounce. Cash or reference. Price on application to

H. J. HARDY,
Stour Valley Seed Grounds, Bures, Suffolk.

CHARLES B. SAUNDERS, Cæsarean Nurseries, St. Saviour's, Jersey, respectfully solicits Orders for the following NURSERY STOCK:—

ELMS, 5000 Guernsey, fine upright trees, 7 to 12 feet, 30s. to 100s. per 100.
OAKS, 5000 Evergreen, carefully grown, 8 inches to 8 feet, 8s. to 150s. per 100.
EUONYMUS, 10,000 Golden, Green, and Silver, 8 inches to 2 feet, 12s. 6d. to 50s. per 100.
BULBS, CAMELLIA STOCKS, CARNATIONS and PICOTEES, FRUIT and FOREST TREES, SHRUBS, &c.

CATALOGUES of which may be obtained on application.

BEAUTY OF HEBRON POTATO.—This new American sort is now offered for the first time. This valuable Potato originated in 1874 from seed bulbs of the Chili Red. The vines and leaves strongly resemble those of the Early Rose, only more vigorous. The plants appear above-ground very shortly after planting, and from that time continue to grow with great rapidity, outstripping all other varieties in strength of growth and luxuriance of foliage. On this account it will be understood they withstand better the ravages of the Colorado Potato Beetle than any other Potato yet brought before the public. The tubers, shaped like those of the Early Rose, are very smooth, slightly tinged with pink around the eyes, but attain a pure white colour during the winter. Their yield is really enormous. The tubers lying closely together in the hills, the labour of digging them is but slight. In point of earliness it may be ranked as ripening at least twelve days earlier than the Snowflake, and no less than three or four days ahead of the Early Rose. For culinary purposes its mealy qualities and richness and delicacy of flavour give it a precedence before all other varieties. Contrary to what is usually the case in all large specimens of Potatos the Beauty of Hebron almost invariably prove sound and solid to the core.

May be obtained of the principal Seedsmen of England.

J. M. THORBURN AND CO., 15, John Street, New York, U.S.A.

For Present Planting or Sowing.

CABBAGE PLANTS.—Gee's Superior Early Enfield Market, Drumhead, and Thousand-headed, all at 3s. per 1000; Purple Sprouting BROCCOLI, and BRUSSELS SPROUTS, 5s. per 1000; Winter LETTUCE PLANTS, Brown Cos and Hardy Green, at 7s. 6d. per 1000. Terms cash with order. Gee's noted stocks of Winter ONIONS, CAULIFLOWER, CABBAGE, and all other kinds of Seeds and Plants for present use, of best quality. CATALOGUES on application to FREDK. GEE, Seed and Plant Grower, Nurseryman, &c., Biggleswade, Beds.

SPECIMEN and FINE FOLIAGED TREES and SHRUBS for immediate effect, FRUIT TREES, ROSES, &c. An inspection solicited.
CATALOGUES on application.
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KENTISH FRUIT TREES.—One of the largest and cheapest stocks in the county, consisting of tall Standard CHERRIES, Standard, Pyramid, and Espalier APPLES, PEARS, and PLUMS, from 70s. per 100; GOOSEBERRIES, CURRANTS, &c.
CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers
T. EVES, Gravesend Nurseries. Established 1810.

FOR SALE.—Standard APPLES, named, 40s. and 60s. per 100; CUPRESSUS LAWSONI, 7 to 9 feet, 24s. and 30s. per dozen; also HOLLIES, AUCUBAS, EUONYMUS, CUPRESSUS, &c., for pots, at very low rates for Cash.
J. B. BUTTERFIELD, Nurseries, Baker Street, Enfield.

TO EFFECT A CLEARANCE
the following little LOTS are offered:—
5000 CHESTNUTS, Spanish, 1½ to 4½ feet, for 180s.
5000 ASH, 1½ to 5½ feet, for 150s.
5000 RHODODENDRONS, 3 to 4 ft., fine, 75s. per 100.
Free into railway truck.
CHARLES NOBLE, Bagshot.

Fruit Trees, &c.

N. LAWRENCE has to offer English OAKS, 6 to 8 feet, extra strong, at 5s. per dozen, 30s. per 100. Standard APPLE TREES from 75s. to 100s. per 100, all very good strong fruiting trees. Selection left to N. L., and finer varieties no one can have. Muscat of Alexandria GRAPE VINES, good planting canes, at 30s per doz. Cash with order
The Burnsfield Nurseries, Chatteris, Cambs.

Special Offer to the Trade.

C. DIMMICK AND SONS beg to offer their VICTORIA COS LETTUCE, and NONPAREIL RED BEET, in packets to the Trade only. Price will be furnished on application.
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To the Trade, &c

LIMES, large Red-twigged; Giant and other ELMS; HORSE CHESTNUTS, &c.; extra fine, clean, well grown, and well rooted trees, suitable for Street or Avenue Planting, or for Immediate Effect in Parks, &c. Particulars and prices on application to
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Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

To the Trade.
AGRICULTURAL and GARDEN SEED.

H. AND F. SHARPE'S WHOLESALE SPECIAL CATALOGUE of HOME-GROWN SEEDS is now ready, and will be forwarded on application. Every variety named in it is of the very finest quality in every respect. The prices are very low.
Seed Growing Establishment, Wisbech.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.
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THE NURSERIES,
Wandsworth Common, Garratt Lane, and Tooting.
The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to
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The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

SPECIAL OFFER of FRUIT TREES, &c., on Land that must be cleared this season.
2,000 CHERRIES, Bigarreau, strong, standard.
600 „ Morello, strong, trained.
10,000 PLUMS, standard and pyramid.
2,000 PEARS, William and Hessel, pyramid.
400 APPLES, Wellington, maiden.
8,000 CURRANTS, red.
10,000 CRAB and PEAR STOCKS, strong.
2,000 LIMES, strong, 10 to 12 feet.
T. EVES, Gravesend Nurseries. Established 1810.

Nursery Stock.

TO be SOLD, at low prices, as the ground must be cleared:—
SPRUCE FIR, from 7 to 12 feet.
BEECH, 8 to 9 feet.
BIRCH, 14 to 15 feet.
LIMES, 12 to 14 feet.
NORWAY MAPLE, 14 to 16 feet.
PINUS AUSTRIACA, from 5 to 7 feet.
SCOTCH FIR, 6 to 8 feet.
OAKS, English, from 7 to 10 feet, &c.
Prices on application to
HY. MINCHIN, The Nurseries, Hook Norton, Oxon.

Seakale, Asparagus and Rhubarb.

ROOTS FOR FORCING.

EXCEPTIONALLY FINE, VERY LOW PRICES

For Special Quotations apply to
H. THORNTON,
12, MAXWELL ROAD, FULHAM, S.W.

The Best Potato.

SUTTON'S

THE HEAVIEST CROPPER.

THE LEAST LIABLE TO DISEASE.

MAGNUM BONUM.

Mr. CHARLES PENNY, Head Gardener to H.R.H. the Prince of Wales, says:—
"I find Magnum Bonum the best Potato I ever ate. In flavour it is superior to any variety known."

Specimens of Sutton's Magnum Bonum Potato may be seen on

Messrs. SUTTON'S SPECIAL STAND
AT THE
BIRMINGHAM CATTLE SHOW,

And the Inspection of Visitors to the Show is respectfully invited.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1806,)
ROSE GROWERS,
TREE, PLANT, BULB, AND SEED MERCHANTS,
WALTHAM CROSS,
HERTS,
Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.
Priced Descriptive Catalogues free by post.

Rare Dendrobiums.

MR. WILLIAM BULL has just received from Torres Straits an importation of several hundreds of good plants of the beautiful DENDROBIUM BIGIBBUM SUPERBUM, and can now offer this hitherto costly Orchid, good plants, with stems about 18 inches long, 1 guinea each, or three plants for 2 guineas; a few very fine strong plants, 2 guineas each.
Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.
NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING," price 21s. and 42s. each. For Detailed List and Descriptions, see BULB CATALOGUE.
NEW FIG, "HARDY PROLIFIC," price 10s. 6d. each. Extra sized fruiting plants, 21s. each.
B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Fruit and Forest Trees, Ornamental Shrubs,
SEEDS, &c.

J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.
The "ORCHARDIST," price 3s. 6d. The best work on Fruit Trees and their cultivation in the English language.

FOREST TREES,
well transplanted and good.
LARCH, 2 feet, fine and good leads.
FIR, Scotch, 1 to 1½ foot, 1½ to 2 feet, twice transplanted.
„ Spruce, 1½ to 2 feet, 2 to 2½ feet, twice transplanted.
Send for samples and prices to
W. JACKSON AND CO., Nurseries, Bedale, Yorkshire.

To the Trade Only, for Cash on Delivery.

HELLEBORUS NIGER.—A few hundreds of blooming plants, £5 per 100
DIELYTRA SPECTABILIS, strong, 20s. per 100.
VESUVIUS GERANIUM, bloom splendid trusses, 10s. per gross.
THOMAS KITLEY, Oldfield Nursery, Bath.

Pansies, Pansies.

WILLIAM PAUL, Paisley, N.B., has upwards of 20,000 Show and Fancy PANSIES, in splendid condition, 4s., 6s., to 12s. per dozen.
W. P. was awarded Silver Medal and six First Prizes at Scottish Pansy Show, June, 1877. First Prize of £6 for 24 Show Pansies (open to all) at Paisley, July, 1877. First Prize for 24 Pansies, at Newtownards, Ireland, July, 1877, &c.
Orders carefully forwarded by Post or Rail. The Trade supplied.

LADY HENNIKER APPLE.—
FINE STANDARDS, 2s. 6d. each, 24s. per dozen.
PYRAMIDS, 2s. 6d. to 3s. 6d. each.
ESPALIERS, 5s. to 7s. 6d. each.
MAIDENS, 2s. each.
Price to the Trade on application to
EWING AND CO., The Royal Norfolk Nurseries, Eaton, near Norwich.

Laurels, Larch, Spruce, Scotch Fir.

REUBEN TOWLER has to offer 2000 fine transplanted LAURELS, 3 to 4 feet, well furnished plants, splendidly rooted; also 40,000 strong LARCH, 2½ to 3½ feet, 2-yr. bedded, 2-yr. transplanted, fine, healthy, and well-rooted; 50,000 SPRUCE, 1 to 2½ feet, fine feathered stuff; 20,000 good SCOTCH FIR, 1 to 2 feet. Price on application.
Mowbray Vale Nurseries, Bedale.

Florists' Flowers, and Roses.
Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.
Hale Farm Nurseries, Tottenham, London.

Cabbage Plants, Cabbage Plants.

S. BIDE can supply, for Cash, good strong plants of Enfield Market, Imperial, Improved Nonpareil, and Drumhead or Cattle CABBAGE, at 3s. per 1000, free on rail and package free; Red or Pickling CABBAGE, 5s. per 1000. All the above are grown on light land, and are beautifully rooted. Send orders early to
S. BIDE, Alma Nursery, Farnham, Surrey.

To Large Planters and the Trade.

LIMES, Red-twigged, from 6 to 7, 7 to 8, 8 to 10, and 10 to 12 feet.
YEWS, English, well furnished, 2½ to 3, 3 to 4, and 4 to 5 feet.
CHESTNUT, Horse, 6 to 12 feet.
LAURELS, 2½ to 3, and 3 to 4 feet.
OAKS, Hedge-row, and Standard ROSES, &c.
Prices and sample dozens on application.
A. GODWIN AND SON, Ashbourne, Derby.

HYDRANGEA PANICULATA GRANDIFLORA.—We can offer extra strong, bushy plants of this really fine, hardy shrub, 2 to 3 feet high, at 18s. and 24s. per dozen. It should be known that this is quite deciduous, and (unlike the commonly known Hydrangeas, which only bloom on the tops of the ripened shoots of the preceeding year), flowers on the young shoots of the current one, and so is sure to flower where the others do not.
RODGER, McCLELLAND AND CO., Nurserymen, Newry.

To the Trade.
SEED POTATOS.

H. AND F. SHARPE'S SPECIAL PRICED LIST of SEED POTATOS is now ready. It comprises all the best sorts, both English and American. They have all been grown from carefully selected stocks, are free from disease, and the prices will be found very reasonable.
Seed Growing Establishment, Wisbech,

MESSRS. CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, London, W., have much pleasure to offer the following very beautiful and interesting NEW FRUITS, now offered by them for the first time :—

RUSSIAN TRANSPARENT APPLE.—In the *Journal of Horticulture*, December 21, 1876, "J., Lincolnshire," describes this valuable Apple as giving a "never-failing crop," and as being "a rent-paying tree" for cottage gardens. Mr. BEULAH, an experienced Lincolnshire Orchardist, confirmed this evidence of the usefulness and profitableness of this much neglected but desirable Apple. A tree that bears a never-failing crop, of excellent quality, as stated below by Dr. HOGG, must be as near perfection as possible, and a desideratum that cannot fail to be appreciated by Orchardists in general. The Russian Transparent Apple was brought from Moscow during Napoleon's campaign in Russia, by General Boucheret, who, noticing its hardiness and free growth, and believing it would be suitable for English gardens, brought a quantity of grafts to his home in North Lincolnshire, round which it became and has remained up to this time localised; and now, through the kindness of Mr. Beulah, we have been enabled to purchase all the available grafts from the original stock.

The following is from Dr. HOGG's *description*:—"Fruit large, roundish, somewhat oblate, narrowing towards the crown, where it terminates in several prominent ridges, flat at base; skin smooth and shining, grass green, strewed with large russet dots. Eye closed. Flesh very tender and juicy, with a pleasant sub-acid flavour, and a peculiar and agreeable aroma. I am convinced that this is one of the most valuable culinary Apples in cultivation, and is worthy of more than local fame."

Messrs. Charles Lee & Son have much confidence in introducing this desirable and profitable Apple to more extended cultivation. Strong Maiden Plants now ready, price 7*s*. 6*d*. each.

HENSON'S SEEDLING GOOSEBERRY.—This excellent variety was figured in the *Florist and Pomologist* for May, 1874, a First-class Certificate having been awarded to it by the Fruit Committee of the Royal Horticultural Society in 1873. It was described as "a new and distinct variety of exceedingly good quality, of the hairy red section, and a good dessert fruit of medium size."

Messrs. Charles Lee & Son having purchased the entire stock of this valuable Gooseberry, they are now prepared to distribute it to the Public. Price per Plant, 3*s*. 6*d*.

The usual discount to the Trade.

PLANTING SEASON.

FOR IMMEDIATE EFFECT.

JAMES IVERY & SON

Beg to offer well grown stuff of the following, at very low prices, being overstocked with them :—

LAURELS, fine bushy p'ants, 6, 7, and 8 feet.
YEWS, fine bushy plants, 6, 8, and 10 feet.
GREEN HOLLIES, fine bushy plants, 5, 7, and 9 feet.
TREE BOX, fine bushy plants, 5 to 6 feet.
IRISH YEW, fine bushy plants, 6, 7, and 9 feet.
UPRESSUS LAWSONIANA, fine bushy plants, 10 to 12 feet.
ARCH FIR, 8 to 10 feet.
PINUS AUSTRIACA, 6 to 10 feet.
,, STROBUS (Weymouth Pine), 6 to 10 feet.
ARAUCARIA IMBRICATA, splendid specimens, 8, 10, and 20 feet.
PINUS EXCELSA, splendid specimens, 10, 15, and 20 feet.
SPRUCE FIR, splendid specimens, 8, 10, and 12 feet.
SILVER FIR, splendid specimens, 10 to 12 feet.
SYCAMORE, 10 to 15 feet.
BIRCH, 10 to 12 feet.
AILANTUS GLANDULOSA, 8 to 10 feet.
POPLARS, in variety, 6, 8, and 9 feet.
LIMES, very fine, straight stems, 10, 15, and 20 feet.
NUTS, various, large quantities, including many of Webb's new kinds, 4, 6, and 8 feet.
WALNUTS, standards, fine heads, stems 5 to 6 feet.
MULBERRIES, Standards, fine heads, stems 5 to 6 feet; probably the largest and best stock in the kingdom.

Also a large collection of GENERAL NURSERY STOCK too numerous to mention.

Prices on application at
THE NURSERIES, DORKING, SURREY.

SPRING FLOWERING PLANTS.

ANEMONE FULGENS, strong plants, established in pots, 1*s*. each, 10*s*. per dozen, 75*s*. per 100. This is the most dazzling scarlet, and commences to open its flowers in January and continues until May. Most invaluable for the spring garden, and also for cutting, as it opens its flowers just as well under artificial as real light.
CARDAMINE PRATENSIS, fl. pl., Double Lilac, flowers most profuse, first-rate spring flower, 25*s*. per 100.
PRIMROSE, Double Crimson (true), 18*s*. per dozen, 140*s*. per 100.
,, Double Crimson-Purple, fine variety, often throwing up its flowers in scapes, and continuing long in bloom, 6*s*. per dozen, 45*s*. per 100.
,, Double Yellow, 4*s*. per dozen, 25*s*. per 100.
,, Double Lilac, 3*s*. per dozen, 16*s*. per 100.
,, Double White, 3*s*. per dozen, 20*s*. per 100.
,, Single Yellow, flowering in scapes, most continuous, 6*s*. per dozen, 40*s*. per 100.
POLYANTHUS, strong fine strain, 3*s*. per dozen, 12*s*. 6*d*. per 100.
PHLOX, verna, 4*s*. per dozen, 20*s*. per 100.
,, setacea, 4*s*. per dozen, 20*s*. per 100.
WALLFLOWERS, Single, Harbinger, Tom Thumb, yellow and early dark brown, 1*s*. 6*d*. per dozen, 8*s*. per 100.
,, Double Germans, eight distinct colours, separate, very strong, 1*s*. 6*d*. per dozen, 8*s*. per dozen.
,, Double, Golden Drop (pots), 3*s*. 6*d*. per doz., 25*s*. per 100.
,, Double, black and striped (pots), 4*s*. per dozen.
DAISY, Double Crown, very large, 3*s*. 6*d*. per 100.
,, Snowball, fine, 3*s*. 6*d*. per 100.
,, Crimson, 5*s*. per 100.
,, Aucubæfolia, 10*s*. per 100.
,, Small White French and Carmine French, two very pretty sorts, 7*s*. 6*d*. per 100.
,, Cœrulea (Blue Daisy), 4*s*. per dozen.
IRIS, pumila, 3*s*. per dozen.
MYOSOTIS, rupicola (pots), grows 3 inches high, a gem, 6*s*. per dozen.

RODGER, McCLELLAND AND CO., Nurserymen, &c., Newry.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

DWARF ROSES

ON THE

CULTIVATED SEEDLING BRIER.

The only establishment where this stock is used exclusively for Roses.

CATALOGUES ON APPLICATION.

GEORGE PRINCE,
14, MARKET STREET, OXFORD.

VINES, FRUIT TREES, EVERGREENS, SHRUBS, &c.

CATALOGUES Post-free.

PLANTING and FRUITING CANES, well ripened, with good fibrous roots, of the undermentioned, 2*s*., 2*s*. 6*d*., 3*s*. 6*d*.. 5*s*., and 7*s*. 6*d*. each :—Barbarossa, Pearson's Golden Queen, Dr. Hogg, Royal Muscadine, Black Hamburgh, Black Alicante, Madresfield Court, Lady Downe's, Gros Colman, Foster's Seedling, Buckland's Sweetwater, Muscat of Alexandria, West's St. Peter's, Venn's Black Muscat.

APPLES and PEARS, fine Pyramid, 9*s*. to 18*s*. per dozen.

PEARS, Dwarf-trained, exceedingly fine trees, 30*s*. per dozen.

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PLANTS, &c., for CONSERVATORY DECORATION.—Solanums, Bouvardias, Cyclamen, Cytissus, Poinsettias, Abutilons, Begonias, 12*s*. to 18*s*. per dozen, all for immediate effect; Ghent Azaleas, Rhododendrons, Kalmias, Ardromedas, Azalea indica, all full of buds, for forcing, 30*s*. per dozen; Spiræas, Dielytras, 5*s*. per doz.

SPRING BEDDING PLANTS, BULBS, FLORISTS' FLOWERS, HERBACEOUS PLANTS, &c.—See Advertisements in *Gardeners' Chronicle* from October 20 to November 24, for List and Prices.

CATALOGUES of above, Roses, Fruit Trees, &c., post-free.

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OLDFIELD NURSERY, ALTRINCHAM.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to

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SYCAMORE, 5 to 7 feet, 30*s*. per 100; 8 to 9 feet, 50*s*. per 100.
HORNBEAM, 4 to 6 feet, 10*s*. per 100.
NORWAY MAPLE, 4 to 6 feet, 15*s*. per 100; 6 to 9 feet, 30*s*. per 100.
FIR, Silver, 3 to 4 feet, 3*s*. per dozen; 4 to 5 feet, 6*s*. per dozen; 5 to 6 feet, 9*s*. per dozen.
,, Spruce, 3 to 4 feet, 6*s*. per dozen; 4 to 5 feet, 9*s*. per dozen; 5 to 6 feet, 12*s*. per dozen.
,, Scotch, 2 to 4 feet, 12*s*. per 100; 4 to 6 feet, 15*s*. per 100; 6 to 8 feet, 25*s*. per 100.
ARBOR-VITÆ, American, 2 to 3 feet, 4*s*. per dozen; 3 to 4 feet, 6*s*. per dozen.
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YEWS, English, 2 to 3 feet, 8*s*. per dozen; 3 to 4 feet, 12*s*. per dozen; 4 to 5 feet, 18*s*. per dozen.
ASH, 2 to 4 feet, 25*s*. per 1000.
HOLLIES, Green, 1½ to 2½ feet, 5*s*. per dozen; 2½ to 3 feet, 6*s*. per dozen.
ASPARAGUS, 20,000 Grayson's Giant, 2-yr., 2*s*. per 100.
,, 20,000 Grayson's Giant, 3-yr., 3*s*. 6*d*. per 100.

Extra Large Trees and Shrubs for Immediate Effect.

WILLIAM IRELAND begs to offer the following :—

ABIES DOUGLASII, 7 to 9 feet, 24*s*. per dozen.
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EXTRA STRONG—BEAUTIFULLY TRAINED.

	2-yr. Cordons and Palmettes. Per 100.
APPLES, on Crab and on Doucin	42*s*.
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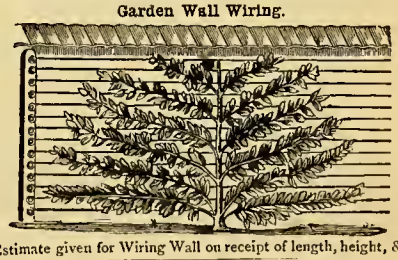

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This beautiful and distinct variety was raised by Mr. Douglas, Loxford Hall Gardens, and is a hybrid between A. californica and A. chrysantha. The flowers are of a large size, the centre petals being of a clear yellow colour, and forming a very effective contrast to the deep orange-red of the sepals and spurs. In habit of growth it is intermediate between the parents, and produces its lovely flowers in great profusion. It was awarded First-class Certificates by the Royal Horticultural and Royal Botanic Societies, and is a decided acquisition to this class of hardy spring-flowering plants. The *Floral Magazine* of October gives a very faithful coloured illustration of this charming variety.

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This is another very fine hybrid raised by Mr. Douglas, and is the result of a cross between A. cœrulea and A. chrysantha. It is exactly intermediate between the parents, the centre petals being clear sulphur-yellow, and the spurs and sepals a charming shade of pale blue. The flowers are large and well opened, partaking most of the character of A. cœrulea. The plant is perfectly hardy and of good habit, and is an important addition to the old but pretty genus of Columbines.

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The following description is taken from the Royal Horticultural Society's report of the great trial of Peas at Chiswick, in 1872:—

"A cross between Dillistone's Early and Alpha. The plant has the habit of Dillistone's Early. Stem 2½ to 3 feet, simple, producing from seven to eight pods singly. The pods are small, rounded in form, slightly curved, very tightly filled, of a light green colour, and contain about six fair-sized Peas of a fine colour and good flavour. Ripe seed small, round, blue. Sown February 23, first flower opened May 9, was in full flower May 15, slats appeared May 21, fit for use June 26. The earliest Pea in the collection, being three days earlier than Dillistone's Early, and six days earlier than Sangster's No. 1. Received a First-class Certificate."

It is also somewhat similarly described in Hogg's *Year Book* for 1873, page 87.

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VEITCH'S SELF-PROTECTING AUTUMN BROCCOLI.

A very valuable Broccoli for autumn and early winter use. The plant is of robust but upright growth, and the heads, which are beautifully white, firm and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

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This extremely valuable variety is perfectly distinct from any other sort. The heads are magnificent, beautifully white, large, firm, and compact, and being thoroughly protected by the foliage, remain longer fit for use than any other kind.

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LETTUCE, "EARLY PARIS MARKET."

This distinct and very handsome variety of Lettuce is much used in the Paris Market Gardens. It hearts very quickly, and we believe it will prove invaluable for forcing purposes.

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THE

ILLUSTRATED GUIDE

FOR

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Spring, 1878.

Containing 116 pages of beautifully illustrated Letterpress, complete Directions for the successful Management of the Kitchen Garden and Flower Garden throughout the year, with Original Articles on the Cultivation of various Flowers and Vegetables, a Select List of Choice Kitchen Garden and Flower Seeds, Lilies, Gladioli, Seed Potatos, &c. Also a superbly finished Coloured Plate, the whole enclosed in a charmingly beautiful Cover of a new and elegant design.

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"This is the most tasteful and best executed thing of the kind we ever remember having seen." *The Country.*

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EDWARD TAYLOR

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MR. ROBERT BLACK,

whose great experience and practical knowledge of every department of his business enables Mr. Taylor with the greatest confidence to recommend him as his successor.

In reference to the above

ROBERT BLACK

(for some time a representative for the Lawson Seed and Nursery Company) respectfully intimates that he has purchased the old established business, and in thus beginning on his own account begs to solicit a liberal share of public support, as well as a continuation of the patronage so long bestowed upon his predecessor.

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Are plentifully stocked, and in fine condition.

THE SEED STOCK

WILL COMPRISE ALL

AGRICULTURAL and GARDEN SEEDS

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FINEST QUALITY ONLY.

CATALOGUES are in preparation, and R. B. trusts that his past experience in the Nursery and Seed Business may secure him the confidence of his friends and future customers.

ROBERT BLACK,

SUCCESSOR to MR. EDWARD TAYLOR.

SATURDAY, DECEMBER 1, 1877.

THE BATTLE OF LIFE.

INDEPENDENTLY of the attractive nature of the study, man is deeply interested in the mysteries of the "struggle for existence" among plants and animals; but it is only within comparatively recent years that we have been made aware of the universality and extent of alternate preying upon each other exhibited by organised beings, and the varied means of defence according to their several requirements possessed by different plants and animals. Some of the phenomena of weather also exercise a disturbing and destructive influence. Perhaps it is not going too far to assert that not a single species of plant or animal enjoys immunity from the predatory attacks of other plants or animals, though, of course, individuals under favourable circumstances may lead an unmolested life and die in peace and fulness of years. As all plants have enemies, either animal or vegetable, or both, it is of the greatest importance to the gardener to ascertain what they are in each case, what natural protecting agents against them the plants possess, and, in the event of their inadequacy, what artificial means can be provided to secure the perfect development of the plant. When one of the enemies has been discovered (it may be only a gardeners' enemy), it is necessary to act with circumspection, or we may by destroying a certain kind of bird favour the propagation of a still more rapacious insect. In some parts of France small birds have been almost exterminated, and the consequence is, that insects have increased enormously, some of them in the larva state destroying the crops by attacking them underground. On the other hand, in Algeria sparrows have been preserved, because it was believed that they fed upon the locusts, and now they exist in such countless multitudes that they devour the grain of acres upon acres of corn, and carry away tons of straw to build their nests.

With regard to the discovery of effective and practicable means of destroying or preventing the spread of some of the most formidable of the indirect foes the cultivator has to contend against, it must be admitted that it is much easier to say that it ought to be made than to make it. We can protect a Cabbage from a cow or a caterpillar, and the mildew of the Grape Vine is easily subdued with sulphur; but there remain, among others, two notable unconquered enemies, the one an animal and the other a vegetable organism. As may be inferred, we allude to the Vine-louse (Phylloxera vastatrix) and the Potato-fungus (Peronospora infestans). Unfortunately there appears to be no assured safety in "Salus;" but a fortune awaits the person who shall find a remedy that can be practicably and profitably applied for either of the pests mentioned. The loss these two organisms have conjointly caused is almost incalculable, and as they operate underground it is to be feared that we may have long to wait for a remedy. Still it is not impossible that some simple and inexpensive substance may yet be found to possess the desired power.

Turning to the consideration of the natural weapons and means of plants for self-preservation and for ensuring the perpetuation of their kinds, we are lost in admiration of the endless variety of provision to secure this end. But it

is a singular fact that many plants under cultivation lose their preservatives against the unfavourable influence of animals. Thus some thorny plants produce no thorns, the fruit of others changes in flavour or consistence, &c. It is true that the conditions under which plants grow in a wild state often seem to be favourable to the development of certain characteristics of a plant which also serve to protect it from extinction by browsing animals or other agents. The foliage of Roses, Brambles, and Whitethorn has a pleasant flavour, and would doubtless be greedily devoured by animals if not protected by prickles. In connection with this it may be observed that trees are rarely spiny; and prickly or spiny shrubs not only protect themselves, but also other plants which grow under them or amongst them. Succulent plants, such as most Cacti and the Cactus-like Euphorbias, are armed with most formidable prickles, the absence of which would leave the plants at the mercy of animals who would slake their thirst with the juicy tissues. Plants that affect a sandy soil usually develope an enormous root-system in proportion to the part above-ground, and thus not only secure a hold for themselves, but likewise prepare the ground for other species.

An efficient protection that many plants enjoy in common against the effects of cold of winter or drought of summer, lies in the capability of their seeds to bear extreme temperatures without injury, and some of them moisture for a considerable period without rotting. On the other hand some seeds soon lose their germinating force. The seed of some of the Willows, for instance, loses its vitality in a few days after it is freed from the seed-vessel. The seeds of many small edible fruits are protected from destruction by a bony endocarp, or stone, which passes undigested through the stomachs of animals, and cases are on record of such seeds retaining their power of growing even after having undergone the process of cooking. In the arid parts of Australia, where, it is asserted, spontaneous fires occasionally break out and consume or kill the greater part of the vegetation, many of the trees have hard, woody seed-vessels, which escape the fleeting flames and afterwards burst open and free the seeds. Oftentimes trees are found bearing the closed seed-vessels of several successive seasons. Perennial herbaceous plants in cold climates enjoy the advantage of their root-stocks being in a warmer medium than the atmosphere during winter. In arctic and alpine regions vegetation is covered with a thick mantle of snow during the winter months, and is thus probably never exposed to a relatively great degree of cold. The foregoing means for the preservation of plants are only a few of the innumerable ways in which their reproduction or propagation is ensured.

In the form of a supplement to the *Botanische Zeitung*, Mr. Otto Kuntze has collected an immense mass of material on the Preservatives of Plants from Animals and Unfavourable Weather. A second part of this supplement is devoted to the exposition of a theory of an original fresh-water sea; but we reserve that for notice on some future occasion. Mr. Kuntze has travelled far and wide, and his notes are many of them original and interesting. He treats of every stage of plant life from germination to fertilisation, and of the different aspects of the same species under different external conditions, in so far as they reveal means for the preservation and propagation of species or forms. One very curious contrivance for protecting seeds, as he points out, is that of ripening underground. We have an example in the native Trifolium subterraneum, which, after flowering, forces the seed-vessels into the ground, where the seed ripens, and grows into fresh plants. Arachis hypogæa, a leguminous plant, commonly cultivated in warm countries, exhibits the same peculiarity, as does also Geococcus pusillus, a dwarf cruciferous plant, native of West Australia. The Sweet Flag, Acorus Calamus, is a plant that rarely produces ripe fruit, even in its warmest or any of its habitats (Kuntze thinks never, but its seeds are known); but like the American Water-weed, Elodea canadensis, it shows a most prodigious power of extension.

Trees with superficial roots, like many of the Coniferæ, usually grow very close together and thus mutually shelter each other, and they seldom have any horizontal branches of large size, so that they present very little surface to the wind. The most remarkable instance of whorled strictly horizontal branches observed by Kuntze, was in Eriodendron orientale (usually regarded as a variety of E. anfractuosum). The wind has little or no effect upon them, and in Java the telegraph wires are attached to them. As an instance of the occasional advantage of hybridism, the rapid growth of a hybrid Poplar is cited. It is a hybrid between Populus monilifera and P. nigra, var. pyramidalis, and grows to a height of more than 100 feet in twelve or fifteen years.

With regard to the germination of old seeds the author seems to give credence to the growth of Mummy Wheat, the history of which was written long ago. Among seeds scattered by propulsion, those of Hura crepitans are sometimes projected to a distance of twenty paces. The surfaces of most fruits which open with force is clammy, as in Clusiaceæ, &c. Victoria regia has the leaves thickly beset with prickles on the underside, which would serve to protect it from the attacks of "fish and other swimming animals." Plants that grow epiphytically are sometimes thereby preserved from extirpation. Polygonum chinense has edible berries, but browsing animals are so fond of its foliage that it is rarely met with in fruit. Birds are fond of the berries, and are the means of dispersing the seeds. Among other protective agents Kuntze speaks of stinging hairs, ants in the stems, thorns, leaf-bladders, &c., insect-food (which he regards as wholly unnecessary), hairiness, adventitious roots, secretions, &c. With regard to the change of colour during flowering, it may be, Kuntze suggests, connected with the attraction of different species of insect.

New Garden Plants.

ARDISIA OLIVERI, *sp. nov.** (Fig. 132, p. 681.)

A stove shrub, of remarkably striking appearance and of considerable botanical interest. We first met with it at Messrs. Veitch's in 1876, when we could not fail to be impressed with its peculiar recurved foliage and large globular heads of beautiful flowers like those of an Ixora, but of a pink colour. The plant was introduced from Costa Rica by the late M. Endres to the nursery of Messrs. Veitch, by whom it will shortly be distributed.

A coloured figure will eventually be given in the *Botanical Magazine*, meanwhile we are indebted to Professor Oliver for the privilege of figuring it on the present occasion, and avail ourselves of the opportunity of attaching his name to it, as a trifling but very sincere acknowledgment of the very valuable services he has, in a manner as thorough as it has been unobtrusive, rendered to horticultural botany for many years past.

Of personal kindness and assistance we would not speak here, but we may at least tender on the part of those who have to use the herbarium and library at Kew our heartiest thanks, and we may also congratulate both him and the public service generally on the admirable administrative capacity exerted by Professor Oliver and his assistants, and which has been so signally manifested in the transfer of the contents of the old herbarium to the spacious new building provided by Government for its reception, without intermitting the ordinary work of the department for a single day. Those who know the magnitude and complexity of the task will acknowledge that this is indeed a feat of administrative ability and wholeheartedness in work deserving of admiration. Incidentally we may mention that the rooms of the old building are undergoing re-arrangement with a view to provide for the library in a convenient manner and with special reference to the prevention of fire.

Adverting now to our Ardisia Oliveri, we may add a few particulars condensed from notes taken by ourselves from the living plant as well as in the herbarium. The nearly sessile glabrous entire leaves measure from 6—8 inches in length by about 2 inches in the broadest portion. In shape they are oblanceolate acuminate, and taper to the very short petiole. The general nature of the inflorescence is sufficiently shown in the illustration, technically it consists of a number of stalked many flowered corymbs. Each flower is raised on a slender pedicel about twice its own length. The calyx and corolla are both spirally imbricated to the left of the central axis of the flower (dextrorse to the observer looking at the flower). The sepals are oblong obtuse, marked with black lines; the corolla is rotate with a five-lobed limb half an inch across, the lobes obtuse, rose-pink. The stamens spring from the base of the short white or yellow throated tube of the corolla, and have short hairy subulate filaments and erect subulate-lanceolate anthers twice the length of the filaments, which open at the top by a single pore. The ovary is small, ovoid, surmounted by a long slender linear subulate style. The fruit has not yet been observed.

The present species does not fit well into any of the recognised sections of the genus established by Alphonse De Candolle in his monograph of the Myrsineæ in the *Prodromus*, viii., p. 120; nor by Sir Joseph Hooker in his revision of the genera in the *Genera Plantarum*, ii., p. 645. A. De Candolle's genus Monoporus does not appear to differ from Ardisia, except in the solitary terminal pore to the anther. It naturally occurred to us that our plant might be referred to this genus, but in the character of the inflorescence it is quite different to the plant described and figured by De Candolle, while the difference between one or two pores does not seem of much moment, still less the distinction between pores and chinks. Possibly De Candolle's genus Monoporus may ultimately form a separate section of Ardisia, including our present species. To importers of new plants we may, in conclusion, add that there are 200 species of Ardisia known to botanists, many of which would be handsome decorative plants; not a tenth or a twentieth part, however, have hitherto been seen in English gardens. *M. T. M.*

ONCIDIUM JAMESONI, *Lindl.*

A straggling inflorescence bearing many dozens of flowers forming one large yellow mass, spotted here and there with a beautiful warm violet-purple. This is the first impression this plant offers. Its upper sepals and its petals (which are highly curious, unguiculate and hastate, though in an obscure manner) have basilar or median blotches of purple. The broad panduate lip, as well as all the other floral parts, are, no doubt, bright yellow, as in the neighbouring species, Oncidium ampliatum. The column has large oblong wings, ending very blunt each side, and very odd small angles are to be seen each side under the stigmatic hollow. There are innumerable small abortive flowers (see Masters' *Vegetable Teratology*, p. 462, fig. 217). The plant, I dare say, will be welcome to such amateurs as like the fascinating effect of masses of small flowers acting powerfully according to the device, *l'union fait la force*. The effect must be a good one, since M. Edouard Klaboch wished it to be dedicated to one of his best friends, provided it was new. Ah! the wish comes too late by thirty years, and many of us elder botanists like the old name that so well reminds us of an excellent friend, the Scotch Professor Jameson, of Quito, who died lately, to the great grief of so many. At all events it is pleasing to have the plant in Europe. M. Edouard Klaboch has sent it, and I have no doubt it will soon make its *début* in a big room not far from the *Gardeners' Chronicle* office. *H. G. Rchb. f.* [We are afraid not yet. EDS.]

* *Ardisia Oliveri*, Mast., sp. nov., fig. 132, p. 681.—Glabra; foliis subsessilibus patenti-reflexis oblanceolatis integris utrinque attenuatis longe acuminatis lineis purpureis parvis notatis (20—25 cm. long., 4—5 cm. lat.); inflorescentia terminali ampla sub-globosa pluriflora e corymbis pluribus pedunculatis constante, pedunculis patentibus elongatis e bracteatis; sepalis petalisque ovato-oblongis obtusis sinistrorsum contortis; filamentis brevibus subulatis hirtellis e tubo corollæ prope basin emergentibus antherisque lanceolatis apice 1-poris multo brevioribus; stylo subulato stamina vix æquante.—Costa Rica, ubi legit beat. Endres. Observ. et descript. ex specim. viv. in hort. Veitch, nec non in herb. Kew.

PERILS OF A BOTANIST.

WE are indebted to Mr. George Maw for the following graphic account of the dangers to which a botanist may be exposed even in the Ionian Islands. Mr. Maw's many friends will join with us in congratulating him on the result.

Landing from Corfu early on the morning of October 28, I at once called on a gentleman connected with the commercial community, to whom I had a letter of introduction, to make inquiries for accommodation. Thence proceeded to the little hotel and breakfasted, but the 28th being Sunday, I deferred my intended visit to the Consulate.

After arranging with the hotel-keeper to obtain me a horse and guide for a botanical excursion in the island on the following day, I went out for a walk to the hill

FIG. 132—ARDISIA OLIVERI, NATURAL SIZE; FLOWERS ROSE-PINK.

south of Phanaromanie, overlooking the town, and, tempted by the beauty of the scenery and the interesting surroundings, wandered on for two or three hours through vineyards and villages to Asproierakata, where, at a point about twenty minutes' walk above the village, five young men surrounded me and commenced importuning me for money, and immediately rifled two of my pockets with a demonstration of force which I felt it unwise to resist, though no actual violence was exercised. The men at once hurried off with their booty towards the coast, and I retraced my steps to the village, where the Demarch, or village mayor, suspecting that something had happened, spoke to me, and, with the assistance of a man who understood a few words of English and Italian, was soon made acquainted with the circumstances. The Demarch and villagers urgently desired me to remain the night, with the object, I afterwards ascertained, of endeavouring to recover my money without the transaction becoming public. I, however, insisted on returning to the town, and, accompanied by the Demarch, reached the Consulate at a quarter to six, where Mr. Onofrio, the Vice-Consul, heard with much surprise the particulars of the robbery, as the Ionian Islands were looked upon as perfectly safe, nothing of the kind having occurred in Santa Maura since the year 1838, when a serious conflict with the English troops took place.

A hasty memorandum of the particulars of my loss was made at the Consulate, whence we repaired to the office of the Procurator Fiscal, where the whole of the public authorities of the island, including the Eparch or Governor, the assistant Public Prosecutor, the Commandant of the Fortress, the Chief of Police, the Demarch or mayor of the town, and other functionaries soon assembled. I cannot speak too highly of the tact and judgment displayed by Her Majesty's Vice-Consul in representing the urgent necessity of prompt redress, met by a ready compliance on the part of the authorities, who at once assured me that the money would be recovered and the men taken within a few hours. Full and minute depositions were taken as to the contents of the stolen purse and pocket-book, even to the number and value of each kind of postage stamps.

At 10 P.M. the Public Prosecutor requested the Commandant to at once provide 120 soldiers, said that he could capture the men with ten, but that he had an object in taking up an imposing force. The Demarch of the town was desired to obtain horses for the public authorities, H.M. Vice-Consul, and myself; but few were forthcoming. It was said that the villagers of Asproierakata form part of his municipal constituency, and that he wished to favour them, by gaining time for the voluntary restitution of the stolen property.

A rumour now reached us that the stolen money was already in Santa Maura, and at a few minutes after 10 P.M. the priest of the village appeared, bringing with him a little rag bundle, given him by a person he declined to name, containing £29 in English gold, some Italian and Austrian notes, postage-stamps, and silver and copper coin, mixed up together, all of which was counted, and, as far as I could remember, fell short of the amount stolen by from £15 to £18. An English £5 Bank of England note, and eight or nine 25 franc Greek notes were certainly missing. The priest had been previously with the stolen property to the Demarch of Santa Maura, and from information I received after leaving the island I have reason to believe that it had closely followed me from the scene of the outrage, and reached Santa Maura within an hour after my return to the town, as a rumour was afloat between 6 and 7 o'clock that the stolen money had been brought for restitution, no one knowing to whom it belonged.

The Public Prosecutor decided promptly that the balance of the stolen amount must be restored, and the men captured, and we were requested to hold ourselves ready to start for the scene of the robbery.

After an hour's rest and a hasty meal, we reassembled at midnight, and with soldiers, constabulary, and the authorities, we formed a long column of about 160 men in the main thoroughfare, and marched on into the shade of the dense Olive grove environing the town. This was planted under the rule of the Venetians in the seventeenth century. A golden sequin (about 9*s.* 6*d.*) was paid as a premium to encourage the culture of the Olive on every established tree, and the trees are so thick that they are barely fruitful. The scene was novel and strange, the dull rays of the half-moon obscured by driving clouds and filtered through the dense overhanging Olive boughs, here and there cast an occasional glimmer on the soldiers' rifles, mixed up confusedly with the cigarette lights and the glow-worms; the suddenness of the occurrence, and the strangeness of the scene became almost oppressive to the "outraged British subject," who could scarcely realise that he is the central feature of such a demonstration. We marched on and on for three hours, out of the Olive wood, and wound up some 1500 feet, through vineyards, and at last halted about three o'clock in the morning near the village of Sphakiotes, where the 120 soldiers were detailed in small companies to completely invest the offending district. Some of us retired to rest in the house of the Demarch, the Public Prosecutor remaining at work all night.

October 29.—Last night's driving scud developed into a dull melancholy day, and a saturating moisture of mingled mist and pouring rain, but the soldiers had already done their work completely. The vineyards were deserted, and scarcely a man was to be seen. The male population of the district was apprehended, and was in captivity, but where? My companion said "Would you like to see them?" and took me up the hill to the little church, which, with the surrounding churchyard, was densely packed with an exceptionally large congregation, like sheep in a pen. The scene was bewildering, and I could not help exclaiming, "Oh, what a lot!" But this was not all. My friend pointed to a knoll a little way off, and through the mist I saw an ill-defined dark patch, another churchyard full of men, and the mass threading out in procession towards me. Each man was passed in review for identification, and I picked out one, who admitted he saw the deed committed. The priest who brought in the first portion of the stolen money refused to give up the name of the person from whom he received it, and was placed under arrest, but as he was still obdurate and uncommunicative, the Public Prosecutor sent him a message to the effect that if he wished to speak the truth he might speak in Greek; but if not, he had better communicate in Chinese. He at once elected to speak in his native tongue, and gave the desired information.

The whole of the five men were at last identified, and three in actual custody in the town of Santa Maura. The soldiers were told off for billet in the various houses, and the men liberated and called before the Public Prosecutor, who addressed them, and told them that the 120 soldiers would remain at their expense till the whole of the five men were in custody and the remainder of the stolen money restored, and that at the end of three months a further contingent of fifty men would be added to the little army they were supporting.

A rumour reached us at 4 P.M. that the pocket-book and remainder of the money had been taken to Santa Maura, but the amount, about £20, was certainly more than the balance of my loss. A special messenger was sent to ascertain particulars, and at the request of the troops the three prisoners were brought back to the scene of the outrage, that as they had contributed to their capture they might have the satisfaction of publicly escorting them into Santa Maura.

The evening of October 29 was pleasantly spent at Sphakiotes, with the various civil and military authorities; "Health to the recovered money" was drank in rakee, and the lieutenant commanding the troops, who as sergeant led a portion of the soldiers who captured the Marathon brigands, gave us a graphic account of the transaction, and told us how he tracked them over the snow, and with fifteen men against twenty-six killed four and wounded two without losing a man, and drove the remainder of the band to surrender. I also learnt much about the inner life of Santa Maura. Almost the whole of the inhabitants are well-to-do peasant proprietors, and each village is self-contained, almost independent of the outer world. They produce nearly every necessary of life—corn, wine, oil, meat, and fuel, and every article of clothing, except cloth, is produced in the house. They grow their own Flax, Cotton, Hemp, and wool. The matrons of the household have distaff and spindle in hand, and the home-made loom works the thread up into coarse calico, towelling, and blankets and rugs of no mean artistic merit. The natives of Sphakiotes, where we lodged, especially the women, are comely and of fine stature, of a different race to the remainder of the islanders, and the descendants of a colony from Sphakia, in Crete, which was imported by the Venetian nobles in the fifteenth century.

October 30 opened with a lovely, brilliant morning, after yesterday's gloomy rain, and the lifted veil of mist revealed a scene in fair Leucadia more beautiful than any description can convey. We looked down from the hill above the village over a rich foreground of vineyards, golden and crimson in their autumn leafage, relieved by the contrast of tall green Cypresses. To the south the finely moulded grey ridge of Megaoros, culminating in the point of Saint Elias, with a distant portion of the Peloponnesus, bounds the view. To the east the mountains of Epirus and Albania, backed up by the range of Pindus, which last night received its first mantle of snow, were seen over the Turkish town of Previsa, and the Gulf of Arta running far inland to the foot of the mountains, and to the north the faint outlines of Paxo and Corfu resting on the bright blue Ionian Sea. In the early morning we marched from Sphakiotes to the village of Asproierakata, and by mid-day the five men were all in custody. Formal depositions were taken at great length by the Public Prosecutor, and the prisoners committed for trial. At 3 P.M. the five men, roped together, were sent forward under a small guard, followed by the public authorities and troops, and winding down through the vineyards and the Olive wood shrouding the plain we reached the town of Santa Maura at nightfall, through a dense crowd which had turned out to meet us, the whole transaction, from the robbery to the apprehension of the men and the recovery of the lost money, having been accomplished within forty-eight hours.

The affair created intense anxiety and indignation throughout the island, not only amongst the commercial community of the town, but everywhere during my subsequent excursions in the island the expressions of respectful sympathy and regret were universal. Before my departure the parents and other relations of the young men called upon me to ask my forgiveness. I explained to them that the matter was not in my hands, that I felt such an offence ought to be punished, and would be severely punished in my own country, but that, as the robbery could not have been premeditated, and as prompt reparation was made, I would ask Her Majesty's Vice-Consul to intercede for such a mitigation of the penalty as the tribunal might consider consistent with the circumstances. *George Maw, Benthall Hall, Broseley.*

THE GENUS AGAVE.

(*Continued from p. 620.*)

SERIES II.—CARNOSO-CORIACEÆ.—Texture of the leaf more fleshy and pliable than in the Coriaceo-carnosæ. End-spine scarcely pungent. Prickles if present always small.

Group VIII. ALOIDEÆ.—Edge of the leaf furnished with distinct teeth.

In the present paper I propose to deal with the large species of this group, which have oblanceolate-oblong or ensiform leaves. These differ from the Aloideæ already dealt with by the leaf being narrower in proportion and less narrowed at the base, and from those of my next paper by their larger size.

* Leaves oblanceolate-oblong.

70. *A. (Littæa) Goeppertiana*, Jacobi, Monogr., p. 243 and 308.—Stem reaching a height of ½ a foot. Leaves 20—30 to a rosette, oblanceolate-oblong, 2 feet or more long, 4—5 inches broad at the middle, narrowed to 3—3½ inches above the base, bright green, the face rather hollowed, the short brown tip pungent only in the young state, the crowded spreading brown deltoid teeth under a line long, the base about 1 inch, the centre ⅛ inch thick. Scape twice as long as the leaves, densely clothed with adpressed lanceolate bracts. Flowers in a dense spike as long as or longer than the scape. Perianth including the ovary 1¾ inch long; ovary oblong, 8—9 lines long; segments oblong-lanceolate, about as long as the tube. Filaments 21—24 lines long, inserted at the throat of the tube; anthers ½—⅝ inch long. Style nearly 1 inch longer than the filaments. Mature capsule oblong, ¾ inch long.

A native probably of Mexico. Described by Jacobi in 1865 from specimens seen at Breslau and Reigate. There is a figure of the plant in flower in the seed-index of the Breslau garden for 1874. There is a small specimen in the Kew collection.

71. *A. Smithiana*, Jacobi, Monogr., 250.—Acaulescent. Leaves about thirty in a rosette, oblanceolate-oblong, 4 inches broad at the middle, narrowed to 2—2½ inches above the base, bright green, the face flat in the centre, 1 inch thick at the base, ⅛ inch at the middle, the brown tips ½ inch long, the close deltoid brown prickles about $\frac{1}{12}$ inch long. Inflorescence unknown.

Described by Jacobi in 1865 from a specimen in the Kew collection, imported from San Luis Potosi, and named in compliment to Mr. Smith. I have seen it only in the Kew collection, and cannot separate from it by the descriptions, *A. lamprochlora*, Jacobi, *Nachtrage*, i., p. 35, and *A. perlucida*, Jacobi, *Nachtrage*, i., p. 36.

72. *A. (Littæa) horizontinalis*, Jacobi, Nachtrage, i., p. 33.—Caulescent. Leaves few, oblanceolate-oblong, 2 feet long, 4—5 inches broad at the middle, narrowed to 2½ inches above the base, the face broadly channelled, bright light green, glaucous when young, the end-spine short and chestnut-brown, the edge not at all repand, the crowded minute deltoid teeth dull chestnut-brown. Scape 3—4 feet long. Flowers in a dense spike 2—2½ feet long, the lower bracts about 4 inches, and the upper about 2 inches long. Perianth under 2 inches long, the ovary about ¾ inch, the oblong-lanceolate reddish-brown segments equalling the tube. Filaments 2—2½ inches long; anthers 9—10 lines.

Described by Jacobi in 1865 from a flowering specimen in the collection of Mon. De Jonge van Ellemeet, of Overduin in Zelande, received from the Botanic Garden at Utrecht. Although Mons. Ellemeet raised a couple of hundred seedlings, I have not seen it in any of our English collections.

73. *A. Humboldtiana*, Jacobi, Monogr., p. 251.—

Acaulescent. Leaves 30—40 in a rosette, oblanceolate-oblong, 2½—3 feet long, 5—6 inches broad at the middle, narrowed to 3 inches above the base, bright green, slightly glaucous when young, slightly channelled in the centre, the base a couple of inches, the centre ¼ inch thick, the brown end-spine about ½ inch long, the red-brown close very minute deltoid prickles tipped with red-brown. Inflorescence unknown.

Like A. Smithiana, this was described by General Jacobi on his visit to England in 1865 from a specimen in the Kew collection imported from San Luis Potosi. The plant is still at Kew, and has never flowered.

74. *A. kewensis*, Jacobi, Monogr., p. 242.—Stem ½ foot high. Leaves 30—40 in a rosette, oblanceolate-oblong, 4 feet long, 7—8 inches broad above the middle, narrowed to 4 inches above the base, bright green, 1½ inch thick at the base, ⅝ inch thick in the centre, the end-spine short and brown, the face hollowed all down, the prickles small, distant, deltoid, brown, spreading. Inflorescence unknown.

A native of Mexico. Described by Jacobi in 1865 from a specimen in the Kew collection, which is still there, and has never flowered. It is by far the finest of all the Aloideæ.

** Leaves ensiform.

75. *A.* (*Littæa*) *Sartorii*, K. Koch; Jacobi, Monogr., p. 128; Bot. Mag., t. 6292; *A. Nozickii*, Jacobi, Monogr., p. 125; *A. pendula*, Schnittspahn; Jacobi, Monogr., p. 130; *A. cæspitosa*, Todaro, Hort. Bot. Panorm., t. 8. —Caudex 1—2 feet long, sometimes forked. Leaves 30—40, spaced out in a lax rosette 1½—2 feet long, 3 inches broad at the middle, narrowed to 2—2½ inches above the base, bright green, with a pale band down the middle, 1 inch thick at the base, ¼ inch thick in the centre, the face flat, the end-spine small, and not pungent, the minute, crowded deltoid spreading teeth tipped with red-brown. Scape 3—4 feet long, the green linear ascending bracts 2—4 inches long. Flowers in a dense spike about 3 feet long, 5—6 inches broad when expanded. Pedicels very short. Perianth greenish, 1½ inch long, including the ovary. Ovary, tube, and segments of about equal length. Filaments 18—21 inches long, anthers ⅜—½ inch long. Style rather exceeding the filaments.

A native of Mexico and Guatemala, introduced about 1860. It is now widely spread in collections, and has flowered several times. A full account of the plant will be found in the *Botanical Magazine* just cited, from a plant that flowered at Kew in February, 1877. I cannot distinguish by the description *A. rufocincta*, Jacobi, *Nachtrage*, i., p. 88.

76. *A.* (*Littæa*) *oblongata*, Jacobi, Nachtrage, i. p., 40. —Acaulescent. Leaves ensiform, 2 feet long, 3½ inches broad at the middle, narrowed to 3 inches above the base, light glaucous green, the face nearly flat in the centre, the end-spine small, weak, and chestnut-brown, the edge not at all repand, the teeth crowded, minute, deltoid, chestnut-brown. Scape 4 feet high, 1 inch thick at the base. Flowers in a dense spike, which is twice as long as the barren part of the stem. Perianth 1½ inch long, including the ovary; segments ¾ inch long. Filaments 2½ inches long; anthers ⅝ inch long. Style rather larger than the filaments. Capsule elliptical, 1¼ inch long.

A native probably of Mexico. Described by Jacobi, in 1868, from a specimen received from Herr Tonel. It is, I think, most likely a mere variety of A. micracantha. I have not seen it in England.

77. *A.* (*Littæa*) *Haseloffii*, Jacobi, Monogr., p. 244. —Shortly caulescent. Leaves about twenty in a rosette, lanceolate, reaching a length of 18—21 inches, 3 inches broad at the middle, narrowed to 2 inches above the base, bright light green, ½ inch thick at the base, ⅛ inch in the centre, the brown subpungent end-spine ½ inch long, the teeth close and brown, the central ones lanceolate, ⅛ inch long, those of the lower two-thirds of the edge more or less deflexed. Stem 5 feet long, 1½ inch thick at the base. Flowers in a dense spike about 2 feet long. Perianth bright green, 1½ inch long, including the ovary; ovary ¾ inch long; segments about ½ inch. Filaments 2½ inches long; anthers ¾ inch long. Style rather longer than the filaments.

A native probably of Mexico. Described by Jacobi in 1864 from a specimen in the garden of the gentleman after whom it is named. In England I have seen it at Reigate and Kew, but only in an undeveloped flowerless condition.

78. *A.* (*Littæa*) *Muilmanni*, Jacobi, Nacht. ii., p. 76. —Shortly caulescent. Leaves lanceolate, 2 feet or more long, 2—2½ inches broad at the middle, bright green, the face concave, the end-spine horny and red-brown, the edge not at all repand, furnished with minute crowded deltoid red-brown horny teeth. Scape, including the inflorescence, 4—5 feet long. Flowers in a dense spike half as long as the barren part of the stem. Perianth, including the ovary, 16 lines long; ovary about ½ inch, segments above ½ inch long; tube very short. Filaments 1¼ inch long; anthers linear, ⅝ inch. Style as long as the filaments.

A native probably of Mexico. Described by Jacobi in 1871, from a plant in the collection of Herr Muilmann at Utrecht. I have not seen it in England.

79. *A. Martiana*, K. Koch; Jacobi, Monogr., p. 116. —Acaulescent. Leaves lanceolate, reaching a length of 2—2½ feet, 3—3½ inches broad at the middle, narrowed to 2½ inches above the base, a light opaque green, the face nearly flat when mature, the end-spine very short and brown, the edge in the upper part with a continuous brown line and minutely toothed, lower down furnished with irregular small deltoid chestnut-brown teeth. Inflorescence unknown.

A native probably of Mexico. Described by Dr. Karl Koch in 1864, from specimens in the Botanic Garden at Berlin.

80. *A. caribæa*, Hort. Kew.—Acaulescent. Leaves about thirty in a rosette, ensiform, 2—2½ feet long, 3—3½ inches broad at the middle, 2½ inches broad above the base, narrowed gradually from the middle to a weak brown point about ¼ inch long, bright green, the face nearly flat, the centre ⅛ inch, the base 1 inch thick, the prickles very close and very minute (the central ones only ⅛—½ line long), deltoid, all pale green, or only faintly tinted at the very tip with red-brown.

History unknown to me. Described from two specimens now in the Kew collection, received one from Reigate and the other from Mr. Justus Corderoy. *J. G. Baker.*

COLOURED LEAVES.

Seeing the other day a glass, the foliage in which consisted of autumn leaves, it occurred to me that an effective and varied nosegay might be formed of leaves whose form and natural colours, without the fugacious aid of autumn, might be the most interesting of the two. Azalea leaves have no beauty in themselves of form or texture, although an American garden I saw the other day was as bright with red, crimson, and purple foliage as in June, when the Azaleas are a blaze of yellow, orange, flame, and pink flowers.

The leaves I collected were, for feathery, hair-like texture, Ferula tingitana, Meum athamanticum, two Tanacetums, boreale and crispum, Acæna millefolium, Achillea Millefolium and A. M. variegata; of round Geranium-shaped leaves there were the chocolate Heuchera Richardsoni and Tellima grandiflora; a stalk of Epimedium rubrum, which oftener has leaves in a beautiful marbled state than the other Epimediums we have; a leaf of Burnet and Spiræa filipendula, a gold feather leaf of Potentilla anserina aurea, and one of Barbarea vulgaris variegata; Cineraria acanthifolia and Artemisia argentea were two grey leaves, and a forked leaf of Peucedanum officinale; one stalk of Woodruff for the seven-rayed star of its whorled leaves, and a blade or two of Carex japonica variegata and Dactylis glomerata variegata; also one Juncus spiralis, to give point to the group, and a miniature Palm leaf, as in Helleborus fœtidus, of darkest green, and one of Rubus laciniatus. The whole formed a glass of varied beauty, and relieved the eye, the other glasses being full of brightest Roses, Chrysanthemums, Asters, Gladioluses, Anemone japonica of sorts, Stocks, Antirrhinums, &c. The leaf glasses have lasted three supplies of flowers, and look as if they would last another three. As I write they attract me irresistibly, the beautiful forms and delicate and varied textures are charming.

In regard to the fading of green leaves it is interesting to note how very many fade into as bright colours as any one sees in flowers (with the exception of blue), and how few flowers fade into beauty, all their varied colours and shades merely dying into dingy drabs, browns, and white—but then green is not a colour, but a substance. I can only remember at this moment Vittadenia triloba, Aster discolor and bicolor, and Franciscea, the young and old flowers of which one has to recollect before pronouncing which is the normal colour; the white to pink of Vittadenia, white to purple of the Asters, and lilac to white of the Franciscea. It is a good quality, this changing of colour, and prolongs the beauty of a flower. *F. J. Hope, Wardie Lodge.*

PICTURESQUE PLANTING.

The planting of woods or waste lands with a view to profit is a very easy matter, and may be carried out by any one having only a very limited knowledge of trees, but to produce the most pleasing artistic effect, and add to the natural beauties of a landscape, requires much study and an intimate acquaintance with the different species, their habit and growth, or the arrangement of them must necessarily be of a haphazard kind, as may be seen in the incongruous mixtures frequently to be met with in many of our parks and pleasure-grounds. If half the skill were brought to bear on work of this kind that is now expended in carpet bedding and other modes of embellishing flower gardens, what splendid results would be achieved, not of the ephemeral character of that which endures only for a season, but such as the hand of time would improve and render still more beautiful.

We have plenty of hardy plants, if they were only used as they deserve to be, that would form strikingly ornamental objects grouped or placed in suitable positions, as may be seen by any one visiting such establishments as those of the Messrs. Veitch at Combe Wood or others of our large nurserymen. Take the Bamboos, for instance, and what can be more graceful than their long tapering rods drooping in a regular curve, with the tufty sprays of elegant green foliage always kept in gentle motion by the slightest breeze or breath of air that is wafted. Such a plant on a lawn or near water is quite cooling and delightful to look on during a hot summer's day, and not only then, but being of such distinct habit, they show up most favourably with anything with which they may be associated, and impart quite a cheerful aspect to any garden at all seasons of the year. Then, again, there is that fine hardy Palm, Chamærops excelsa, a few of which judiciously grouped or planted as isolated specimens in certain positions would impart quite a tropical appearance to any place, and yet strange to say it is rarely met with anywhere except under glass. Of a different type of vegetation, but equally effective, are the different varieties of Yucca, some of which in addition to their ornamental foliage and stately growth produce annually fine spikes of magnificent flowers. The whole family are plants well deserving a much more extended cultivation than they now receive, and from their hardy nature and sturdy habit are specially adapted for elevated positions in poor soils, where, whether bleak or not it matters little, as they struggle on quite regardless of storms or sunshine. Even with these alone, and a few evergreens to back them up, a fine effect might be produced in certain portions of the grounds, especially where at all broken up either naturally or artificially, as then they can be grouped according to their several habits, and made to show off to great advantage.

For sunny spots on lawns as single plants or to form masses in prominent parts of the shrubbery border, what can surpass the Rhus Cotinus with its brilliantly coloured feathery inflorescence, almost equal in appearance for lightness and elegance of form to the plumes of the ostrich?—and yet there are hundreds of places where this beautiful shrub is not to be found. The Sumachs, too, although they have not so much to recommend them as regards flower, amply make up for that deficiency by the rich profusion of their elegant foliage that furnishes such fine autumnal tints, of which, alas! the early frost and gales have this season unfortunately robbed us. Another strikingly ornamental and much-neglected plant that has been noticed of late in the pages of the *Gardeners' Chronicle* is Arundo Donax, so easy and graceful in outline that it cannot well be misplaced, as it is alike suitable for the extreme back of shrubbery borders, single specimens or groups on lawns, the subtropical garden or Fern dell, but where it looks more particularly at home is near lakes or ponds associated with Pampas-grass, Bamboos, &c.

If we want variegated plants, or such as have beautiful foliage, for producing pictorial effect in the more dressed portion of the grounds, there are now any quantity, of either erect or spreading habit, varying in size from the tiny Euonymus radicans up to others of giant stature; so that with a little study and foresight there need be no difficulty in so blending them as to come in to suit spring, summer, autumn and winter, and thus render the aspect of a place attractive at all seasons. What is in my opinion so much needed is a more bold style of planting instead of the

higgledy-piggledy system that now to a great extent prevails, apparently without any regard to contour or their suitability for each other. Take, for instance, the usual run of places that have been planted without professional aid being called in, and what do we find but a Laurel here, a Holly there, with Thorns, Planes, Conifers, and other things dotted about in endless confusion, and so near together that in a few years many have to be sacrificed. If, instead of this, plants that harmonise were grouped a little together, how much more pleasing the effect would be. Suppose we take for example a background of the common Yew, Taxus baccata, and plant in front any of the gold or silver variegated kinds at suitable distances to allow room for growth. The effect of these, as soon as they got into size, would be to light up a place in such a manner as to be satisfactory to the eye at all seasons. Green and variegated Hollies might be used in the same way, and so on with many others, but of course this kind of planting may be carried to an extreme, and become of too formal a character.

The thing is with this as with all other modes of embellishment, to get contrast and perfect harmony at the same time, as well as that natural ease of outline that trees and shrubs always assume when properly arranged. Among plants capable of producing those lovely tints during the autumn that all of us so much admire, the American Oaks, Liquidambar, Sugar Maple, Sorbus, Birch, with its polished papery bark, and Pavia flava, should have conspicuous places, as should also those having variegated or ornamental foliage, such as the Fern-leaved Beech, Fern-leaved Elm, Willow-leaved Oak, &c., and among the former, gold and silver Elms, Acers, Thorns, and Willows, all of which do much to enliven a place. For clothing trees that are thin of branches, or have become decrepid through age or other causes, nothing can equal some of the Vines, the Virginian Creeper, Traveller's Joy, and some of the free-climbing Roses, the effect of which when seen festooning in a natural way from such lofty positions is really most charming. Some we have here treated in that way are of the most picturesque character imaginable; and so exceedingly telling are they for certain situations that it is quite worth while sacrificing a few common trees for the purpose of growing them. Vines especially, that have such gorgeously beautiful leaves during the autumn, are most striking, as is also the old Virginian Creeper and Ampelopsis Veitchii, both of which colour up most brilliantly when fully exposed to sunlight and air. Some of the Ivies, too, are very showy, and associate well with any of the foregoing, to which they likewise show up in pleasing contrast.

Leaving the pleasure-ground for the park, what grand effects may be produced here by a little grouping and blending of colour, such, for instance, as would be afforded by the Abele and Copper Beech, neither of which are half so much used as they deserve, if we take into consideration how very ornamental they are. An avenue of the latter planted here will be quite a feature some day, and besides being particularly suitable for this work they look well near silvery streams and lakes, or on hill-sides, either in masses or as single specimens.

Magnificent as are the English Oak and Beech for park scenery, the landscape would look cold and drear without some trees of an evergreen nature, and none stand out in bolder relief than the Scotch Fir, which from its rugged appearance and powers of endurance is just the thing to clothe the hill-top or other bleak exposed situations. Of all the Conifers I look on this, after it attains size and age, as the most picturesque, especially when planted in clumps of from three to five or six, and within a few feet of each other. Such a group would delight any artist, and form a pleasing picture in any landscape, as there is something in the trees when so arranged that looks so natural; and more particularly is this the case if they vary greatly in size, giving one the idea that the smaller have originated from those of larger stature. These being of a dark sombre hue, the grey of the Deodar and the silver come in well, but owing to the early spring growths the former make it is useless, except for sheltered situations. Besides a judicious commingling of foliage in planting to produce picturesque effect, much may be done by taking advantage of the ground, the inequalities of the surface of which should be seized on to make the valleys look still more depressed, and the mounds or hills still higher by planting on them only such things as tower up, except toward their base, to which the gradation ought to be carried by using others of more lowly growth. If this is strictly carried out it gives a much more broken and diversified surface, and an apparent extent that could not be produced in any other way, besides which there is a degree of natural beauty about such planting of which the eye never tires, as there is always repose in the depth of light and shadow and the many-coloured tints of the foliage. *J. S.*

CYPRIPEDIUM INSIGNE MAULEI.

AT one time or another in almost every establishment where the liking for a collection of Orchids is a growing passion, the probability is that in one of the earlier stages of such a gathering or accumulation Cypripedium insigne will be found to have had a place; and though, by the arrival of other and certainly more showy forms and species, it may now be esteemed of less importance and value, it will always in some of its varieties be deserving of a place in the most select and choice collections. That there are two or three distinct varieties of it will be apparent to most growers, though to determine which are true to name by the manner of growth or the general habit of the plants is a matter of very great difficulty, and any attempt to prove them by this means would almost certainly result in failure and disappointment.

There is certainly a small-growing variety, the leaves of which are narrower and the flowers considerably less in size than the original type, which will be readily recognised though it is not often met with; but when we come to the others, the growth is so exactly alike that it is only by accepting the word from those of whom they are obtained that any particular plant can be received as just the one variety that is desired. These thoughts and allusions are prompted, and in fact necessary, by a reference to some made in the Calendar of Operations at p. 495, where, in treating of this species, reference is made to two forms that had been obtained under the names given, and were described and recommended accordingly. That C. insigne Maulei was and is distinct has always been accepted as an assured fact, yet a doubt as to its true characteristics was so often expressed that one was as often left undecided as assured that the description was true and satisfactory. That the doubt may be cleared up, and the true markings of this variety known (for the time being I will not allude to those I have under my charge here), I may state that I have succeeded in obtaining flowers from different collections, which are now before me, and comparing one with another find the following to be clear and unmistakeable. From the plant of the one named violaceum punctatum, which at the time of the Manley Hall sale passed into the collection of the late Mr. W. B. Hume, I have succeeded in obtaining a flower, kindly forwarded by the present gardener, Mr. A. Murrel, who assures me that his late employer considered it by far the best variety he had. I have also been favoured with a flower of the true Maulei by the Messrs. Veitch & Sons, of Chelsea, the same as exhibited by them at the floral meeting of the Royal Horticultural Society on the 6th inst. (see p. 600). Placing these side by side I find them so exactly alike in size, colour, marking, and purple spotting, that one is tempted to inquire, Which can be the true plant now?

Well, from the Messrs. Maule, of Bristol, I have been able to obtain the *Floral Magazine* for July, 1861, and there on the first page is a figure of the original Maulei, and a statement that the drawing had been made from a plant exhibited by the Messrs. Maule at one of the meetings of the Royal Horticultural Society during the autumn of 1860, and was then awarded a First-class Certificate. On comparing the flowers with the plate all uncertainty is at once removed. Here we have the true Maulei in both cases, and the name violaceum punctatum, though it may be very true as far as description in a limited sense is concerned, is quite unnecessary and misleading, and would be better dropped altogether. Comparing the flowers with those of insigne, the lip or slipper part is narrower at the point—the whole of this part being of a bright shining brownish purple colour, the petals a good part of their length being stained with a similar colour, and shining as the lip. In the words of the work just quoted, which are as true now as when the plant flowered for the first time, we may say:—"It is a really handsome and attractive form of this well-known species, differing most obviously in the broader surface of pure white on the dorsal sepal, and in the purple spotting which occurs on this white ground, quite distinct from the brownish spots which only are met with in the ordinary states of this species. The spots, moreover, are more distinct, larger, and less numerous than usual, and fully two-thirds of the surface of the sepal is white."

Little need be said beyond this in praise of this fine variety. However, to those whose taste is towards this class of plants, it may truly be said to be one of the most pleasing, showy, and desirable forms that are to be met with in this group or section of Cypripediums bearing single blooms. *W. Swan, Fallowfield, Nov. 20.* [The description and plate above referred to having been drawn up and published by one of us, we can endorse as correct all that Mr. Swan states as to the distinctness and beauty of this variety. EDS.]

ROOT-PRUNING.

IT is pleasing to note the kindly and philosophical spirit in which this matter has been discussed in your pages. It is one of the most important subjects that can engage the attention of horticulturists. Mistakes, too, are very pardonable in regard to this matter, for the theory and practice of root-pruning are comparatively recent additions to the art of horticulture. It has also proved itself one of the most potent and successful means of hastening and augmenting fertility. Top-pruning may succeed, root-pruning must; in rendering fruit trees fertile the former deals with vital power and growth after both are made, the latter moulds it in the making to the will of the cultivator. So far these are facts, not theories. Root disturbance, lifting, pruning, forces vitality to the side of fertility. This is a matter of daily experience. A young tree rushes into wood growing: prune the top, it makes more and stronger wood—prune its roots, it stops growing timber and sets about the work of fruit bearing. Hence I cannot at all agree with Mr. Hinds, that top-pinching is equal to root-pruning as a means of forcing trees into fertility; though what he says at p. 598 is quite true—that top-pinching will force the strong shoot to break into two or three instead of one. But this mere weakening of the shoots may not end in fruitfulness. A number of weak shoots not seldom continue as sterile as fewer and stronger ones. Fertility is something more than the mere product of a sub-division of growing force. Our gardens and orchards abound with barren sprays as well as sterile boughs. Pinching in our climate often proves a mistake; our summers are barely long enough to ripen one crop of wood, to say nothing of two or more. A crop of medium-sized shoots furnished with immature buds is but a poor basis or preparation for fertility. Besides, persistent stopping probably throws the roots out of gear, as it were, in regard to their season of active growth. Sever a big root and you modify top growth at once. There is no proof, however, that the converse holds good. Pinch or prune back a strong shoot and the root does not follow the lead of the top and break into fibres, but holds on its course as an earth cleaver or a water carrier. This is the testimony of actual experience demonstrated by actual practice.

Few admired or were influenced more by the practice and the writings of the great and good man so lately removed from us, Mr. Thomas Rivers, than the writer. As a consequence I went with enthusiasm into the pinching theory, and found it a mistake in the open air. With the command of an artificial climate in orchard or other glass houses it may succeed—in the open air, writing broadly and admitting many exceptional cases of success, pinching fruit trees more than once, and that so late in the season as to prevent a second crop of wood, is and has all along been a mistake. It is impossible thus to force fertility at the point of the knife, or finger and thumb on the tops of trees; besides, there is no need of it. The root-pruner has the issues of growth and of produce entirely in his power. He wants timber—let him plant his trees, or, better still, sow the seeds of them, in rich soil, and leave their roots alone, and feed them liberally, and he will have it. He plants for fruit—let him plant on medium soil, sever the strongest roots at planting, encourage them to run within a foot or so of the surface, and lift or prune them occasionally—if they run into water-pipes instead of fibrous masses—and fruit in plenty, weather

permitting, will be as certain to follow, as that twice two are four.

Diverging from demonstrative facts to their probable causes, theories are at once broached that may be open to question, but these do not alter the facts any more than erroneous notions concerning light can extinguish the sun at noonday. The sun shines on all the same, whatever our theories of the manner of his shining, and in like manner root-pruning promotes fertility, though we may be in profound ignorance of some or all of the causes of this result. For instance, perhaps my views were open to the objection urged by Mr. Hinds with regard to time. Possibly it might have been rather too late to modify the buds much for this season, but root-pruning is useful to augment fertility as well as to produce it, and the moment the large roots referred to were severed the process of augmentation would begin. As the sun declines in power it is the more important that the elaborative functions of the leaves should not be swamped by a flood of watery sap. By severing gross roots early in October, the current of sap would be cut off or reduced, and the buds in the current year's wood be more highly matured in consequence.

The editorial note, and also some remarks of Mr. Hinds, seem to show a slight misconception of my meaning. I made a distinction between water and food. Perhaps such a distinction cannot be established nor sustained in theory, but practical experience appears to establish the fact that certain roots are chiefly or solely water-carriers, and others mainly or chiefly food providers. Hence I retain my own dictum, that the larger the root the more water it will raise, and also the editorial correction (see p. 521) that a "multitude of fibrous roots form better feeders than simple undivided roots," and which is in exact accord with my own assertion on the same page, that "the fibrous roots formed the most and the best food, and the single and undivided roots the least." This Mr. Hinds also shows, by his case of the two trees referred to at p. 597. I am also in entire accord with Mr. Lee's useful remarks on the same page.

We are in accord, therefore, concerning the efficiency of root-pruning, and also the more apparent causes of that efficiency. The main cause may be formulated thus—the breaking up of the few roots into many, and the substitution of fibrous for fangy roots.

If all this be granted, may we not advance a step further, and, finding that we have a change of root culture, and of top character and produce, assume or prove that we have also a change of root formation—in other words, that the fibrous roots formed food and the fangy ones water? Not but that either set of roots may do either or both in the absence of or in conjunction of either; but that the primary function of the former is to collect food, the latter to carry water.

It seems probable that roots perform a third function, that of changing the character of the food absorbed. If this is so it may readily happen that the altered size, and changed structure of the roots, may materially affect the character of the materials conveyed by them. The larger the roots probably the less changed the materials they convey, the smaller the more changed. We have a striking illustration of this in animal nutrition. It is in the ultimate tissues of the body, where arteries and veins are reduced to mere lines of invisible fineness, that blood is finally converted into animal tissues. May it not, therefore, happen that the matters absorbed from the soil by fine roots should undergo such important changes during their transmission, as to affect the growth and produce of the trees? Besides the reduction of size may also determine to a great extent the election of food. Roots are too often considered mere involuntary channels conveying mechanically, as it were, anything and everything presented to their open mouths or spongioles. They are so, to a great extent, no doubt, as is abundantly proved by daily experience and scientific experiments. But roots are more, and better than mere mechanical tubes. They have either vital power of election or transformation of the most wondrous potency. And it is highly probable that instead of all the elaborating processes of plants being carried on in the leaves only, that certain changes begin to be effected the moment food or water are absorbed. In fact I have long been of opinion that the roots of plants do, at least to some extent, elaborate or digest or change the character of a portion of the food absorbed by them. If so it is an easy and a material step from this to assume that the finer and more numerous the root channels the more potent their power in this direction, and consequently the better fitted this partially elaborated or more highly refined sap for the establishment and perpetuation of fertility. *F.*

TIE FOR TREE GUARDS.

We copy from the *Bulletin d'Arboriculture* the accompanying illustration, fig. 133, representing a very simple and efficient tie for staking trees. They are composed of semi-circular bands of zinc or galvanised iron lined with a thick cushion of plaited Rush, and with wires at the end to tie it in its proper position. The Rush plait does not rot so soon as straw, which is commonly used, does not harbour so many insects, does not injure the tree, and can be more quickly and easily fixed in place than the ordinary tie. They are made of various sizes by M. J. Durand, Cité des Fleurs, 16, à Batignolle, Paris.

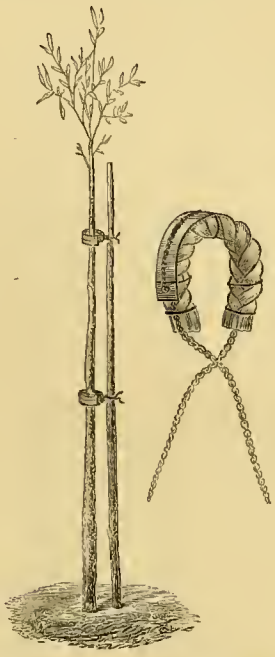


Fig. 133.—Bands for tying up trees.

Notices of Books.

Thompson's Gardener's Assistant. New edition, revised and extended, by Thomas Moore, F.L.S. London: Blackie & Son.

We hail with the greatest amount of satisfaction the completion and appearance of this new, revised, and greatly enlarged edition of the *Gardener's Assistant*—the best book on general practical horticulture in the English language. There is no doubt about this. Ever since the appearance of the original edition direct from Thompson's own pen, it has been felt and acknowledged to be a text-book, and the leading authority on the general principles of English gardening. There have been many writers on gardening subjects, but no one has conveyed so much direct and correct information on the first principles of the art, or has made it so plain to the common understanding, as Mr. Thompson. This was the great power of Mr. Thompson's writings—they were real; the writer was a perfect master of his subject. It would be a work of supererogation for us, however, to recapitulate all the sterling merits of the original edition; they are well known. A new edition was, however, required to bring it down to the present time, to embrace and introduce all the great advancements and discoveries made in horticulture in the present age, &c., and no man more fitting for the task of preparing it could have been found than the editor, Mr. Thomas Moore.

The quantity of new matter in this edition amounts to nearly one-third of the original work, and a closer type has been employed for the various descriptive lists of trees, flowers, fruits, &c. Many new and additional illustrations have also been introduced into the text. Eight new and beautifully executed coloured plates of new plants and flowers, twenty-four superb engravings of ornamental trees and plants, many plates of horticultural buildings, and, lastly, two most interesting and instructive plates of those insects which are most injurious to vegetation, the whole making a compact handsome volume of over 1000 pages of clear and excellent type.

The editor very carefully distinguishes the new matter from the original. In the preface we are told that "In those matters which relate to the science of gardening and to the practical operations of the vegetable and fruit gardens . . . no further alterations have been made than those rendered necessary by the lapse of time, and those chiefly among the selections of vegetables and of fruits." "It is in the section devoted to the flower garden, which had been unduly compressed for want of space in the original edition, that the greatest change has been made; and in this division of the work the subject is now treated with the fulness which its importance requires." No words of ours can better explain the character of the work before us. There was little room, indeed, for any improvement on Mr. Thompson's writings on the science of gardening or the practical operations of the vegetable and fruit departments. His writings on these subjects remain almost for all time. In the flower garden section, however, the original work was extremely weak, while now it is strong. In point of fact a new part has been added to the *Gardener's Assistant*, giving it a new character, a broader basis of usefulness to the gardening world at large.

In those matters which had become susceptible of change through lapse of time in the vegetable and fruit departments, we could almost have wished—only it is something like straining at a gnat where so much that is good has been done—that the editor, who knows so well how to use the pruning knife, had just done a little more; but we imagine his hands have been somewhat tied by the existence of stereotype plates. Hence, the "revised lists" of fruit and vegetables are not quite so thoroughly "revised" as they might have been, a good many sorts of doubtful quality, of doubtful existence, are still retained, but we feel bound to say that no worthless varieties under the guise of "being new" have been introduced.

Several new papers on fruit cultivation appear; that on "Orchard House Culture" being well written and most appropriate. The division entitled "Forcing Fruits and Vegetables," which is still retained, ought to have been merged into the general treatises on the various subjects, and which would have made them more complete. In Thompson's days forcing was a distinct sort of department, but in the present days of cheap glass, glass protectors, orchard-houses, ground vineries, and everything being produced out of season and in season, it is impossible to define "forcing." Besides, under this very heading, "forcing," we are given the "outdoor culture of the Vine," &c.

Of the flower garden section, which is all but entirely new, we can only speak in terms of the most unqualified praise. We turn to the index—well, what is there in it? Everything? Yes!—everything, almost, that does or can concern a flower garden or a lover of plants. We are here given the most full, carefully selected, and thoroughly descriptive lists of plants and flowers that, perhaps, have ever appeared in any one book before, that is, as adapted for the adornment of an English garden; all sorts of plants are noticed, for all sorts of places, and all sorts of purposes. This is one great and special feature of the book; and we are not only told what to grow, but the instructions as to their cultivation are as copiously and completely given. It is difficult amongst so much that is good to notice any in a special manner. If we say that the articles on the Rose are good, so also are those on hardy herbaceous plants, window gardening, sub-tropical gardening, and floral decorations, &c. We forbear to quote from any, but strongly advise the reader to buy the book and consult it at leisure. It is a book that ought to be in the hands of every young gardener as a handy-book of guidance and reference on almost all the practical matters relating to a gardener's duties. It is a true Gardeners' Assistant.

There is, however, one great fault—shall we call

it?—attached to it, a fault that destroyed in a measure the usefulness of the original edition, a fault recognised and oft lamented on to the present writer by good Mr. Thompson himself. It is too expensive—too expensive for the pockets of poorly paid gardeners. It was for gardeners that Mr. Thompson wrote this book, as he very often expressed—to be to them "an assistant," and it is put beyond their reach by the price being greatly enhanced through the introduction of the coloured plates of flowers, &c., which are of no real practical value. They make it a very handsome volume certainly to those who can afford to pay, but what else? We hope the publishers may see their way to issue an edition, without the plates, in a much cheaper form, condensed perhaps and rearranged, to bring it within the reach of those whom it was originally intended to benefit. *A. F. B.*

—— The last number which has reached us of the *Indian Forester* opens with a very valuable paper by Dr. Schlich on the general principles of forest management, by which we mean systematic conservancy, not the mere happy-go-lucky rule-of-thumb business which often stands for woodcraft in this country. Dr. Schlich's paper is based on the best German practice, modified by the peculiar requirements of India, and will probably be extended over several numbers. Colonel Beddome contributes a short note on the forests and flora of the Tinnevelly district, alluding among other things to Podocarpus latifolia, the only Conifer of Southern India, and one found in some parts of the Himalaya and in Ceylon, but not known in the intermediate district till discovered abundantly in some of the Tinnevelly forests at altitudes of 2000 to 4000 feet The occurrence of a beautiful species of Cypripedium is also of great interest, as the genus does not occur elsewhere in the Peninsula or in Ceylon; nor, says the writer, must the beautiful Balsams be excluded from special mention, Impatiens grandis, umbellata and uncinata being all very beautiful plants peculiar to these ghâts, and Impatiens viridiflora and auriculata most curious epiphytic species.

PUBLICATIONS RECEIVED.—Sound Constitutional Principles in Theory and Practice, by Richard Herring (Longmans).—The Potato Disease, illustrated by Photomicrography, by Robert Bell, M.D. (Glasgow, Mackhouse). — Bulletino della Società Toscana di Orticultura. — Villa Gardener.—Hamburger Garten und Blumen Zeitung.—Guide du Botaniste en Belgique, par F. Crèpin.—Field Paths and Green Lanes, by L. J. Jennings (Murray). — Ferns of the British Isles, by Sy. C. (Van Voorst). —All the Year Round.—Un Livre très utile Caen, 1876.—Proceedings of the Academy of Natural Sciences, Philadelphia.

The Villa Garden.

MAKING A FRUIT GARDEN.—This comes as a seasonable topic, for now that the weather is mild and open, and it is fairly dry, or dry enough not to seriously retard outdoor operations, the ground can be prepared, the trees planted and securely staked where necessary, and all made neat and tidy ere the frosty weather puts in an appearance. It may not be far distant from us, for the year is rapidly drawing to a close, and on clear starlight nights there is a sharpness in the air and a glow in the northern sky that presages frost and snow, and as one of the old poets has it—

"The heavens are all coldly clear—
Through leafless boughs the keen winds blow,"

and, therefore, it is time all outdoor planting be hastened on as fast as possible—

"Before the mute snow covers all
The tired land as with a pall."

THE ARRANGEMENT OF THE FRUIT GARDEN.—In the case of a small garden, where space is of some importance, and it is necessary to keep the soil as open as possible, it is perhaps best to make a plantation of pyramid trees, and let it be a permanent one, using Apples, Pears, and Plums for this division of the fruit garden. If the garden be large enough and open enough to allow of some standard trees being planted they should be Cherries and Damsons, and such Apples and Pears as do best in a standard form. There is this to be said in favour of standard trees, that other crops can be grown under them; but on the other hand pyramid trees can be planted much closer together, and so the advantage in the one case balances that in the other. In addition, pyramid or espalier trees of Apples, Pears, and Plums can be planted in lines by the sides of walks, leaving a 4 or 6 feet border between the trees and the walk. Here space is afforded for cordon trees, and notwithstanding that they have been heartily condemned in some quarters, they are yet cultivated by many, and with a good measure of success. The planting of walls shall be treated of afterwards, at present we have to do with such fruit trees as those above named. In all methods or arrangements of planting, while economy of space is duly considered, let the trees have fair play. It is a common fault to plant too thickly; the Villa gardener likes an immediate effect—he wishes his garden covered, and he settles in his own mind he will have some of the trees removed by-and-by to make room for others; and then, when time has passed, and the crowded trees challenge attention, he finds he has become attached to them as old friends, and is reluctant to thin them out. It is best to plant thinly in the first instance, cropping the space between the trees—in the case of plantations—with vegetable crops, till such time as the trees have covered the ground.

SOIL FOR FRUIT TREES.—Gardeners are accustomed to say that a tree or plant "delights" in a certain soil, meaning thereby that it grows well in it, flourishing vigorously as if perfectly at home. We may, therefore, state with truth that fruit trees delight in a good loam. For assisting the production of fruit on pyramid trees, a good loam resting on a gravelly subsoil is the best; and especially does this remark apply to Pear trees. On a loam resting on a clay bottom, and especially if the clay be at all near the surface, Pear trees on the Quince stock will make a most vigorous growth, root and branch, and this causes them to be some time getting into bearing. Where the clay subsoil prevails it would be as well if a layer of stones or some resisting material could be placed 2 feet or so in depth below where the trees are planted, to prevent the tap-root striking downwards, and at the same time cause the fibrous roots to spread out horizontally, by doing which they are more under the management of the cultivator for root pruning, &c.

If the soil be poor, *i.e.*, if it has been used for the growth of vegetable crops, &c., and there is reason to fear it has become impoverished, a dressing of manure and decayed vegetable refuse may be given, digging it in just where the trees are to be planted, and thoroughly mixing it with the soil. It is best to do this sparingly rather than plentifully, as it is an easy matter to further manure by means of mulching and top-dressing when required.

WHAT TO PLANT.—Let us take the Apple first, and make a selection of suitable sorts in the order in which they will come into bearing. Here are twelve dessert Apples to commence with, all of which are suitable for growing as pyramids, and have been found to succeed in that form:—White Juneating, Red Quarrenden, Yellow Ingestre, King of Pippins, Cox's Orange Pippin, Sykehouse Russet, Ribston Pippin, Fearn's Pippin, Kedleston Pippin, Cockle Pippin, Old Nonpareil, and Sturmer Pippin. Then of kitchen Apples the following are well worthy the attention of Villa gardeners:—Keswick Codlin, Lord Suffield, Beauty of Kent, Blenheim Pippin, Emperor Alexander, Mère de Ménage, Pomeroy Russet, Bedfordshire Foundling, Alfriston, Royal Russet, Norfolk Beaufin, and French Crab.

In getting these trees from a nurseryman they should be asked for as on the Paradise stock. It is a stock on which pyramid Apples are generally worked, because it does not induce an over-vigorous growth, and also because it tends to fruitfulness.

What is known as the "bush" tree was a great favourite Apple tree with the late Mr. Thomas Rivers, and he used to speak of them as "the most delightful trees ever invented." He regarded them as especially adapted for small gardens, and, as he remarked, "by planting them every artisan and Villa gardener with their suburban gardens may grow their own Apples." These the late Mr. Rivers always worked on the Nonesuch Paradise stock, and for this reason, that he found it kept pace with the grafts, so that they did not swell over the stock, disturb the health, and shorten the life of the tree.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Fern-house.—Ferns that require warmth for their cultivation, and especially when a higher temperature, as is often the case, is given them than necessary, are very much subject to the attacks of two insects—scale and thrips, which are both more difficult to destroy on these plants than on most things, by reason that many species, particularly during the growing season, will not bear an application of tobacco smoke sufficiently strong to kill the thrips, nor any of the solutions employed for the destruction of scale, without destroying or seriously disfiguring the young immature fronds. If by washing and fumigation means were taken for their destruction earlier in the autumn, as soon as growth was completed, these should still be persevered with. Mere killing of the large matured insects is not sufficient, nothing less than complete extermination of the young in all their stages will do away with the necessity of repeating the same process year after year. I frequently meet with collections of Ferns upon which a great amount of labour is expended in trying to cope with these insects, and still the plants have a frowsy unsatisfactory look, from the fact that brushing, sponging, fumigating, and washing are carried out to an extent sufficient to rob them of the delicate healthy green appearance they ought to have, but not enough to eradicate the insects which are the cause of the mischief. With Ferns of a naturally strong-growing habit, especially the tree kinds, which if allowed a great amount of root-space often outgrow those of a weaker, more delicate character, as well as the room available for them, where they are affected with scale, the under oldest fronds will generally be found the worst infested, and of these there need be no hesitation at cutting away a portion, say up to one-fourth or third of the whole they possess. This will considerably lessen the labour in cleaning them and have the desired effect in reducing the size of the fronds they produce the ensuing summer. In fact I have known experienced cultivators of Ferns resort to this annual cutting away system with plants that were quite clean, the object being to keep the growth within bounds, the fronds at the same time affording acceptable materials for decorative purposes where cut Ferns are required. The fronds of the deciduous Davallias may, without doing them any harm, be gradually used for cutting from this time forward until the rhizomes are bare. These, such as D. bullata and D. elegans, keep well in a cut state. Where large Ferns are wanted for cutting nothing surpasses in appearance or endurance the glaucous-leaved Cibotium, C. Barometz, and the strong-growing Adiantum formosum, for which purpose it seems strange that these two Ferns are not more generally grown, as if plenty of root-room is allowed them, one-half the fronds they produce after the plants have attained a considerable size may be cut during the winter without weakening them. The deciduous Leucostegias, as soon as their fronds are dead and fit for removal, must not have nearly so much water given them, otherwise it will have the effect of rotting their root-fibres; but on the other hand it must not be withheld to such an extent as to let the soil get quite dry, or it will destroy or seriously weaken the plants. The atmosphere of the Fern-house should now be kept much drier than during the season of active growth, withholding the use of the syringe altogether where Gymnogrammas are grown. These should be removed to a warmer house, as they will not be at so low a temperature as other Ferns; they should not be subjected to much under 60° in the night. This will be found much better than keeping the rest of the collection too hot with a view to accommodating them. From 48° to 50° in the night, with a few degrees' rise by day, is the most suitable temperature to maintain for the general collection for the next eight or ten weeks.

FLOWER FORCING.—Azalea amœna is one of the best plants we possess for winter forcing. It affords a distinct and useful colour, and is naturally such a good grower that with fair treatment through the summer, when the plants have attained a moderate size, almost all the flowers they produce may be cut with from half to two-thirds the current season's wood. A few plants at a time should be introduced into heat as required either for cutting or conservatory decoration. Genistas also should be similarly dealt with. The old Acacia armata and A. Drummondii are amongst the best plants for a like purpose, as both may be cut freely with no further effect than its keeping the plants within bounds as to size, which is often rather an advantage than otherwise. In growing forced flowers for winter for cutting, the eligibility for the purpose to a very great extent depends upon the way the plants are treated whilst in heat. We frequently hear people complain that such and such flowers are very nice to look upon whilst on the plant, but they are of little use in a cut state, as they are no sooner severed from

the plant than they begin to wither, whereas with others the same flowers will last for days in an ordinary living room. The cause of the difference is not far to seek; the former are produced with too much heat, too much moisture, and too little light, by being stood whilst the flowers were developing too far away from the glass, often in bottom-heat; the two last causes are the most mischievous. For such things as the foregoing a night temperature of 60°, with 5° higher in the day, and the heads of the plants elevated to within a few inches of the roof-glass, will bring them on into bloom in a way that will enable the flowers to last double the length of time when cut that they will when grown under the opposite conditions. Hyacinths and Narcissus must also be brought on in heat in quantities proportionate with the demand. These likewise are much better not subjected to too high a temperature, and with all the light possible after the advancing tops have got inured to it. *T. Baines.*

Orchids.—The Pleiones which more or less for the last month have been very gay with bloom, will now in most cases be over. On an examination of the bulbs and flower-shoots, which by-the-bye are new growths at the same time, it will be found that a number of new roots are just starting away ready to supply the growths with support during the season, which is now commencing with the majority of this class; hence it will be advisable that they should be looked to, and where they have not been potted for a couple of seasons they must be shook out, the greater part of the old soil carefully picked out, the old bulbs cut away, and then without rending them or separating every bulb they should be made up, if sufficient are at hand, in pans of about 10 inches in diameter. That they will bear pulling to pieces like Calanthes, every bulb being pulled apart, roots and old bulbs cut away and thus made up, is at once admitted. I have for a number of years managed them very successfully in this manner, and always been rewarded with fine displays of bloom. I have also grown them in the pans without disturbing them for two years, and in this way they too have grown and produced abundance of bloom. However, since if they are pulled to pieces, each bulb apart, torn from its adjoining neighbour, the roots are much bruised and injured, they do not always so readily start away again. The plan I have found the best, is to shake them out and make them up in clumps, merely pulling the bulbs just apart without separating them, for sometimes they are so well rooted and become so matted together that they can only be parted by cutting through with a knife. When thus kept in clumps the check seems to be much less, and the roots quickly get into work and activity, and instead of the young shoots turning black, as they often do, more especially those of P. maculatua, caused, doubtless, by too much moisture about them whilst the roots are not sufficiently strong and numerous, the young growths start away with vigour, the leaves assuming a dark green colour, and, instead of being so narrow as they are often to be met with, they become rather disposed to be shorter in length, with greater breadth. In making them up the pans must be well crocked, for, being fond of water, when once fairly started into growth it is necessary that the water should pass quickly away; over the crocks place a layer of moss and begin to make the clumps up, using a mixture of Sphagnum moss, fibrous peat, small crocks, and silver-sand; the whole should be well mixed together, and should have been placed in one of the houses or sheds where it may become genially warm before using; keep the bulbs in the centre of the pans, 3 or 4 inches above the rim, filling the others in as the operation progresses. By this means when the flowering season comes round the flowers show to much better advantage than if the bulbs were placed together on the level. P. humilis is always later in flowering than the others, and therefore until it has bloomed it must on no account be disturbed. When the pans are made up they should all be stood together in the warmest end of the Cattleya-house, they then can be more easily managed than if spread about in different parts of the stages. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

The season is still favourable for planting trees, shrubs, Roses, &c. Let the ground be well prepared for the latter, and some fresh loam used with each plant as the work proceeds. Chrysanthemums in the flower-borders and shrubberies are now blooming freely and making a very interesting display, which at this season is always desirable. The Christmas Rose (Helleborus niger) will soon be showing its welcome and seasonable flowers; if a handglass is put over the plant it will protect it from heavy rains or sharp weather. Laurustinuses are showing great profusion of blossom, but are several weeks later than they usually are. The common Arbutus (Strawberry tree) is also flowering abundantly, but in many places the fruit, which is so showy, is very little more than half its usual size, and not likely to ripen this year; but Holly-berries are plentiful, and will be much prized when the season is further advanced. When the weather is unfavourable for outdoor operations all bedding plants in houses or pits, especially Pelargoniums, had better be looked over and decayed leaves picked off; any dead pieces of the tips of the shoots which may have been touched by the frost, that in some places came rather sharper than was expected at the time, had better be cut off, and the stock all looked carefully over, as the plants are not so apt to suffer from damp when all decayed matter is cleared away. At this season of the year all bedding stuff with few exceptions will require very little water and will stand frost better when they are kept tolerably dry; pits and frames which are filled with half-hardy and some of the choice varieties of hardy Phloxes, Pentstemons, &c., will be the better for plenty of air on all favourable occasions. Calceolarias if kept from frost will not require much attention until they are rooted and beginning to grow, when air every fine day will keep them strong and prevent them from drawing up. Have protecting material in readiness, for it may be wanted at any time. It is also important to sweep and roll the grass and gravel walks frequently at this season, as they sometimes are apt to be overlooked. Leaves and litter should be removed wherever they accumulate. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

The Cherry House.—If those indispensable preliminary operations which I referred to in the preceding Calendar upon this subject are not yet completed in the early house, let them be finished off without any further delay, and, if not already done, have the surface of the borders in which the roots of the trees exist mulched about 3 inches thick with suitable material which is free from any troublesome insect-pests. If the trees are full of health and vigour the requirements will be to keep the roots near the surface and to protect them from damage and prevent too rapid evaporation. For these objects half-decayed manure will suffice, but if, on the contrary, the trees require stimulating and reinvigorating, then use manure of the best description in a decomposed or pure state, from 2 to 3 inches thick. It will be necessary to close this house very shortly, and to employ the needful means to start the trees if ripe Cherries are required for use at the commencement of next May. This excitement must, however, not be too precipitately enforced if successful results are to be realised; therefore, forcing operations should be commenced at about 40° at night and 50° in the daytime. Open the house slightly at about 55°, and close it up finally for the day at about this point, and allow it under such conditions to range 5° or 10° higher than the natural temperature out-of-doors throughout the day. These temperatures should rule during the next month's proceedings, and with an occasional syringing and sprinkling of the trees and other inside surfaces when they become dry, will be all that is necessary here for the present. *G. T. Miles, Wycombe Abbey.*

Cucumbers.—The early winter plants treated as recommended in past Calendars will now be strong and vigorous, and equal to the production of a steady supply of fruit through the dull dark days now upon us. If in pots partly plunged in fermenting Oak leaves the roots will now be finding their way over the sides into the rough turf and rubble placed round them, and the trellis covered with short-jointed growths bearing thick leathery foliage—a striking contrast to plants which have been forced beyond their strength in close moist pits, where they have been allowed to carry a flush of fruit before the roots have become fairly established. With plants in the above described satisfactory condition when these lines appear the battle may be considered more than half-won, but strict attention must be paid to details, if the steed is to be kept going at a time when it would be most inconvenient for it to stand still. The first care must be the steady maintenance of a bottom-heat of 80° to 85°, which will keep the roots at work and capable of taking up the supplies of tepid liquid manure at a time when it will be of the greatest service to the plants. Top-heat may be regulated by external conditions. When the weather is mild and fine it may range from 68° to 85°, but on cold or wet nights a fall to 65° will do less harm than incessant firing, providing the maximum temperature is approached once within the twenty-four hours, and the bottom-heat is not allowed to decline. If blinds on rollers can be used for running down at night and during snowstorms, a great deal of dry firing will be saved, and the internal temperature, whether high, low, or intermediate be in favour with the grower, will be less liable to sudden depressions so often fatal to winter Cucumbers. By dressing over the plants twice a week, and the frequent removal of a few of the old leaves, surplus fruits, and male blossoms, the young vines, which must not be closely stopped, will keep growing and showing fruit, providing the plants are kept free from insects and over-cropping is avoided. Less moisture will now be required, but the evaporating pans may be kept full, and an occasional dusting with dry sulphur will keep mildew and red-spider in check. Last, but not least in successful culture, cleanliness must be observed internally by the removal of all decaying vegetable matter, the application of fresh lime-wash to the walls, and externally by an occasional washing of the glass and paint. *W. Coleman.*

HARDY FRUIT GARDEN.

The exceedingly mild weather with which we are now favoured is just the thing for this department of the garden, and should be taken every advantage of to push forward all pruning and thinning necessary for such trees as Apples, Pears, Plums, and Cherries, beginning with the former and following on in the order they are named. I have seen pruning done when those engaged at it could scarcely hold a knife or handle a nail, much less use them in an expeditious or proper manner, and no doubt this has been the experience of many more, when with a little management such a hardship might have been easily avoided. Many persons defer the pruning of bush fruits till quite late in the season, thinking thereby to save them from the attacks of sparrows and other feathered depredators, but where birds are at all troublesome such a course is of little avail, as the chances are that they will strip off most of the buds long before the winter is over. I find that by far the best way is to prune early, and immediately after to syringe the trees over with thin limewash in which some soot has been stirred, and if water is used for mixing that has had some quassia boiled in it it will be the more efficacious, or, what is better still, about half a pint of carbolic soap to every four gallons of the liquid. The lime should be quite fresh and only slaked just before using, and if strained through a fine sieve to take out any lumps there will be no difficulty in putting it on. The best time to apply it is when the bushes are moist with dew, as then it adheres readily if the day sets in fine and favourable after. Besides the great advantage of insuring the safety of the buds, lime acts most beneficially in ridding the trees of all kinds of mossy growth, and rendering the bark clean and healthy, and is therefore desirable on that account. Near towns or farms where sparrows abound, or in mural districts where bullfinches are troublesome, this lime-dressing is the only way to secure a crop of fruit unless netting is resorted to, the expense of which for such a purpose renders its use quite out of the question. As regards Apples, much may be done to increase the size and quality of the fruit by a judicious thinning to let in the sun and air among the branches, and this is a matter that should receive immediate attention, removing all such as cross each other, or that appear in any way misplaced, and can be spared without interfering with the general symmetry of the tree. If this were done annually orchards would be more productive, as, instead of the growth being drawn and weak, it would be short, sturdy and strong, and bristling with fat buds from base to summit. In the case of espaliers, the spurs of which after a few years' pruning become thick and crowded, they may now be thinned out by cutting away or shortening back all such as are not likely to be fruitful, so as to force them to break again lower down, when, after another season, those left now may be served in like manner. The same operation should be carried out with Pears on walls, or such as are grown as pyramids, as by so doing they may be kept nearly close on to the main branches, and this enables the sap to reach the point more freely than is possible with spurs long, twisted, and knotted in the manner one frequently sees them. Independently of this, the blossoms of those on walls are brought much nearer to the bricks, where they are in a better position for shelter, so that when others fail such as these so favourably situated generally escape. In the training or supporting of Pears against walls or buildings I find nothing equal to galvanised iron staples, which when once driven in remain permanent and can readily be made use of to put a piece of tar-twine through at any time required. As they are very neat, and there is no defacing or injury to the joints of bricks in the wall (there is when nails are used, I would strongly recommend them in preference to anything else, except strained wires, which are best for Peaches and Apricots, on account of the young wood that has to be laid in annually; but for dessert Cherries, Plums, and Pears, that have to be grown on the spur system and simply made fast in their places, anything beyond a few staples and an occasional nail and shred is quite unnecessary. It often occurs that during the spring months, if the blossoms of Peaches and Nectarines could but have been retarded for only a few days they would have escaped being cut off by frost, and if the branches are now detached from the wall and tied securely and carefully to poles or stakes sufficiently far away from the bricks not to be affected by the heat they absorb during sunny days, they may be kept back at least a fortnight later, and perhaps by this means a crop of fruit secured. At all events, considering the vicissitudes of spring, the practice is well worth a trial. *J. Sheppard.*

THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 1, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Dec. 3	Sale of Dutch Bulbs at Stevens' Rooms.
TUESDAY,	Dec. 4	Royal Horticultural Society: Meeting of Fruit and Floral Committees at 11 A.M., and Scientific Committee at 1 P.M
WEDNESDAY,	Dec. 5	Sale of Roses, Camellias, Bulbs, &c., at Stevens' Rooms.
THURSDAY,	Dec. 6	Meeting of the Linnean Society at 8 P.M. Sale of Orchids at Stevens' Rooms.
SATURDAY,	Dec. 8	Sale of Fruit Trees, Shrubs, Plants, Bulbs, &c., at Stevens' Rooms.

THE proceedings at the Mansion House on Monday last will be perused with mingled feelings of disgust and satisfaction—disgust, that such nefarious practices as formed the subject of the trial should still be, or have been, carried on—satisfaction, that the full penalty allowed by the law on a first conviction was duly enforced, the case being clearly proved. In the year 1869, as will be remembered by many readers of this journal, a Bill to prevent the ADULTERATION OF SEEDS was passed through Parliament, chiefly by the energy of Mr. CHARLES SHARPE, supported by most of the leading seedsmen. The Government, and Mr. BRIGHT in particular, who was then head of the Board of Trade, offered no sympathetic assistance to the passing of the B ll, but rather the reverse. Eventually, however, the Bill became law, and was printed in full in the *Gardeners' Chronicle*, 1869, p. 939. Of the necessity for such an Act those who read the evidence given by the seedsmen themselves could have entertained no doubt. The honest seedsman could not maintain himself in the face of ruinous and dishonest competition; the consumer was, of course, defrauded, and remedy was difficult if not unattainable. For some time the Act is believed to have worked well, and to have deterred evil-doers; but lately evidence was obtained of the renewal of these fraudulent practices, and the result was the trial at the Mansion House, elsewhere reported. Owing to the difficulty of detection, and of obtaining evidence strong enough to ensure conviction, it became necessary to appoint an inspector (not provided for by the Act itself), and to enable him to enter into business on his own account as a seedsman. In this distasteful manner at length direct evidence was obtained of the killing of seed, and of the sale of such seed. It became known in one instance that a large quantity of Clover seed and of Alsike Clover had been "milled" in a manner similar to what is alleged to have been practised at Worcester. The good effect of the Act has been illustrated by the fact that since the passing of the Act it has been necessary to be cautious; so that while the enterprising seed-killer could formerly show himself openly in Mark Lane, it was necessary now to wait in the passage at No. 60, or round the corner at the tavern, where those who employed him came and handed delivery orders for any seed they wished "done." Frequent changes of clothes became necessary to avoid inconvenience of ill-timed recognition. So profitable was the business in one case, however, that offers of partnership were, we understand, made, but the proprietor of the business preferred to keep the matter in his own hands and in that of his sons.

In the case which came before the Lord Mayor on Monday last it was shown that the object of killing seed was that it might not grow and betray its worthless character, for were it to grow the farmer would at once know that he had been defrauded, and that that for which he had paid 60*s.* a bushel, believing it to be Turnip, was actually composed, in some instances, of 50 per cent. of spurious seed. On the other hand, if undiscovered, the seed would be sown, and its failure would be attributed to natural or unavoidable causes. The difficulty of bringing such fraudulent practices home to the guilty parties, and the honour between "man and man" (saying nothing as to between man and men) are significantly illustrated in the report of the trial. One CHAPMAN, employed as it seems by STRANGEWAYS, produces a sample of "killed Charlock," price 6*s.* 6*d.* a bushel. A few days after STRANGEWAYS presented himself to the would-be purchaser (the inspector), and produced an invoice, in which the seed was described as "old Charlock." Witness seeing that, said they must have an understanding together that the seed was not to grow, because if it did, according to that invoice, he had nothing to fall back upon. The defendant "clapped him on the shoulder and said, 'Between man and man not a seed of it would grow, and that if it did he would put it in the kiln again for nothing,' adding, 'you know the state of the law. We cannot put anything into writing, but you must trust me and keep your own counsel.'" In a subsequent conversation STRANGEWAYS is reported in court to have said, "You can depend upon the seed being thoroughly well done, and not like FRITH'S. They shoot down the seed in the kilns, but don't scrape the sacks. I am very careful with this seed, and I always scrape the seams of the sacks myself with a small needle, so that there cannot possibly be a single seed to grow."

The defendant's counsel did not offer any defence or extenuation of this rascality, but recommended his client to withdraw his plea of Not Guilty, which was done, and the defendant mulcted in the full penalty, with costs to the amount of five guineas—a trifling matter as regards the immediate pecuniary loss, but sufficient, we hope, with the attendant publicity, to prevent any more sack-scraping for some time to come.

While congratulating Mr. SHARPE and those who acted with him on the successful result of their labours, we may express our regret that so invidious and difficult a task should be left to private individuals. Failing a public prosecutor the Royal Horticultural or Royal Agricultural Societies should take up such cases when assured of their validity. The Royal Horticultural Society, we know, is not burdened with funds to undertake such duties, while it is not the first time that the Royal Agricultural Society has failed to do the duty it might naturally have been expected to fulfil. Lastly, a word of caution may be necessary to purchasers. It is to be feared that Swede Turnip seed, which is likely to be high in price, will be adulterated with this dead seed and a revival of the famous ooo ensue, if the present action do not happily suffice to prevent it. We are unfortunately not able to name the London houses stated to have been supplied with dead seeds, but we trust the recent exposure will show them the folly and wickedness of carrying on business in such "strangeways."

The proceedings at the Mansion House had reference to the adulteration of Turnip seeds, and we are informed that summonses are about to be issued against some adulterators of Clover seeds, when startling disclosures may be looked for. No time will be lost in bringing the matter before the Courts, in order to stop the sale, if possible, of large quantities of inferior descriptions of Clover and other seeds which have been prepared for the coming season.

—— THE remarkable group of CYPRIPEDIUM SPECTABILE, illustrated in fig. 134, is one which flowered in June last in the Birmingham Botanic Gardens, under the care of Mr. LATHAM. The group consists of twelve plants, one of which bore thirty flowers, each very large as compared with the blooms usually seen, and borne in pairs, and in many instances with three blooms on each shoot. The plants were received in a dormant state from Canada the previous autumn, through J. B. GOODE, Esq. They were potted into good fibrous peat, and kept in a cold frame, and very little water given to them until they began growing, when water was applied copiously, and were kept in this frame until they came into flower, when they were removed into the conservatory. Some of the leaves measured 5 inches long and 4 inches in breadth, and the whole of the plants were in magnificent health.

—— We have received copies of the schedule of the tenth (quinquennial) INTERNATIONAL HORTICULTURAL EXHIBITION to be held at GHENT from March 31 to April 7 next. The schedule is very full and complete, and comprises upwards of three hundred classes, in each of which two, and in most instances three, prizes are offered. Many of our readers well know that the citizens of Ghent are adepts in the art of organising a first-class show, and they know also how cordial and hospitable is the reception given to Englishmen on these occasions. A few copies of the programme are in our hands for distribution, and others may be obtained from the Secretary of the Société Royale d'Agriculture et de Botanique of Ghent.

—— Some PEACH ROOTS have lately been forwarded to us in a very curious condition. The surface is swollen more or less through the whole length into rude, unsightly warty knots, while, in addition to the usual fibres, a single long smooth root is given off, which in its turn yields a few delicate root-threads. The affection is common to all the Peaches and Nectarines on the same wall. The border was trenched two years ago, and the roots cut within 2 feet of the trees. As far as we can judge, the long roots in question, which at present are perfectly even, were the consequence of the root-pruning. It is quite clear that the knots arise from a tendency to throw out numberless adventitious buds or suckers from the same spot; that these suckers are never fully developed, that they die back and thus form a sort of canker. It is precisely the same thing which occurs occasionally in Apple trees, as, for example, in the Keswick Codlin, where at last a formidable canker is developed, affecting all the tissues beneath it. It is impossible, without examination of the especial locality, to say what may have produced this tendency; nor have we any information as to its effect on the general health of the trees. It is, however, always a point gained in these kind of questions, to ascertain exactly what is the nature of the affection. *M. J. B.* [We could find no trace of insects or fungus. EDS.]

—— At a meeting of resident members of CAMBRIDGE UNIVERSITY, held at Christ's College last week, the Master of Christ's College presiding, it was resolved, upon the proposition of Professor HUMPHREY, seconded by Professor FAWCETT, that a MEMORIAL to Mr. DARWIN should be instituted in the University of which he is so distinguished a member, and which should assume a personal form; and it was understood that it should be a portrait—either a bust or a picture. A committee, with power to add to their number, was appointed, and a subscription started in the room.

—— We have received from Messrs. SPEAR & JACKSON, Etna Works, Sheffield, two sets of ANDREW'S PATENT PAXTON GARDEN TOOLS, which they have just brought out. Each set consists of a spade, fork, drag hoe, and rake; and each instrument is made out of one solid piece of steel, and is altogether weldless—an important innovation, which, combined with the efficient principle upon which it is made, should impart the cardinal features of strength and durability. In the spade and fork the iron strap with which the hand in the ordinary tools comes in contact is abolished, and a smooth handle more agreeable to the hand is substituted. The cofer and rivets of the face of ordinary spades and shovels are dispensed with, and a smooth and level surface secured, for which it is claimed as an advantage that it prevents all accumulation of dirt, works easier and keeps more cleanly. Whether, however, the thin layer of wood will not be liable to split seems open to question. The manufacturers also claim as an advantage in the "Paxton" spades and forks that, being divested of the iron straps and shaft at the neck, they will penetrate the earth deeper and with greater ease, and

as there is no clogging of the earth at this essential part, the work of digging is accomplished with greater facility and less labour. The tools included in one of the sets before us are very neatly and well finished off, and intended for the use of amateurs, and the other of good plain finish for gardeners, but both are of the same quality of metal and make, and appear to be exceedingly good. If there is a fault to be found in them, it is in connection with the spades, which are heavier than they need be. We shall give them a trial, and allude to them again if need be.

—— The IMPROVEMENT FOUND IN THE CHINESE PRIMROSE, in the way of obtaining intensity of colour, is well illustrated in a house of Primulas at the London Road Nurseries of Messrs. SUTTON & SONS, Reading. A selection of a remarkably high coloured type was made by Mr. MARTIN, the foreman, a year or two ago, and the progeny raised from it, and now flowering, has a very rich glow of colour, and the habit of growth is quite in keeping with the splendour of the flowers, which are also large, stout, and handsomely fringed.

—— On Thursday next, December 6, the Rev. Canon BEADON, rector of North Stoneham, near Southampton, will have reached the completion of his hundredth year, having been born December 6, 1777. There are still a few who can remember the Rev. FREDERICK BEADON as an early exhibitor at the Southampton and Winchester horticultural exhibitions of nearly half a century since, when such exhibitions were rare and of great importance to horticulturists in those days. Mr. BEADON's name was well known throughout Hampshire, and further as an earnest patron of horticulture, and with a thorough love for plants, as well as possessing a good knowledge of them, and this affection he has retained to the present time. In his library at North Stoneham is to be found a valuable collection of horticultural works, many of them very rare, and it is not long since that, in talking over with a friend, like himself a keen lover of plants, Mr. BEADON referred to one of the books in order to refresh his memory as to the name of the plant he was speaking about. In the rectory gardens many examples of rare trees, shrubs and herbaceous plants are to be found, as well as some veteran Camellias against a south wall, and a fine old Azalea indica alba, out-of-doors, in the American garden, which rarely, if ever, misses having a good head of flowers. There has always been a good collection of indoor plants, including a nice lot of Orchids, and up to the past summer the rectory plants could be depended upon as a great feature at the local horticultural show. Many a hearty congratulation will be offered on Thursday next to the venerable and much loved servant of CHRIST and the warm friend of all who know him, for he truly "loves to do good by stealth," and at North Stoneham he lives in the hearts of all.

—— An excellent contrivance for FUMIGATING PLANTS in ordinary frames can be seen at Messrs. SUTTON & SONS' London Road Nurseries, Reading. It may not be altogether new or original, but it obviates some of the disadvantages of the practice of thrusting down a light, putting in the fumigating vessel, and getting half choked with smoke in doing so. This contrivance consists in building a small chamber, a foot or so square, in the bed of the frame, and immediately under the wooden shelves on which the pots stand, which is covered on the top inside with a slate removable at will; access can be had to the chamber outside by means of a sliding shutter, which when closely shut down prevents the draught from passing into the frame. The fumigating pot is put into the chamber, the slate at the top removed, and the smoke finds its way among the occupants of the frame. The chamber is also useful for giving air in very wet and stormy weather, when it is scarcely safe to raise the lights. The beautifully healthy condition of a collection of herbaceous Calceolarias filling a long range of frames, their robust growth and fine leaf development, seem to illustrate the usefulness of this contrivance, as they certainly do the painstaking cultural oversight bestowed on the plants.

—— The beauty of the JAPANESE CHRYSANTHEMUMS, their brilliant colours and varied form, have been strikingly effective this autumn, and it is worthy of note that they have generally bloomed early, while the earlier flowering incurved types have been quite late. Of the newer Japanese varieties, the following may be said to have made a place for themselves in collections:—Diamond, bronzy chocolate with golden orange centre, large double flowers, and partially

FIG. 134.—CYPRIPEDIUM SPECTABILE, AS FLOWERED IN THE BIRMINGHAM BOTANIC GARDEN.

twisted petals; Peter the Great, pale yellow, the flowers large in size, and very striking in appearance; Red Gauntlet, dark crimson, a fine hue of colour, particularly striking in appearance; Satina, delicate pink or pinkish lilac, a very distinct and taking variety; Magnum Bonum, clear lilac, very fine; Mr. Barnes, clear deep buttercup-yellow, extra fine quality; Emperor of China, white, deepening to blush with age; Bronze Dragon, very fine; Fulgare, pinkish lilac, very bright and effective, and distinct in character; Baron de Brailly, clear delicate rose, very good; Soleil Levant, clear yellow; and Royal Soleil, crimson burnished with orange, fine and effective. Of the older varieties no collection would be complete without Comtesse de Beauregard, Criterion, Elaine, Fair Maid of Guernsey, Garnet, Grandiflora, Golden Dragon, James Salter, M. Charles Hubert Purple King, Plantagenet, Red Dragon, The Cossack, and The Daimio.

—— The exhibitions of the READING HORTICULTURAL SOCIETY in 1878 have been fixed for the following dates:—Spring show, Thursday, May 23; the summer show, Thursday, August 22. As is usual, the exhibitions will take place in the Abbey Ruins.

—— At the last meeting of the LINNEAN SOCIETY Dr. H. TRIMEN exhibited specimens of the OLIBANUM or FRANKINCENSE TREE (Boswellia Carteri, Birdw.), gathered in October last by Mr. J. COLLINS from the trees planted at Aden, and the same referred to by Dr. S. BIRDWOOD in his paper on this genus (*Trans. Linn. Soc.*, vol. xxvii., 1870). Dr. TRIMEN, in making some remarks on the variability of the foliage of the species of Boswellia, expressed the opinion that the B. Bhan-Dajiania, Birdw., was not specifically separable from B. Carteri. The B. Frereana, which yields the fragrant resin called Luban Metyi," and which HANBURY considered to be the African Elemi, is much chewed by Orientals, but rarely is imported into England. It is confined in a wild state to the Somaliland, where specimens have recently been collected by HILDEBRANDT.

—— For blooming at this season of the year in a cold greenhouse ARALIA SIEBOLDI is well worthy attention. It is now in full bloom, and if not particularly striking, the large-branched head of bloom is very interesting, resembling that of the Ivy, but milk-white in colour. While the weather is warm and sunny the balls of flowers will expand, but cold and dull weather prevents its doing this. It is curious to notice how the blow-flies are attracted to the flowers when the sun shines out warmly; they appear to come forth out of their winter quarters seeking the sweet secretion that exudes from the blossoms. Quite a small plant will throw a head of bloom of large size.

—— We are requested to state that there will be an international show of BREEDING STOCK in conjunction with the UNIVERSAL EXHIBITION AT PARIS in 1878. Very handsome prizes will be given, viz., from 1000 francs and downwards for bulls, cows, heifers, &c., of the leading breeds of the United Kingdom:—Shorthorns, Herefords, Devons, Sussex, Channel Islands, Ayrshire, Polled Angus, Suffolk, Aberdeen, Galloway, Scotch, Highland, Kerry, &c. For sheep 500 francs and downwards, for rams, pens of three ewes of the following breeds:—Merino, Southdown, Shropshire, Leicester, Romney, Lincoln, Cotswold, Cheviot, Blackfaced, &c. For pigs, boars, sows, &c. For poultry, pigeons, rabbits, &c. A work of art, for the best group in each division of the show, value 2500 francs; the same for sheep, value 1500 francs; pigs, 1000 francs. Programmes and entry forms can be obtained on application to P. CUNLIFFE OWEN, Esq., C.B., Secretary of the Royal Commission, Canada Buildings, King Street, Westminster, S.W. Intending exhibitors should make their entries by December 20th. The general superintendence of the Agricultural Department has been entrusted to Mr. BRANDRETH GIBBS.

—— A strong plant of the climbing TROPÆOLUM PERFECTION has been for several months trained to the wires at one end of the early Peach-house at Heckfield, and is producing flowers of the richest crimson-scarlet hue and of the most perfect form, in great abundance. The flowers are borne on stems about 4 inches in length, and because of their intense hue of colour are most valuable for vase or epergne decoration at a period of the year when rich colours are scarce. It is a very robust kind, and is valuable in the open air in summer as in the house in winter.

—— The desirability of occasionally examining the state of the butts of large ELM TREES was exemplified at Highfield Park, Heckfield, during a recent gale. A giant tree stood near to the coach road, on one side of which was a fine bank of evergreen shrubs that shut the old church that stands close by from the view. The attention of the Lord of the Manor had been personally drawn to the tree, but it was not thought to be in a dangerous state. During the prevalence of the next gale of wind it blew down, fortunately in a direction to do little mischief; had it fallen to the east it would have smashed in the shrubs and a part of the church, and done great damage. When fallen it was found that, with the exception of about an inch or so of the external wood, all the remainder at the base was quite rotten.

—— A very INTERESTING CROSS IN THE TOMATO has been effected by Mr. DAVIDSON, gr. to Mrs. MARSON, of Highfield Park, Heckfield, the seed-parent being the Red Currant, and the pollen-parent Hathaway's Excelsior. The result is much more robust habit; plants still full of fruit on a south wall, and protected at night by mats, are 7 feet in height, whilst the bunches of fruit are much larger, and the fruit at least three times as large as that of the Currant. It is quite distinct from the known Grape Tomato, and is exceedingly ornamental.

—— A large breadth of VEITCH'S NEW WINTER-PROTECTING BROCCOLI, now growing in the kitchen garden at Heckfield Place, presents a capital example of the great value of this fine kind as an early winter variety. It make a good succession to the Autumn Giant Cauliflower, turning-in at the end of November, and will probably continue to furnish a supply for a couple of months. The breadth is marked by singular evenness and truthfulness to character, whilst its protecting character is seen in the fact that the leaves entirely cover and enclose the head of flower. It is a really genuine novelty, that is worthy of all praise and wide cultivation.

—— The promise made in the spring that the then remarkable bloom upon the HOLLY would be productive of a fine crop of BERRIES has been well fulfilled, as the Holly trees in all directions are covered with rich bright scarlet fruit, masses of which will presently be found making glad the heart of man at the merry Christmas time. It is not worth discussing how far this abundance of berries may prognosticate a hard winter, as that is not worthy of much consideration. It would be more useful to ascertain, if possible, why it is that now and again we get such grand crops of berries, and specially why is it that we find some trees producing a great crop of fruit whilst others close by have not a berry. Some trees are male and others female, and some trees produce a good crop of berries and then rest a year or two whilst their fellows are prolific? One thing is noticeable, that in a large plantation of Hollies the oldest and most stunted trees have the largest crops of fruit. From this it would be fair to gather that the barren ones are expending all their strength in the production of wood, and none in the production of berries. It also often happens that in the great demand for berried Holly heads and large branches of trees are cut off, and as a result a strong robust growth follows which it takes several years to reduce into a proper fruiting condition. It often happens also that where there is a prospective promise of fruit, a late spring frost cuts it all off, and the trees thus get the credit of being males. That some are of that gender is true, but the majority of the wild Holly trees evidently belong to the gentler and more fruitful sex. It must, however, be borne in mind that Hollies, like many other flowers, may be structurally two-sexed and yet functionally of one sex only.

—— According to a correspondent in the *Gartenflora* writing from Tiflis, the splendid HARVEST PROSPECTS of that region were suddenly dissipated by terrific hailstorms on the 3d and 4th of June. The hail fell over an area of about 130 miles long, and from 2 to 10 miles broad. In the neighbourhood of the town of Tiflis the stones were spherical, and from a Hazelnut to a Walnut in size, but along the Vera River they were much larger, and the damage they caused was very serious. Irregularly-formed, sharp-edged stones were picked up, the heaviest weighing 2¼ lb. (!) At the colony of Marienfeld, sixty bullocks, numerous horses, and two stags were slain by these formidable hailstones, and the corn and fruit crops of this part completely annihilated. The greater part of the windows in Tiflis were broken, and in the botanic garden alone about 4600 panes. There was not sufficient glass in the country to repair the damage. The garden of the Acclimatisation Society at the north end of the town escaped almost unharmed. Many people were drowned in the streets, or carried by the raging streams of water from the mountains into the open cesspools of the town, there to meet a miserable death. The torrents of rain and hail caused an amount of destruction fearful to contemplate. We grumble very often at the "detestable" climate of our own country, but hailstones as big as brickbats are happily unknown to us. Such a storm would make short work of the Crystal Palace, and the thousands and thousands of glasshouses all over the country.

—— The Society of Apothecaries have decided to offer two PRIZES for competition by young WOMEN, under twenty years of age, IN THE SCIENCE OF BOTANY. The prizes will consist of a gold medal, and a silver medal and books, to be awarded to the first and second candidates respectively in order of merit. The Rev. M. J. BERKELEY, the examiner for the prizes given by the Society to medical students, will conduct the examinations.

—— We are informed that the well-known nursery and seed business so long carried on by Mr. EDWARD TAYLOR, of Malton, Yorkshire, has been purchased by Mr. ROBERT BLACK, lately with the Lawson Seed and Nursery Company, who intends to carry on the business in all its branches.

—— The COTTON INDUSTRY IN BRAZIL seems to be largely on the increase, judging from a recent report on the subject. Many large factories are now in full working order in the neighbourhood of Saõ Paulo. In some the machinery has been supplied by the most celebrated English firms. Two great advantages attend the establishment of looms in Brazil—first, on account of the raw material being produced or purchased almost at the door; and next, on account of the large internal consumption of the coarse kind of cloth turned out by these factories.

—— A new kind of cultural industry, namely, the GROWTH OF BANANAS, has increased to a considerable extent in Panama during the last two years. These fruits are grown almost exclusively for the New York market. A large tract of land bordering the railway, about a mile from Colon, has been put under this cultivation by an enterprising German, and from this plantation as much as 12,000 tons of fruit are exported monthly to New York, where they sell readily at an enormous profit; the wet, rich alluvial soil of the Isthmus being peculiarly adapted to the production both in quantity and quality.

—— The CULTIVATION OF COCOA (Theobroma Cacao) in SURINAM, and its exportation, has during the last five or six years increased considerably. Of all the products of the colony it is considered not only the safest, but the most profitable—more so even than sugar—the Cocoa grounds having none of the difficulties to contend with that the sugar estates have. In four or five years after planting the Cocoa tree begins to bear to a moderate extent, and in the eighth or ninth year it attains its full bearing, and continues very productive for about forty years. Its subsequent culture is very simple, and the planter has no fear for the future. A profitable Cocoa plantation of 300 acres can be kept up with a staff of from thirty to thirty-five labourers. The dark and dense shade created by the umbrageous mass of its own foliage prevents to a great extent the growth of weeds, so that it is found unnecessary to hoe the ground, in lieu of which about two clearings with the cutlass are made annually; besides, the leaves of the Cocoa fall in great quantities, forming quite a layer on the ground, and so, by covering, help to exterminate the weeds. In the plucking seasons no difficulty is

found in obtaining labour, as it is said the natives find the work easy, and are paid so much per pound as the seeds are brought in, earning from 2s. to 3s. per day.

—— Mr. JOHN MCINTYRE, late gardener to A. A. RICHARDSON, Esq., Aberdelghly, Lisburn, Ireland, has succeeded Mr. JOHNSTONE as gardener to Captain MAXWELL, at Terregles, Dumfriesshire.

—— RICHARDIA ÆTHIOPICA is largely grown in some of the market nurseries round London, and it is scarcely necessary to say they are finely grown. Some growers have from 2000 to 3000 plants, in 48 or 32-sized pots according to the size of the roots. A successioo is kept up by means of the young offshoots thrown up by the large plants; these are taken off and put into large pots and boxes as shoes, and in the spring all that are large eoough are potted and stood out-of-doors with a covering of 4 inches of rotten dung over them. An abundance of water is given in summer, as often as three times a-day when the weather is hot and dry. At the end of the summer they are taken into houses and get into bloom by Christmas, at which time the large white trumpet-shaped flowers are in great demand.

—— We note that the Messrs. STEVENS & WILLIAMS, Brierly Hill Glassworks, Staffordshire, have now brought out their handsome new registered Hyacinth glasses, illustrated in our columns at p. 339, in various colours. They are very ornamental.

Home Correspondence.

The New Waterproof Card Labels.—In your last impression you refer to our waterproof card and other horticultural labels in a paragraph on p. 659. We regret to inform you that a serious injustice has unintentionally been done to these labels by your statement that they last about eight months, and your reference to a patent indelible ink. This is an entire misrepresentation, and we are sure you will gladly put the matter right in justice to us, and with benefit to your readers. From actual experience we beg to state that these labels will last vastly longer than eight months, and we have no hesitation in saying that it is our firm conviction that they will endure for eight years as well as for eight months. No special ink is required, though probably experience will prove that some of the inks now in commerce are more adapted for the purpose than others. The card which forms these labels is practically imperishable, as well as absolutely insoluble. *The Patent Waterproof Paper and Fibre Company, Canal Works, Willesden Junction, N.W.* [We have subjected these labels to severe tests since our paragraph was written, and with very satisfactory results. They will be a great boon. EDS.]

Tuberoses.—The following may interest some of your readers who are in quest of sweet-scented flowers in winter. A correspondent in France sends us a sample of Tuberoses, the crop of 1876, which were kept during the summer in an open but covered shed. They were perfectly sound, and the writer goes on to observe, "Some of these roots were planted in a small hothouse last September, and are now in full bloom;" and he thinks that such bulbs planted in October could be had in flower at Christmas, and he is desirous of knowing whether any English cultivators have similar experience. It is his intention to follow up the experiment next year, and advises that the plan should be generally adopted. I am sorry that none of your correspondents have given more detailed cultural directions for the management of the Tuberose, as there is no doubt that many of them go blind for want of proper handling. *P. Barr.*

Ageratums at Castle Kennedy.—A short notice appeared a few weeks ago in the *Gardeners' Chronicle* of some of the seedling Ageratums which have lately been raised here, with a request for further information on the subject. As they have been very much admired during the last two or three summers, and have attracted a good deal of the attention of lovers of flower gardening, I have much pleasure in complying with the request. A few years ago it occurred to me that the Ageratum possessed many qualities, which, if properly developed, would bring it to the front as a bedding plant; evidently it had not had that attention bestowed on its improvement which its merits deserved; I resolved to try what could be done with it. After procuring a few packages of the best seed I could get, I sowed it, and raised a large number of seedlings, which were very disappointing, scarcely one was worth keeping; very late in the season I discovered one which was a decided improvement, and which was afterwards named Countess of Stair, and was sent out a few years ago by Mr. Williams, of London. The principal step in advance made by this batch of seedlings was variety of colour; seed was saved from the best varieties, taking into account colour, habit, and constitution. For a number of years the same process has been going on, and the result is highly satisfactory; we have now got almost every shade of blue, not a few approaching pure white, others white with red buds, the flowers tipped with pink and other shades of red, some flesh-coloured; a scarlet is within the range of probability. We have now a few varieties possessing all the requisites of first-class bedding plants—abundant flowers, striking colours, strong constitutions, compact and moderately dwarf habit, and as easy kept over the winter as Pelargoniums. We test the best varieties by growing them in beds and lines. Those which attracted most attention last season were—Lady Jane (sent out by Mr. Williams last spring), blue colour, 12 to 16 inches in height, abundant flowerer and free grower, with fine constitution; Beauty, fine dwarf nearly white variety, a pretty distinct bedder, from 8 to 10 inches in height, comes early into flower, has a strong constitution, and is easily wintered; Cupid, the finest of all the dwarf blues, splendid bedder, compact habit, from 6 to 8 inches in height, comes early into flower, strong constitution, and consequently easily wintered. *A. Fowler.*

Cucumbers and Broccoli: a Suggestion.—I have for some time past noticed small paragraphs in your columns on the Telegraph and other varieties of Cucumbers. I will, therefore, ask Cucumber growers to exhibit them at the forthcoming meeting of the Fruit and Vegetable Committee on December 4. It would be a fitting wind-up for the year's labours of the committee. The different varieties of that much-esteemed vegetable, the Winter Broccoli, would also make a most interesting exhibition, and would show, without doubt, which are the best varieties to grow. *R. Gilbert, Burghley.*

Pavia macrostachya (p. 653).—I fully endorse all that you say in praise of this fine shrub, so admirably represented in your large woodcut. But are you correct in speaking of it as a tree? [A slip of the pen.] I have one here which must be at least forty years old, and is every summer a mass of beautiful flowers, but it has always been a bush, never exceeding 8 or 10 feet in height. *H. N. Ellacombe, Bitton Vicarage.*

Covering Early Vine Borders.—Your correspondent "D. M." appears to forget that in starting an early vinery, and for some time afterwards, the heat of the house and that of the border outside bear the same relative proportion to the natural ground and open air during the spring. How does he account for the rapid start vegetation makes after a few hot days, and a genial shower or two? Certainly neither of these can have done anything to raise the temperature of the soil to a sufficient depth for the roots to feel it, and yet the buds burst and the sap immediately flows with redoubled force. Take some parts of the north of Europe, where they jump at once from winter to summer, and what about the warmth of soil there and its effect in producing root-action, and is it not rather brought about in response to atmospheric influence alone? If this is the case, then there is no need for the application of bottom-heat to Vine borders, for by simply raising the temperature of the house we do all that is required to set sap in motion. To keep out frost is only following Nature in her course, as she scatters leaves and other material on the ground to protect the roots when they are no longer of service on the branches, and if we imitate her in this matter we shall do much better than by piling a mass of fermenting material where its utility is at least but questionable at any time, and is positively injurious before Vines get into leaf. If this is done, as I before observed, sap is set in motion only to return again to the border, and of this any one may satisfy themselves by plunging a Vine in heat in a broken pot, so that a portion of the front roots are left open to view, and they will soon see that the sap does not remain in the rod pushing at the buds as they fondly imagined. The subject is one of great importance, and I trust will meet with the consideration it deserves. *S. W.*

—— May I ask your correspondents "S. W." and "G.," who profess to grow early Grapes successfully without the aid of fermenting materials, and the roots of the Vines all outside, what the temperature of their borders is from the time the Vines are started till the Grapes are ripe?—the daily readings if possible, or, if not, the weekly "means." If they have not kept an account of these hitherto, will they do so and publish the same next spring, and confer thereby a real service on your readers? Will "G." also inform us what he considers fermenting materials to mean, as it is clear he does not think a "good covering of leaves," protected by straw, comes under the head. Most people look upon them as being among the best fermenting or "heating materials" they can use, particularly for Vine borders? Then we shall be able to judge how far the practice of your correspondents differs from other people's. My experience is entirely in accord with that of your Dunrobin correspondent, who has demonstrated that while the temperature of the vinery is ascending that of the border is on the decline, and just at the lowest point when it ought to be at the highest—that is, when the border is unprotected. If this is rational Vine culture it is something new, but it is what "S. W." and "G." practically recommend. At least they are committed to prove, either that they can maintain the temperature of their outside Vine borders at the necessary degree without the aid of fermenting materials, or that the Vine can be cultivated successfully with its top in a stove-heat and its roots in a winter temperature. I think that if anything "D. M." has understated the difference between the root and top temperatures. If we say the mean temperature of the vinery is 70° during the months that the Vines are swelling and ripening their fruit, the temperature of the border will be nearly 25° or 30° lower under a covering of non-conducting materials only, supposing it to subside to 40° or 45°; for it must be remembered that, if such materials prevent the escape of heat from the border, they also shut out the sun-heat in March and April, about which period the temperature of the border reaches its lowest point. A Vine border here which was covered early in October with about 6 inches of leaves topped with straw stands just now (November 27) at 49° 1 foot below the surface, and the weather has up to this date been exceedingly mild. By December it will decline to 40° or thereabout, and it will stand at that figure for the next five months if it gets no more assistance in the shape of fermenting materials. It is such facts as these that lead me to ask for more authentic particulars from "S. W." and "G.," and it is incumbent upon them to furnish them if they do not wish to mislead. *S. W. the Second.*

—— During the last twelve months, and more especially within the last three or four weeks, a great deal has been written against the practice of covering early Vine borders (see pp. 598 and 662), and why? Now I am, like other gardeners, no advocate for giving heat or protection to subjects not requiring them, and thus unnecessarily wasting both labour and material, of which commodities few gardeners have enough, to say nothing of labour to spare. But some of the correspondents of the *Gardeners' Chronicle* seem to think that it is not only a waste of labour and material, but that the covering of early Vine borders is of no practical use whatever: rather a bold assertion this. I have been, and am still, under the impression that by putting on the early Vine borders a good covering of dung and leaves in autumn that the heat imparted to the border during summer is to a certain extent retained, and not only that, but the heat, little though it be, contained in the covering material will induce the roots to move in an upward direction, when they will not only permeate the 2 or 3 inches of top dressing put on in the autumn, but in some cases the 3 inches of short dung immediately over the soil, to their advantage. That the above is substantially true I can vouch from the fact that in removing the covering off the border, which we do by "halves," the second half never being removed before the Grapes have thoroughly "finished," we invariably find the roots as above described—"a network." Having stated the above simple facts, I will now ask your correspondents "S. W.," &c., whether they would consider the state of an early Vine border such as I have endeavoured to describe satisfactory? Perhaps it may not be out of place here to state that we commence cutting Grapes in our first house from the middle of March to the end, but always in March. One of your correspondents speaks of the "enormous heaps of fermenting materials," and the piling of "huge hotbeds," and wonders why it is that they "endure it in the way they do year after year." I have never yet seen huge hotbeds piled on Vine borders, but I have seen as much as 2 feet thick of long dung and leaves (the latter preponderating) put on an early Vine border. Perhaps "S. W." will kindly inform us whether it is the continual early forcing of the Vines or the "huge hotbeds" over their roots that causes them to show signs of exhaustion or debility. According to my thinking it seems but reasonable to put a warm covering on early forced Vine borders, thereby compensating them to a certain extent for that which they would possess if they were not forced—a warm

surface from the sun's rays, which surface I would venture to say would be as hot 3 inches from the surface in the month of April as it would be the same depth from surface under the "huge hotbeds" in November. Does it follow that when the heat in a "huge hotbed" is at 150° that the surface of the soil would be the same? I think that the soil 3 inches below the surface would not be much more than half that, if so much. I do not believe a "hotbed" imparts much heat to a Vine border or any other border. Does not the heat spend itself in an upward direction? That being so, what danger is there of burning the roots of the Vines when they would have received 2 or 3 inches thick of top-dressing and the same of short dung? In conclusion, I humbly contend that the only function—and a very important one it is too—that the dung and leaves perform, is that they cause the roots of the Vines to push upward to the heated surface, where they will find something for their trouble, and with consequent results to the appearance and condition of the Vines inside. Of course your readers will understand that I am open to conviction, and have hastily written these few notes on the spur of the moment, in the hope that some of our leaders in Grape culture will more fully enlighten us on this *vexata quæstio*. *H. W. Ward, Longford Castle.*

Aponogeton distachyon.—I was pleased to see in the last issue of the *Gardeners' Chronicle* attention called to this neglected but grand old winter-flowering aquatic, which only requires to be more widely known to be appreciated. The plant is quite hardy in Cornwall, where it grows vigorously, and flowers most profusely in many places. Fine examples of it may be seen at Porthgwidden, near Truro, the seat of the Rev. T. Philpotts, but the finest mass I ever saw is at Bodrean, the seat of Arthur Williams, Esq. In its its season, there may be seen hundreds of these exquisite wax-like flowers expanded at one time; it is growing in a large pond (which is fed by a stream of fresh water, which is indispensable for the well-doing of this plant). Its valuableness for furnishing cut flowers at this time of the year is only known to those who possess it, and to those who do not possess it it is to be highly recommended. It possesses a most agreeable Hawthorn scent, and keeps a long time after being cut. *S. G.*

—— In your last week's issue you bring to notice one of the most beautiful aquatic plants grown out-of-doors in the British isles—Aponogeton distachyon. In addition to the places mentioned by you, allow me to say that it does remarkably well in a pond in the grounds of the Rev. T. Philpotts, Porthgwidden, Cornwall; it is extensively used for church and other decoration, for which its purity of colour, sweet scent, and lasting qualities eminently adapt it. I have often felt surprised at its being so little known, and had come to the conclusion that it might not be hardy enough to withstand the winters of less favoured counties than Cornwall, but your notice of it so far north as Edinburgh goes far to dispel my fears on that score, although undoubtedly it was assisted to withstand frosts by the ponds being fed by springs. *John C. Tallack, Gloucester.*

—— It is gratifying to see attention called to the above very charming plant, which presents many desirable and attractive qualities, and might be introduced to ornament many a corner, particularly where a supply of water is at command. It is perfectly hardy, deliciously fragrant, chaste in colour, durable when cut, very beautiful for table or specimen glasses, subject to no disease, and most easily managed. In a very neat brick tank at Belmont, Taunton, there are four plants which are admired by all visitors; they have been in flower during the whole season; and even now, when there are no flowers in the garden, these plants are blooming as freely as ever. They should be potted in loam and sand, say in 10-inch pots, then placed in water. The supply here varies from 3 feet above the pot—seldom more than 3 feet. Here they luxuriate. Nymphæa alba grows and blooms admirably under the same treatment. Has any one tried to grow Nymphæa cœrulea as an outside aquatic during the summer? If it would flourish under the above treatment, what a charming combination and contrast might be made with these plants. *William Payne, Belmont, Taunton.*

Cypripedium Roezlii.—There is now in bloom here (Belmont, the seat of John Marshall, Esq.) a very fine healthy plant of the above, with eight spikes on it. The plant is very healthy, and fully equal to the task of perfecting the flowers which are on and coming forward. There is, however, one peculiarity belonging to this species which I have not observed in any other of the family, and I should be glad to know if the same thing happens in the experience of others. I allude to the flowers falling off at a certain period, when not withered or decayed. This event appears to be regulated by the development of the succession flowers, for when the unopened bloom arrives at a point of about three parts its opening size then the expanded bloom drops, as if to make way for its successor. I have kept those fallen flowers for a fortnight in very good condition, and cannot account for the occurrence. *W. Payne, Belmont, Taunton.*

Orchids in November.—Although out-of-doors winter is upon us, in the Orchid show-house the season of flowers has begun, and already it is richly furnished, as the following list for November will prove. Readers who desire to cultivate Orchids will see that the greater number of these come from the cool house, and are now also sending forth profusely stems that promise a rich supply through the winter.

Vanda cœrulea
Cattleya maxima
,, marginata
,, bicolor
,, superba
Dendrobium album
,, chrysanthum
,, cumulatum
Masdevallia Chimæra (true; very distinct from M. nycterinia, which is often mistaken for Chimæra and so sold)
,, nycterinia
,, Veitchii
,, melanopoda
,, polysticta
,, peristeria
,, Lindeni
Zygopetalum crinitum
,, Mackayii
Lycaste Skinneri
,, lanipes
,, leucoflavescens
Maxillaria picta
Mesospinidium vulcanicum
,, sanguineum
Rodriguezia secunda
,, species (yellow)
Odontoglossum Andersoni (this plant has one branching stem with forty-three flowers. Is not this an extraordinary number? What is the largest number on record? Will any reader inform me?)
,, Rossii majus
,, Lindleyanum
,, Cervantesii
,, grande
,, Alexandræ
Phalænopsis amabilis
,, rosea
Phalænopsis cornu-cervi
Stanhopea Wardii
Miltonia candida
Oncidium tigrinum
,, pelicanum
,, macranthum
,, suave
,, crispum
,, ,, marginatum
,, varicosum
,, Rogersii
,, flexuosum
,, Kramerii
,, Papilio
,, tigrinum
,, ornithorynchum
,, cucullatum
,, nubigenum
,, aurosum
,, crocidipterum
,, prætextum
,, Forbesii
Ornithidium sophronitis
Cypripedium insigne
,, niveum
,, barbatum
,, Roezlii
,, pardinum
,, longifolium
,, Harrisonianum
Cœlogyne species
,, brunnea
Sophronitis cernua
,, coccinea
,, grandiflora
Pleione maculata
,, lagenaria
Epidendrum species
,, aromaticum
,, striatum
Saccolabium papillosum
Bifrenaria aureo-fulva
Lælia Dayii
Burlingtonia decora picta

Edward W. Cox, Moat Mount, Mill Hill, Nov. 28.

Strawberry Perpetual.—Amongst a lot of new Strawberries which I planted here one bearing the above name, from its habit and strong constitution, took my fancy. The plant in appearance is a good deal like a Strawberry known in the North as "Black's Seedling," and was rechristened about London as "Black Prince," but Perpetual is distinct from this or any other Strawberry which I have met with. At layering time I gave orders to try a hundred of them, and they were treated in every respect the same as the others, but to my agreeable surprise in October they, without any extra encouragement, came freely into blossom, and appear, with simply greenhouse temperature, to be setting their fruit nicely; and I should not wonder when this Strawberry becomes better known and specially treated that ripe fruit on Christmas Day will be quite possible. Years ago I told a raiser of new fruit that what we wanted now most in Strawberries was a perpetual habit, and here some one has cleverly hit off the very thing wanted. *J. Rust, Eridge Castle.*

Schizostylis coccinea.—Those who have never grown this brilliant Iridaceous plant can have no idea of its value for decorative purposes during the winter, or the great ease with which it may be grown and got into bloom at that season. Just now we have a great many tufts of it in 6-inch pots, and a fine display they make in the greenhouse, where they go on flowering for several months in succession. The best and strongest plants with us are some we raised from seed sown last February in heat, in which they were kept growing gently on till towards the end of May, when they were planted out in a partially shaded position, and kept well watered during the summer. In the early stages of their growth they have much the appearance of young Leeks, but afterwards assume more the habit of Iris, to which in miniature they bear a close resemblance, while the spikes of bloom are almost the exact counterpart of those of the Gladiolus, except that they are smaller and of a bright scarlet colour. Considering its hardy nature, and the length of time it has been introduced, it is surprising it is not better known and more generally cultivated than it appears to be, especially as it flowers naturally at a time of the year when there is little else of a gay character to cheer and enliven. Like its near ally, the Gladiolus, I find the blossoms will continue opening in water almost as well as when left on the plant, and it is therefore a valuable subject for cutting as it lasts a long time in water and quite lights up any vase or epergne in which it may be used, admitting as it does of such ready increase either by seed or division of the root. Those who are not so fortunate as to possess a stock of it will experience no difficulty in working up as many as they may desire by setting about its propagation at once, or by sowing soon after the turn of the year, and treating the young plants in the manner mentioned above. Although perfectly hardy, if disturbed at this season it will be the best way to pot each piece separately in small pots and stand or plunge the same in any cold frame where they are protected from frost and dry cutting winds. In such a favoured position they will be making fresh rhizomes underground and forming young rootlets ready for a more vigorous start in the spring. In the ordinary way, after a sufficient stock is obtained, all that is necessary after they have done blooming is to stand the plants away under the shelter of glass till April or May, and then to shake out and plant as many as are likely to be required, having previously divided them into moderate sized tufts to allow for future growth. The soil for them should be prepared by being made light and rich with leaf-soil and well decomposed manure, and after being dug up and thoroughly incorporated together the plants may be put in at about 9 inches apart. A slight mulching of old Mushroom-bed dung, or anything of that kind, is of great assistance during their summer growth in keeping their roots shaded and uniformly moist, which to water-loving subjects as they are is a matter of some importance, as when they are allowed to become dry they are apt to get red-spider on their flag-like leaves, and when that occurs it causes much disfigurement by turning them rusty. To ward off these pests it is a good plan when giving water to always administer it through the rose of a watering-pot, or to make a practice of syringing them two or three times a week during the prevalence of dry weather. By the end of September or early in October they will have nearly completed their growth and formed most of their flower-spikes, and should then be taken up and potted, after carefully reducing the ball to admit of their being placed in 6-inch pots, in which size they look best and are the most useful for general purposes. After the potting the most suitable place for them is a damp frame where they can be kept close and syringed once or twice a day till they get fresh hold of the soil, after which they can be withdrawn a few at a time as they show bloom and placed in the greenhouse or window recesses in rooms, situations for which they are specially adapted. Where they can have manure-water without being objectionable it will be found of great assistance in helping them to develope their flowers, but if rich soil is afforded them when potting the use of any liquid stimulant is not so much needed, but one thing to be observed is not to allow them to become dry at any time. *J. S.*

Crotons.—It is said that "variety is charming," and that "novelty is the spice of life," and certainly those upon whom devolves the duty of developing the progressively increasing taste for things floral and horticultural act well their part, as also do those who create hybrids at home. Croton Weismanni is a great favourite with me. I knew it before it was introduced to the public, but I have never seen a large show plant of it. Another favourite of mine is Croton majesticus, a rapid-growing plant, and very beautiful. I enclose you three leaves for inspection, and you may fancy how very beautiful a plant must be, nearly 6 feet high, with such foliage as the specimens enclosed. We have lately received Croton Earl Derby, which is strikingly grand in its colouring, and should it prove of good constitution it will make a sensation in the exhibitions. *W. P., Belmont, Taunton.*

Holly Berries.—Last year when the cause of the scarcity of Holly berries was discussed in the *Gardeners' Chronicle*, I gave it as my decided opinion that it was wholly and solely caused by spring frosts, and that, like all other crops of fruit, a severe frost in the time of their being in blossom meant few or no berries; and this season confirms this statement, for the time of the Holly in blossom was truly delightful, and the result is the finest crop of berries I ever remember, and the same may be said of the Arbutus. *J. Rust, Eridge Castle.*

Ricinus Gibsoni.—This is not only one of the most effective of the Castor-oil plants, but is apparently the hardiest of all, for while the green-leaved varieties are destroyed or rendered so shabby by frost and rough weather as to be of no further use, R. Gibsoni is still in good condition and appears as if it would remain so for some time to come. Associated with the beautiful light glaucous foliage of Melianthus major, which has the good quality of being even more hardy, it is very telling during the summer and autumn months from the rich contrast afforded by its dark bronzy leaves and bright coloured stems, which are almost equal in colour to Dell's Crimson Beet, now so much in use for summer bedding. R. Gibsoni is such a good thing as to be quite worth

growing for the decoration of greenhouses and warm conservatories during the winter, where, from its highly ornamental character, it could be made to take the place of such things as Dracænas and other subjects too valuable to be risked in a low temperature. When required for purposes of this kind the seed should be sown in June or July, or cuttings put in about the same time, and the plants grown out in some warm sheltered spot plunged in pots, so as to get them sturdy and strong by the autumn. *S. W.*

The Duke of Buccleuch Grape.—In a note to the *Gardeners' Chronicle* sent on a previous occasion I then said that after further trial of this Grape I would revert to the subject again. I am sorry that my longer experience does not improve my opinion of it; but, on the contrary, makes me more and more sceptical of its merits. Here it grows vigorously, and shows fruit freely, but by no effort of ours can we get it to set, and if any do set they are almost sure to shank, and this in a house in which such sorts as Mrs. Pince's Black Muscat, West's St. Peter's, Foster's Seedling, and Alicante do exceedingly well. If any of your numerous correspondents know of any peculiar treatment that this Grape requires they would confer a favour by making it known, as I should like to be able to grow it. The family here like it very much when a well-developed berry of it can be had. If we may judge by the samples seen from time to time at our fruit shows, I fear there are few persons (if any) who have succeeded in making much of it, but I would fain hope that the Duke is destined to be noble in something more than a name. In the *Gardeners' Chronicle* some five or six years ago Mr. Fowler stood, as it were, sponsor for the Duke, and with a considerable flourish of trumpets helped to introduce his Grace to public notice. It would be interesting to know what Mr. F. thinks of the Duke now. At the risk of being thought presumptuous, I take leave to remark that the placing a few samples of fruit before any number of eminent judges is not sufficient to warrant them in recommending for general planting a thing so permanent as a Vine is expected to be. A few samples might be, and often are, the product of a mere matter of chance. In some situations the failure of a Vine or two is but a small matter, but in the majority of places it is a source of much disappointment, hence the necessity of being guarded in recommending or adopting a new Vine. A four or five years' certificate from the experimental gardens for sure cropping and other good qualities would be better and more to be relied on, and until some such guarantee be given we had better be in no hurry in investing in a new Grape. *J. McC., Alexandria, N.B.*

Lasiandra macrantha floribunda.—I am glad to see the statement at p. 660 that this plant is being successfully grown at Lee Hall. I say now, as I said two years ago, that when well grown this Lasiandra is one of the most conspicuous plants for six months in the year that can be well grown in a mixed stove. Four years ago I introduced one to the roof of a stove, still growing it in a 13-inch pot, and from that time it has continued to grow luxuriantly, each season blooming profusely from June to the end of the year. With me Lasiandra has one great advantage over most other stove plants—it is never infested with insects of any description, although grown with other plants that compel one ever to be on the alert to keep them clear from mealy-bug and scale. The treatment it receives with me is this:—After blooming at the end of the year I cut out all the old flowering shoots, tie-in a sufficient quantity of young wood that has not flowered to fill the allotted space, and cut back to three or four eyes all the remaining young shoots; by so doing there is always plenty of strong young wood made for future blooming. The first three months in the year I keep them moderately dry by withholding water from the roots, but being an evergreen I never allow them to get so dry as to shed all their foliage. In April and May they will require a little more water; in June and the two following months I give them an abundant supply with a little extra shading, as I find it is the only thing that they require during the above-named months—different to most stove plants. The Lasiandra will stand as much heat, with plenty of atmospheric moisture, as most stove plants, but it cannot stand the direct rays of the sun so well. As a proof that it will stand a high temperature I may mention that it is growing by the side of Dipladenia splendens that has grown a shoot this season 20 feet long. The blossoms sent are all from the same plant, and I hope they will arrive in good order for your inspection. *William Bishop, Bylaugh Park, East Dereham, Nov. 27.* [A fine bunch of flowers. Eds.]

The Destruction of Mealy-bug.—One of the worst enemies that many gardeners have to contend against is this insect. When it gets ahead, in a large establishment especially, it is a hard matter to deal with, and the task of eradicating it a difficult one. If the pest could be stamped out of the country, a great deal of labour necessarily spent on it could be applied to some other purpose. The labour power employed throughout the country might be said, all combined, to more than equal that required to keep in the best order the largest place in the realm. When the mealy-bug gets into a vinery there is nothing more annoying to the gardener than to find it in his bunches of Grapes. If the insects have got fairly ahead in the summer it takes a deal of attention to keep them under, and with a lot of other work going on at the time it is almost impossible to do it. But now when the leaves are off is the time to lay the foundation for a complete clearance. The woodwork of the house should be all well scrubbed with soft-soap and hot water, or be painted—the best thing to do if possible. After this the Vines should be well scrubbed with a mixture of tobacco-water, soot, clay, and sulphur [or a strong solution of soft soap]. But in this respect care should be taken in dealing with extreme appliances, such as oils, as cases of vineries being treated with extreme measures have proved a final settlement of the existence of the Vines. If the Vines are infested with bug and now dressed in the usual way, in spring more than likely here and there a few pieces of white down will make its appearance on the Vines and about the house; these pieces of down may each be a young brood of the insect, and every one that is seen should be eagerly destroyed. If this course is followed up the chances are that a house which the previous season was overrun with bug may become quite clear; of course, if dirty plants have been or are put into the house, the cleaning process cannot have fair play. It is a great satisfaction to the gardener when he has no mealy-bug at all to contend with, either in stoves or fruit-houses, more especially if he has had a previous experience with it. Some who are inexperienced are of opinion that wherever certain stove plants are grown, such as Ixoras, Crotons, Franciscea, Stephanotis, &c., there is sure to be found the mealy-bug. This is a mistake, for places exist, although they may be exceptional, where all such as these are cultivated and there is not a mealy-bug to be found. When such a case is found the question arises, What is the cause of the exceptional cleanliness? Is it from the continued watchfulness of the person in charge on the introduction of fresh plants, or is it from some peculiarity of the atmosphere of the place or house? It may be possible that both agencies have something to do with the matter, though no doubt it is mainly through having once got the place clean, then afterwards taking care to keep it so. In some houses, however, it breeds much faster than in others, more especially in iron houses, as they get so hot in summer. *Experience.*

Peaches and Nectarines.—The season has been bad—the worst I ever knew; still, with 121 trees out-of-doors and eleven under glass, I had as much fruit as I wanted, which lasted from August 26, with Early Louise, till October 8, with Nectarine Peach and Princess of Wales. Let me here speak of Parham's glass copings. On October 8 I was at my friend's, W. Connop, Esq., of Fifehead Neville, and saw a most triumphant and magnificent sight of Peaches under the glass copings. They were chiefly the Princess of Wales, ripe, and large as cricket-balls. The gardener is not a professed gardener, but a humble hard worker, and modest. On October 8 he had taken off two dozen and a-half of Peaches before I viewed the trees. He pointed to a Nectarine tree under the glass copings, and said, "I disfruited 150 Nectarines off that tree, and have landed off it 150 Nectarines. I should introduce here Parham's glass copings were it not for the high winds and the low walls—none above 7 feet high." It is a great misfortune to lose a crop of these fruits where the trees are in high condition, because the wood for another year is apt to grow too coarse, and also, unless the autumn is dry, to be unripe. Ripeness of wood is one of the grand keys of success. I have all the old sorts, and a great many of the new sorts. I recommend these:—Peaches: Early Louise, Dr. Hogg, Early Alfred, Royal Ascot (Standish), the finest coloured of all Peaches; Early York, Early Victoria, Grosse Mignonne, Royal George, Noblesse, Bellegarde, Barrington, Nectarine Peach, and Princess of Wales. These are, in my opinion, the pick of the Peaches. I have others, English and Americans, but they are not equal to those named. As to Nectarines the best are Downton, Elruge, Violette Hâtive, Lord Napier, Rivers' Orange, Rivers' Pine-apple, Rivers' White, and Emmerton's White Nectarine. If the reader gets the above Peaches and Nectarines he will be right. If it were not for mildewing under glass, or in hot smoky gardens, I have no hesitation in saying the Royal George is the best Peach in England to have. It does well and is the best in my cold exposed garden on walls E., W., and S. It is short-jointed, and the best setter under difficult circumstances. I am going to try a dozen cut-backs of the Royal George on my north walls, in front of which is a sunken vale of 20 miles to Mere in Wiltshire and 12 miles to Shaftesbury; I have no doubt the Royal George will acquit itself. Much has been said about pruning, I pinch all summer, and am now cutting out superfluous and useless wood. I use M. Auber's *secateur*, to whom great thanks for one of the best garden instruments: he deserves the thanks of the pruning world. I do not advise persons who do not know the difference between a leaf-bud and fruit-bud to prune now. As regards pruning, I never at any time of the year leave on wood which appears to be useless. The Snow Peach, white blossom, is here, and appears to be worthless; Tippicanoe is untried; Stump-the-World is no better than our own. The golden-fleshed are not so good flavoured as the white-fleshed. The best golden-fleshed Peach here is Mr. Turner's gift, the Golden Frogmore; the golden-fleshed are valuable to vary dessert—use sugar with them. *W. F. Radclyffe.*

The Deciduous Cypress.—I have read with much interest the remarks of "P. P. C.," H. W. Ward, and W. Gurney, respecting the deciduous Cypress. I beg to inform those and others interested in such trees, that there is one here, in the beautiful grounds of E. A. Drummond, Esq., which measures 85 feet in height, and 11 feet 4 inches in circumference at 4 feet from the ground. The trunk is straight and clean for about 25 feet, at that point the tree assumes two leaders; though it is deprived of a few branches by the rough winds it is exposed to from time to time, it is nevertheless a handsome tree, and the finest I have ever seen of its class. The tree grows in a light gravelly but wet soil, and about 8 or 9 yards from it is a large sheet of ornamental water. The heavy winds of late have destroyed the beauty of its foliage, or otherwise it would now have been grand. *G. Mussell, The Gardens, Cadland, Hants.*

Veitch's Autumn Broccoli.—Veitch's Giant Cauliflower has almost a world-wide reputation, and I do not suppose there is a garden in the kingdom in which it is not grown, so indispensable is it looked on to carry on a supply when other kinds fail, through the heat and drought of summer. Following right on the heels of this comes their new autumn Broccoli, which is in every respect equal to the far-famed Cauliflower, indeed so much alike are they that the one might pass for the other, and all the difference there appears to be is in the time they are ready for use. In this Broccoli we have what has long been wanted, and there will be no difficulty now in compassing the whole year through, as it will exactly fill up the void, and last on till Snow's, Backhouse's, and others come in. *J. Sheppard.*

Shade Loving Plants.—I beg to thank "Constant Reader" for his kindness in making out a list of shade-loving plants. If it does not take up too much of your space, I should like a little more information, and I think the subject would be interesting to many of your readers. The most ardent lover of flowers have often only limited garden room, and wish to make the most of every corner, whether shaded or not. Referring to "Constant Reader's" list of plants, I should like to know something more about the Allium Moly; common Ramson is only too common with us, and if this Allium has the same smell and the same spreading habit, I think we will do without it, unless it is very handsome indeed. [Pretty yellow flower, not so objectionable as the other.] I never saw the Alströmeria to know it, and should like some further description, nor do I know the Dondia, but I find it is an umbellate, and I don't much care for them; Ægopodium I shall certainly not try. Some of the names of bulbs I am very glad to hear of as shade-loving—Galanthus plicatus, Crocus sativus, and the Scillas—but will the Ornithogalum open without sunshine? I have just looked out Gagea in Bentham, and I think from the description it must be the flower I once saw blooming all over a little garden in front of a house in the City Road, London. It was some years ago, but I cannot forget how refreshing its cool yellow petals looked on a hot day, growing as they did out of ground as hard as a road, and shaded by tall trees. I shall certainly get some of them for my border when I can. The Meconopsis, and Tradescantia, Geranium Endresii too, I am glad to be reminded of, they are worth the space they will cover; but hardly so the Galeobdolon, Asarum, or Anchusa sempervirens. These things may do in the corners of shrubberies, but they have not sufficient distinct beauty for the border. Gentiana acaulis I know will not do in the shade, and I hardly think Fritillaria Imperialis will, but F. Meleagris grows well here among the grass on a part of the lawn partially shaded. We grow Cyclamen hederæfolium in the same way; this beautiful little flower really does well in the shade. C. europæum we have, but it does not flower, neither does the Vinca appear to flower well without sunshine; and Saxifraga umbrosa, though it likes to be shaded by a rock or wall, does not do well under trees. I think the same may be said of the Caltha, has "Constant Reader" tried it under trees? We have Aconite, Corydalis bulbosa, Leucojum, Omphalodes, Pulmonaria, and Funkia, and the lovely Anemone

apennina; but the best ornament of our most shaded parts is the Martagon Lily in its season. Are there not other Lilies which love the shade? We are trying Lilium giganteum. I am anxious also for some information about Aquilegias. I have some nice seedlings of A. Skinneri and A. chrysantha coming on, and I should like to know how they should be treated. Are there any good hardy Oxalids? *Trowel.*

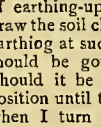
Hardy Herbaceous Plants for a Border Shaded by Trees.—The plants in the list which I give below will thrive in such positions as "Trowel" speaks of in his letter at p. 566. Before proceeding to give their names I would just make the important remark, that if the border is so near to the trees, or the trees so large as to have entirely filled the border with their roots, these should be severed by means of trenching the border to the depth of 1½ to 2 feet deep. First of all I will enumerate those plants whose flowers are blue or colours approaching blue:—Omphalodes verna, intense blue, Forget-me-Not like flowers; Lithospermum purpureo-cœruleum, the beauty of this plant is enhanced by being grown in shady positions; Iris germanica I. pumila, Gentiana gelida, G. asclepiadea—for these two latter add a little peat to the soil; Hepatica triloba, the single and double forms; Campanula macrantha, Lupinus polyphyllus, Ajuga genevensis, Anemone apennina, Aquilegia vulgaris, Polemonium cœruleum, Scilla bifolia, S. sibirica, S. campanulata, Veronica gentianoides, Vinca major, V. minor, Viola cucullata, V. striata, V. odorata, and its varieties. Symphytum caucasicum: this is the best plant I know of for growing under dense shade of trees; the flowers, too, are very beautiful, but the plant requires plenty of ground to ramble about in: it is not suitable for association with smaller kinds, as it would soon overrun them. *Plants with White Flowers.*—Erythronium dens-canis album, a most lovely plant for such positions; Anemone apennina alba, A. nemorosa and its double form, Helleborus niger, H. maximus, H. orientalis. This has creamy white flowers, the foliage is large and distinct. Hepatica, single white; Pæonia chinensis plena, Iris florentina, Vaccinium vitis-idæa (peaty earth); Saxifraga affinis forms a carpet of lovely green, the flowers are not conspicuous; Scilla bifolia alba, S. campanulata alba, Spiræa japonica, S. filipendula plena, Symphytum ibericum, a plant with cream-coloured drooping flowers—from 9 to 12 inches high—grows very freely; Thalictrum aquilegifolium, Trillium grandiflorum, a most lovely plant, it thrives best when planted in damp peaty earth, and enjoys the shade of trees. *Plants with Yellow Flowers.*—Hemerocallis flava, H. lutea, Anemone ranunculoides, Dondia epipactis, Doronicum Chesii, D. caucasicum, Trollius asiaticus, T. europæus, Genista sagittalis, Erythronium giganteum, Primula sikkimensis. The last two plants would require a damp situation, and the addition of peat earth or leaf-mould. Polygala chamæbuxus, a well-known plant with evergreen Box-like foliage and lemon-coloured fragrant flowers; Solidago Virgaurea, Iris flavescens. *Plants with Rose or Pink Flowers.*—Erythronium dens-canis, Hedysarum obscurum, Helleborus atrorubens, H. olympicus, H. colchicus—the flowers of this latter species are coppery plum-coloured; Hepatica, single and double-red; Lathyrus grandiflorus, L. latifolius. Cypripedium spectabile will thrive under the shade of trees if the soil is not too dry, by adding a good quantity of peat or leaf-mould. Pæonies in variety, Cardamine latifolia, Colchicum autumnale, in variety; C. speciosum, a beautiful kind; Cyclamen hederæfolium, C. neapolitanum, C. europæum, Polygala Brunonis, a very useful plant for autumnal display; Primula cortusoides amœna, P. pulcherrima, P. purpurea. These have purple or slaty-purple-coloured flowers—they are extremely fine flowering, as they do so early in spring. Silene caucasica plena, a showy plant, but requires plenty of room; Spiræa venusta, S. palmata, in damp soil; Tussilago fragrans. The following are worthy of cultivation for the beauty and grace of their foliage:—Bambusa metake, Thamnocalamus Falconeri (Arundinaria falcata), B gracilis, Osmunda regalis, and other Ferns, especially the Struthiopterises; Arundo conspicua and Gynerium argenteum will grow if not too densely shaded; Libertia ixioides, Polygonum cuspidatum, Pulmonaria sibirica. *R. P., Holgate, York.*

The Hardiness of Desfontainea spinosa.—At p. 597, col. *c*, are two letters touching upon the hardiness of Desfontainea spinosa. May I ask what is the possible use (in speaking of the hardiness of a plant) of a man signing himself "Cambrian" and another "Broughty Ferry?" "Cambrian" may live at the south-west corner of Wales, on the sea-coast, and "Broughty Ferry" may be known to people living there or the inhabitants of Dundee, but why cannot the correspondents say where their localities are, and whether subject to sea influences? All I know is that this beautiful shrub will not stand here, 12 miles south of London, as I know to my cost. Pray ask your correspondents to be more explicit. *A. R.* [We should be very glad if they would do so. Eds.]

Root-pruning.—I advocate attention to the roots, especially of fruit trees, and hope now that we have had the admirable papers by "Observer" and Mr. Boulger, that the root theory will have the attention which in my opinion it deserves. From my experience I would say, give the roots the pruning and the food they require, and you will have little need of the finger and thumb process, or of the use of the knife either. I cannot dispute the success which may result from the summer pinching if the soil is all that can be desired, but with a bad soil that is liable to get sodden in very wet weather, or very hard in very dry weather, I say "lift," either annually or biennially, giving nutriment at each operation if required, and you may expect results to your satisfaction. I am a little doubtful of the ultimate health of trees that are either much pruned or severely pinched. In the summer, apart from the excess of duties demanding attention just at this time—but perhaps I ought not to refer to busy time when the operation needs attention, the lifting and root-pruning incur very much time, as in fruit thinning, at least I found it so when I practised it; I hope I may be able to practise it again ere long. Had I not been disturbed in my then garden my trees would now have been some of the finest in the world, simply from lifting and root-pruning. I have never seen such leaves and flowers anywhere, and the fruit, some of which were sent to Dr. Hogg, were such that in a letter from him he said that he had never seen "such, except on the Continent, where it was grown for show and not for use." Not only were the fruits large, but so beautifully coloured too; Apples about 1¼ lb. each, and Pears over a pound, and not from a wall but from pyramids or bushes. *George Lee, F.R.H.S., Clevedon.*

Christmas Rose.—Of all hardy plants this is certainly one of the most serviceable, affording as it does an abundant supply of flowers for cutting at a time when they are generally much in request and not over plentiful. Not only is it of great use for the above purpose, but it is equally valuable for pots to use in the greenhouse or window recesses in rooms, for the latter of which positions it forms a charming ornament of great powers of endurance, owing to the thick texture of its leaves and the immense substance of its fine waxy-looking blooms; the stems, too, that support these, being large and porous, take up water freely, in which, when placed with flowers even in the bud state, they absorb sufficient to induce them to expand almost as well as if left on the plant. Although generally supposed to be slow to increase, I have not found it to be the case with H. niger maximus, which is by far the finest and best of all the species, as, after obtaining three clumps last autumn, I was enabled, by shaking them clear of all soil and carefully separating each crown, to increase them to twenty-five, only one of which failed to grow. The situation I chose to plant them is a narrow border, at the sunny end of a greenhouse; that appears to suit them admirably, as they have all made fine crowns and are producing a profusion of blooms. In a position of this kind they get shelter and can easily be protected by leaning some old lights over them on the approach of bad weather. So favoured, the flowers come with much greater purity of colour, and free from that disfigurement to the edges of the petals in the way they are generally affected when exposed to wind and wet, and allowed to take their chance. To grow them well and strong they require a light, deep, rich soil, and if of a peaty nature all the better, as they delight in decomposed vegetable matter, and if peat is not easily to be had, plenty of leaf-mould should be worked in instead with a little road scrapings or sharp sand to keep the whole open and porous. In ground prepared in this way, and with occasional waterings during the summer, they will luxuriate and make plenty of foliage, on the free and full development of which much of the success in flowering these most useful plants depends. For pot work it is best to take them up about the middle of October, and to put them under cover in cold frames, where they can be kept with plenty of air till they get well into bloom. It should be borne in mind that, hardy as they are, they are very susceptible of injury after being housed some time, as the leaves do not acquire that degree of firmness and leathery texture so characteristic of them when fully exposed to the weather. This being the case, any that are used as pot-plants should not be turned out in the open as soon as their beauty is over, but be kept in some cool light place till all danger of severe frosts is over. *S. W.*

Potato Disease: How to Guard against It.—I saw in your issue for October 27 a paragraph on the management of Potatos, in which the writer suggested two methods of saving the crop from disease, viz.:—1, to pull up the stalks, leaving the tubers in the ground; and 2, to cut them off close to the ground. I have tried both plans, and in each case think the Potatos were injured. In the first place they stopped growing, in the second they lost flavour, and were close and soapy. This year I adopted another plan, namely: Having the rows 24 inches apart, I set the Potatos 6 inches apart, and as they advanced in growth I followed the old plan of earthing-up, but with this difference—I did not draw the soil close to the stalk, leaving room for another earthing at such time as I thought proper. In this I should be governed by the state of the weather. Should it be fine, I let them remain in an upright position until the first appearance of the flower-buds, when I turn the rows over with the handle of the spade. On reaching the end of the row, I at once commence with a narrow spade to place sufficient earth to prevent the stalk from rising upright. In a few days the tops will be found drawn up by the light, as shown in the figure. I am glad to say that I found this a perfect success. The experiment was tried with Early Rose and the Royal Ashleaf Kidney. To prove it, I left some rows not turned down. In either case the crop was good, some of the Potatos weighing 1 lb. each. The tops were alike spotted with the disease or fungi, but not so with the Potato itself. Those done as I have shown were found good and free from disease when taken up, whilst those earthed-up the second time were for the most part bad. *R. Inch, Gr., Hache Court, Taunton.*



Large Willows.—Beside the burn which flows through the holm just outside my garden there were some large Willows, grand old trees which had stood out, and suffered from, many a severe storm. At last they showed signs of such decay that it was resolved to cut them down. This resolution was the more readily acquiesced in as their removal certainly opened up a good view along the course of the river, and during my absence abroad last winter three of the trees were cut down to the ground, and one was cut to within 8 feet of the ground. Of this old trunk I send you a rough sketch. The dimensions are, from C to D, 7 feet 11 inches; and the girth, from A to B, is 12 feet 1 inch. It strikes me that this is rather an uncommon girth for a Willow: from the ground to place of measurement is as near 4 feet as it can be. You will observe that the tree is making vigorous efforts to throw out young shoots. On the other side of the tree there was a third branch springing a little lower from the trunk than the two shown at D, and just below the line of B on the other side is another bole or excrescence like the one from which the young shoots are springing so lustily. In a few days more I shall be leaving this place, and may never have the opportunity of seeing the old tree again, so I venture to send you its measurement as an addition to the records of girths of trees which you publish from time to time. I have also measured the flat surface of one of the other Willows cut level to the ground, and send you an outline of its shape with the dimensions:—A to B, 4 feet 1 inch; C to D, 3 feet 3 inches; E to F, 3 feet 1 inch. Following the shape closely, the measurement is 12 feet. Being flat to the ground this is, of course, no test of what the measurement was at 4 feet from the ground, and from my recollection of the tree I think I may safely say it was quite 2 feet less in circumference than the one of which I have sent you a sketch. *J. A. C., Annan.*

The Rival Ivies.—It would almost seem that the gentleman who writes from Ireland (Mr. Smith) had felt a kind of personality in my remarks on the comparative value of the two Ivies. Whether Mr. Smith's desire was to add some remarks of his own, or to call mine in question, does not plainly appear. There is no doubt the term "Irish Ivy" is a trade one. Whether the latter Ivy is a species or a sport I cannot say; if the latter, it is very marked and permanent; and as to not knowing where it begins or ends, it would not do for a tradesman to offer intermediate for it. Mr. Smith seems to have our native plant in view when speaking of variability, which I admit, but I never knew the Irish Ivy to vary except into variegation, or the arborescent form which all Ivies will assume conditionally. It is granted the plant in question must be shorn like a sheep, and as the Ivy appears to look the best when re-leafing after the operation, so the other appears the handsomer when newly shorn. But the labour! It is no small matter to shear the side of a three-storey mansion. I have seen a man up a break-neck-looking ladder at the operation for days together; and as regards the seeming exaggeration about the comparative quantity of leaves on the two plants, I will again repeat that in draughts, close passages, or very shady places, where the common Ivy would be a sheet of emerald, the Irish Ivy would be nothing more than a network of bearded stems. In conclusion, my remarks on the two Ivies have been answered, but not contradicted; and but that I have been misrepresented I should not have written this. Mr. Smith may "think exactly" (as he admits at the commencement), but he does not quote exactly at the

end, where mention is made about the plant being difficult to propagate. There is not a word about this in my communication. I thank Mr. Smith for the information about the bed of 100,000 seedling Ivies. I must confess I was in ignorance that Ivies to such an extent were propagated in that way, and I must say this is something new under the sun. *Thomas Williams, Ormskirk.*

The Wilson and other Cress Rafts.—Shortly after the notice of the above in the *Gardeners' Chronicle*, Charles Beard, Esq., of Bury St. Edmunds, the talented inventor of Beard's metallic hothouses, invited me to see a Watercress raft in his garden reservoir. It was formed of a sort of floating basket, and had been employed for many years for the growth of Watercresses for household use. The raft had the free run of the reservoir, which is not very large, and answered admirably, seldom failing to yield a good supply. It was sometimes found at one side of the fountain, sometimes the other, according to the set of the wind. This is an admirable use for floating rafts such as Mr. Wilson describes. It would add an additional charm, if not a new sweetness, to the Watercresses to be grown thus in one's own garden. Those that have larger lakes or ponds could easily moor these rafts to the shore, so as to haul them in when wanted; or, where the water was large enough for the use of a boat, a raft hunt for Watercress might prove a useful constitutional for breakfast or tea. Mr. Beard has another simple contrivance for keeping the water in his fountains sweet and pure. The pipe rises to a considerable height in the centre, and, unless the fountain is wanted to play for effect, the waste is carried from thence to the bottom of the fountain; the water is by this simple contrivance renewed from the bottom upwards, instead of from the top downwards, and the result is that the water is always clean and sweet. It is not probable that this method of renewing the water has had much to do with the luxuriant growth of the Watercress, but it is a fact of great practical moment if water can by this simple and unusual method of replenishing be kept pure and sweet for years. The overflow of waste water is placed an inch or two below the upper edge of the reservoir. It is just possible that as the sea beyond a certain depth of the surface is always calm, however wildly the waves roll or breakers dash on the surface, so fountains furnished with water from the top in the usual way are only partially renewed; hence the stagnant water underneath runs into putridity and becomes offensive, while by renewing and also gently agitating the whole mass of water from the bottom upwards the whole bulk is changed, and this renewal preserves it sweet. Be the cause as it may, Mr. Beard assures me the facts are as stated, and the water was specially sweet at the time of my visit. *D. T. F.*

Desfontainea spinosa.—I am glad to find "Cumbrian" (see p. 597) speaking so well of this much neglected but beautiful shrub. It ought to be planted in all collections of choice flowering shrubs. We had it in flower at Woodstock in July, and it has now (November 20) quantities of flowers fully expanded, a few of which I enclose. I find cuttings put in about the middle of February take root freely. We simply put in the cuttings, say two dozen in a 6-inch pot, and then plunge them in coal-ashes in a cold frame, and there leave them until the autumn, when they are potted off into 4-inch pots and replunged in ashes. As this shrub is so beautiful and perfectly hardy why not have hedges and banks of it instead of the everlasting Privet, which requires such constant and continual clipping to keep it in order? *G. Dodd, Woodstock Park, Kilkenny.*

Protection of the Pampas Grass.—The writer at p. 534 suggests covering this plant with coal ashes. What are we to do with the beautiful silver spikes now in bloom? Must they be destroyed? As to the noble plants seen in Madeira, which stand so prominently on many a lawn, some being 5 feet in height and 10 feet in circumference, I would ask are we to have mounds of coal ashes this height on the lawn? I have found the green sward a sufficient protection from the frost. *R. Inch, Gr., Hache Court, near Taunton.*

"PUNCH" TO DR. DARWIN.

Our world's stage footlights flare and fume,
While the clear light that shall illume
The Future's farthest ages
In quiet sanctums few descry,
Still trimmed and tended patiently
By unobtrusive sages.

And when that light begins to show
Its keen but unfamiliar glow
To poor be-muddled mortals,
The dullards blink, the quidnuncs croak,
The zealots fain would Heaven invoke
To bar those perilous portals.

In vain: that clear and conquering light
Wins as it widens, calms affright,
Dull souls from dread delivers;
Till they who came to curse make shift
To give a welcome to the gift
And honour to the givers.

So comes my Darwin's turn of praise
And the green honours of their Bays
The men who banned you offer;
The smile, of such occasion born,
Might well have had a touch of scorn,
Could Wisdom be a scoffer.

But only shallow smartness mocks
The antics of the orthodox,
The dogmatist's wild capers;
Smile, but ne'er lift the heel to spurn:
Trust Truth's asbestos to outburn
Delusion's glimmering tapers.

Science should be the last to claim
Infallibility's false fame,
Which only Folly urges.
The truth to seek with patient quest
Is hers, content to leave the rest
To blatant Boanerges.

So have *you* done; the road you tread,
As free from rashness as from dread,
You follow without swerving.
Fame meets you fairly on the way,
And where 's the duffer who to-day
Dare question your deserving?

Punch cracks his jokes at you *sans* ruth;
His honest fun wars not with Truth,
But rather serves to test her;
And, serious now, he bows respect,
Sure that the Sage will not reject
The tribute of the Jester. *Punch.*

FLORISTS' FLOWERS.

CHRYSANTHEMUMS AS DECORATIVE PLANTS.—At the Ealing nurseries of Messrs. Charles Lee & Son, Mr. George Cannon, the able manager, has afforded another illustration of the admirable way in which that most useful of autumn flowers—the Chrysanthemum—can be utilised as a decorative agent. There is in the nursery a house 50 feet in length by 20 feet in width, which is used during winter and spring for housing orchard-house trees in pots; and it occurred to Mr. Cannon that a house of Chrysanthemums would be an attractive object to the flower-loving public of this rapidly-increasing district. The house is now filled with admirably-grown and finely-bloomed plants, carrying flowers of excellent quality, and the collection serves to show not merely what a "flush of hues" can be had in the autumn months when scarcely a gleam of colour is visible in many outdoor gardens; but also the best varieties that can be grown for the purpose of conservatory decoration.

The house being spacious requires a good number of plants to fill it, and there are three or four of a sort of the following varieties:—Abbé Passaglia, Barbara, Beethoven, Beverley, a very fine white; Dr. Sharpe, Duke of Edinburgh, very pretty indeed for conservatory decoration, but not adapted for show purposes; Empress of India, Golden Empress of India, a splendid exhibition variety; Grand Lodge Rival, a kind of dark-bronzy gold, distinct and fine; Felicity, with large half-reflexed flowers, white, with lemon centre, appearing as if intermediate between the large-flowered and Japanese varieties; George Glenny, Golden Beverley, Golden Queen, Guernsey Nugget, a rather late variety that keeps its foliage remarkably well; John Salter, Julia Lagravère, Lady Talfourd, Mr. Dixon, Golden Mrs. George Rundle, Mrs. George Rundle, with flowers of a remarkable size; Prince of Wales, Queen of England, Virgin Queen, probably the purest white Chrysanthemum in cultivation; White Globe and White Venus, with that fine white Anemone-flowered variety, Lady Margaret. Of Japanese varieties there were Diamond, very fine; Crykang, Fair Maid of Guernsey, Glitter, in the way of Diamond, deeper in colour, but of delicate habit; Gloire de Toulouse, James Salter, Meg Merrilees, The Cossack, and Ville d'Hyères, dark reddish maroon pointed with golden-yellow.

The plants averaged from 3 to 5 feet in height, with a main stem, and three or four leading stems branching out 18 inches or so above the pot. There are about 300 plants, mostly in 12-inch pots, and being tastefully arranged they make a most effective display. The method of culture adopted by Mr. Cannon may afford a valuable hint or two to those interested in the cultivation of the Chrysanthemum. The cuttings were struck in an ordinary dung frame in February, and grown on in 60-pots, and early in May hardened off when the plants were a foot or so high, and of a sturdy character; then they are allowed to break out to three or four leading shoots. In June they were potted into their flowering pots, stood out in the open air, and never allowed to suffer in the least for want of water, and two or three times a day were thoroughly drenched overhead from a hose. Some manure-water judiciously administered at blooming time gives size and brilliancy to the blossoms, and he who was never before moved to admire Chrysanthemums could scarcely look upon the contents of this house, and then pass out, without being fired with admiration, even if he were not incited to attempt something of the floral treat so lavishly set forth. *R. D.*

Reports of Societies.

The Birmingham and Midland Counties Chrysanthemum Fruit and Flower Society.—The seventeenth annual exhibition of Chrysanthemums and other plants, flowers, fruit, &c., was held in the Town Hall, November 21 and 22.—The Chrysanthemum plants as a rule were inferior to those displayed in previous years, really good plants being the exception, the backward season having shown its influence on the exhibition. There are plenty of fine plants about Birmingham, and if the exhibition had been a fortnight later, Chrysanthemums would have been then in great force. Examples of a hideous system of training were there, which merited and received general condemnation. These were large but apparently tolerably well-grown plants, but tied down closely to a large flat circular form, and all traces of the natural growth of the plant were lost, and in most instances it was palpably clear that the tying down had been done the day before, and what few blooms there were had a very lopsided appearance. Mr. Newell, gr. to Mr. L. Hayman, obtained the 1st prize for nine large-flowering kinds, and Mr. Padbury, gr. to Mr. R. P. Yates, the 2d prize. For six plants, Mr. Denning, gr. to Mr. J. Fenton, was 1st, and Mr. Shepherd, gr. to Mr. W. Warden, 2d. For nine Pompons: 1st, Mr. Padbury; and for six Pompons: 1st, Mr. Doughty, gr. to Mr. H. Hayman. One of the very best plants in the exhibition was a plant of Mrs. Dixon, a fine yellow, exhibited by Mr. Denning.

The cut blooms were not numerous, but some of them were very fine, and in the open class for eighteen Mr. Silver, gr. to Mr. S. A. Everett, had a grand bloom of Queen of England, not so white as usual; Prince Alfred, very fine; Empress of India, Fingal, a fine purple; Guernsey Nugget, Cherub, Lady Talfourd, Mrs. Haliburton, Lady Slade, Gloria Mundi, Mrs. George Rundle, Beauty of Stoke, Mr. Gladstone, Jardin des Plantes, Isabella Bott, Lord Derby, Lady Harding, and Baron Beust, fine. These blooms were a very fine lot indeed, and took the 1st prize, the 2d prize falling to the gardener to Mr. R. Bradley. For twelve blooms Mr. Silver was also 1st with very fine blooms of kinds shown in his eighteen, Mr. Dyer, gr. to Mr. T. W. Webley, being 2d.

In the class for eighteen blooms for growers within 3 miles of Birmingham Mr. Dyer was 1st, in whose stand were fine blooms of John Salter, Jardin des Plantes, Prince Alfred, and Mrs. Dixon; 2d, Mr. Denning, gr. to Mr. J. Fenton.

There was a very nice display of plants, and in the collection of nine Mr. Walter Jones, gr. to Mr. Councillor Matthews, took the 1st prize, and this collection included a grand Chorozema Hendersoni and a fine Cocos Weddelliana in flower. Mr. Jones always exhibits successfully, and turns out his plants in a masterly manner. Mr. H. Lea was placed 2d with a capital lot, and Mr. Crisp, gr. to Mr. B. Scarf, took the 3d prize with a very creditable lot.

In the class for stove and greenhouse plants Mr. Dyer was placed 1st, and in his lot were well-grown and beautifully coloured examples of Croton variegatus and C. angustifolius.

For special prizes, offered by a member of the committee for nine stove and greenhouse plants in pots not exceeding 8 inches in diameter, there was a close competition, and a lot of plants which cheered the heart of those who prefer such to the elephantine specimens often seen. The 1st prize fell to Mr. Dyer, who had Abutilon marmoratum variegatum in fine character, and beautiful plants of Maranta Veitchii and Dracæna Macleayi. Mr. Stacey, the treasurer to the society, had a nice lot which ran a close 2d, and included a fine variegated Curculigo and a good Cocos Weddelliana.

The Chinese Primulas were, however, the great feature of the exhibition. Birmingham stands out prominently in Primula culture, and at its head stands Mr. Tomkins of Sparkbrook, one of the oldest nurserymen of the town, and his strain of Primula of the Princess Louise and Marquis of Lorne type,

two well-known varieties of his own raising, have a great local celebrity. These are the progenitors of other varieties which, with the parent kinds, form a distinct strain of Primulas which should be known as Tomkins' Birmingham Prize Strain, and not as anybody else's. They are wonderful in form, size, substance, and colouring, and one variety, named Scarlet King, is of a wonderfully bright colour. Mr. Tomkins took several 1st prizes, his six Fern-leaved varieties being marvels of Primula culture, and he took a 1st prize for six fine double varieties of his own raising.

In the gentlemen's gardeners' classes for Primulas there was a hotly contested competition, not an indifferent lot being staged. In the class for twelve, Mr. Caldecott, gr. to Mr. William Matthews, was 1st, Mr. Denning 2d, and Mr. Doughty 3d, an extra prize being awarded to Mr. Shepherd for a fine lot; so that some idea may be formed of the excellence of the collections obtaining the higher prizes.

Mr. Thompson, seedsman, Birmingham, offered extra prizes for twelve Primulas, open to gentlemen's gardeners only, and the competition was very close indeed, so close that equal 1st prizes were finally awarded to Messrs. Dyer and Caldecott. Mr. Crook, gr. to Mr. W. Millward, took the 1st prize for six good Cyclamens, and Mr. Stacey 1st prize for Solanums.

Bouquets were a decided feature of the exhibition, Messrs. H. Pope & Son, Birmingham, obtaining the 1st prize with a handsome bride's bouquet; and Mr. Walter Jones a 1st prize for a handsome ball-room bouquet. Messrs. Felton & Sons, Birmingham, sent, not for competition, a very handsome bridal bouquet, which was much admired, and was made up by Master Felton, a young gentleman who has just attained his fifteenth year; so our older bouquetists must look out for their laurels.

The Fruit made a good display, especially in Grapes and Apples. There were five exhibitors of three bunches of black Grapes: 1st prize to Mr. W. H. Clark, gr. to Lady Edwards; 2d to Mr. Dyer; 3d to Mr. Chadwick, gr. to Mrs. Nilson; and an extra to Mr. A. Sayers, gr. to W. H. Wynn, Esq., all really good. Three bunches of white Muscat Grapes from Mr. Sayers were grand, highly finished, of a rich golden-amber colour, and good in berry and bunch, and won in a canter the 1st prize. In the class for single bunch of black Grapes, Mr. Dyer was 1st with a capital bunch, Mr. Chadwick 2d, and an extra to Mr. Clark. In white Grapes, Mr. Bannister, gr. to Mr. W. H. St. Vincent Ames, was 1st with Bowood Muscat; 2d, Mr. Cushion, gr. to Mr. W. E. Wiley. For a collection of fruit, eight varieties, Mr. Chadwick was 1st, and Mr. Ashmore, gr. to Captain Cox, 2d.

In the class for six dishes of Pears there was not much competition, but Mr. W. Gardiner, gr. to Mr. E. P. Shirley, won the 1st prize very easily with a fine lot, consisting of Beurré Diel, extra fine; Easter Beurré, extra fine; Beurré Rance, Glou Morçeau, Doyenné du Comice, and Passe Colmar.

For twelve varieties of Apples, as well as for six varieties, Mr. Gardiner was 1st, with grand fruit, large and richly coloured. His varieties consisted of Dumelow's Seedling, New Hawthornden, Wyken Pippin, Ribston Pippin, extra fine; superb Blenheims, King of the Pippins, Cox's Pomona, Yorkshire Greening, Flanders Pippin, very fine indeed; Hanwell Souring, extra fine; Lord Derby, a grand dish of Belle de Bois, and Hawthornden, very large and wonderfully bright in colour, which Mr. Gardiner says were grown on a tree not perceptibly larger than it was fifteen years ago. Mr. Bannister was 2d with a fine lot, including very fine Kentish Pippins, bearing a close resemblance to Blenheim Pippin, but not so well coloured; Blenheim, grand in colour; and King of the Pippins, very bright in colour, almost red. Mr. Chadwick was 2d for six dishes, which included Glory of the West, a very fine kitchen Apple, Pike's Pearmain, a bright-coloured handsome dessert fruit; and the Shilling Apple, a very bright striped showy variety. Mr. T. C. Boston, of Acock's Green, formerly manager of Messrs. Carter & Co.'s nursery at Forest Hill, contributed a collection of dried specimens of eighty-six varieties of Ericas, and about 150 varieties of Ferns and Lycopods, all life-size, and admirably mounted and of especial interest, and to which a special prize was awarded. Mrs. E. H. Hodgkins, 35, Hyde Grove, Manchester, contributed a most beautiful display of examples of botanical anatomy, which proved a marked feature of the exhibition and received great praise and a special award. This lady is a medallist of the Royal Horticultural Society, and has devoted much attention to skeletonising leaves, and they are of rare beauty, especially a fine group of Ficus Porteana foliage, which required twelve months in the preparation and completion; seed-pods of Poppy, or rather the mere skeleton of the seed-pods; Fern fronds most beautifully bleached by a process of Mrs. Hodgkins'; and artistically arranged groups, showing the beauty of botanical anatomy, were plentiful.

Mr. R. H. Vertegans, of the Chad Valley Nurseries, exhibited a plant of Colonel Trevor Clarke's new Begonia Moonlight, a plant of great beauty; a large group of Poinsettias, fine in growth and foliage and in the richness and size of the bracts; a basket of Azalea Blanchard, pure white and very early, the best and earliest forcing kind we have; and a group of Biota semperaurea, as golden as a field of richly coloured Wheat.

A satisfactory staging of a multitude of things in a building such as the Town Hall is difficult, therefore a word of praise is due to Mr. Latham, of the Botanic Gardens, Mr. W. Herne, Mr. Stacey, and Mr. Spinks of the Lower Grounds, Aston, who saw to all this. *D.*

The Liverpool Chrysanthemum and Fruit Show.—The Liverpool Horticultural Society held the annual exhibition of Chrysanthemums and fruits on Wednesday, the 21st ult., under circumstances which promised to be a great success. The number of entries in all the classes exceeded those of any previous exhibition for the past seven years at least, and all arrangements for a successful exhibition were unique and complete. The sun, however, denied his smiling augury to lend lustre to the occasion, and what was still more unfortunate than the mere absence of sunshine, the elements seemed as if by concert to belch forth in angry torrents a continuous downpour of hail and rain. Only those who have some experience of stormy weather on the steps in front of George's Hall (where the exhibition was held) and the corner of Lime Street and London Road will be able to fully appreciate the difficulties the pedestrian had to encounter before reaching the exhibition. The principal attraction on these occasions is of course the Chrysanthemums in cut blooms and trained specimens, and it is no idle compliment to pay to Liverpool growers to say that they out-distance their compeers in the cultivation of this the queen of winter flowers.

In the class for eighteen cut blooms, large-flowered Chrysanthemums, Mr. Tunnington, gr. to Charles McIver, Esq., staged perhaps the finest stand ever exhibited here or elsewhere, perfect in form, substance, and colour, and grown to a day. Mr. J. Roberts was a capital 2d, and Mr. Peers 3d. In the class for twelve cut blooms there was evidently some oversight in making the award, and never was the Scriptural phrase, "the first shall be last and the last first," more truly exemplified than in this instance. To Mr. Pythian first honours were awarded: his flowers were under-sized, two of their number being "absolutely over" and one (Hermine) being wrongly named. Mr. Mease, who was clearly entitled to the prize, showed a highly creditable stand; his flowers were large, well-formed, brilliant in colour, and presented a striking contrast to the seedy appearance of the 1st prize lot. The prizes for six cut blooms were keenly contested by Mr. Leadbetter and Mr. Knott, being awarded in the order named.

Trained specimens were represented in all shapes, reflecting great credit on the ingenuity of the various exhibitors and a striking memorial of the handiwork of the craft. Probably this formality of training has reached its climax, public opinion is already denouncing the working out of any geometrical problem on a family of plants whose natural form of growth is repugnant to distortion in any form. The general exhibition of stove and greenhouse plants, Palms, Ferns, &c., was excellent; whilst Epiphyllums, Poinsettias, fringed Primulas, and Roman Hyacinths were in ample quantity to enable the committee to make a brilliant display all over the hall, every foot of space being admirably lit up with choice plants interesting either for the beauty of their leaves or flowers.

The centre of the long tables in the middle of the hall were beautifully arranged with choice Palms, and Poinsettias, alternately with "breaks" of Orchids, Cyclamens, and other plants; on each side the fruit, which occupied no unimportant part of the exhibition, was staged; and both ends of the principal table were respectively occupied with a choice selection of foliage and flowering plants from Mr. John Cowan, of the Garston Vineyard, and Messrs. R. P. Kerr & Son, of the Aigburth Nurseries, Grassendale. Mr. Cowan's collection, which was neatly and tastefully arranged, consisted of the usual varieties of popular stove and greenhouse plants in nice form for growing on. Messrs. R. P. Kerr & Son's were of a choice character, and were prominent for the grand display of novelties, of which there were many admirers. The arrangement was artistic in itself, and was evidently executed by some one who not only knows the way to grow plants, but to show them also. There were choice Bertolonias exquisitely coloured, Sonerilas, Aralias, Crotons, Dracænas, choice Ferns, and in fine a medley group of rarities, the like of which are seldom exhibited in Liverpool.

Of trained specimens the flowering and foliage plants of Mr. W. Blomiley, gr. to Henry Crosfield, Esq., were as usual a long way ahead of anything else; his Bouvardias Vreelandii and elegans were wonderfully well done, the latter being 4 feet 6 inches in diameter. Mr. Mark Woods also staged a very fine group, which was awarded second honours. This exhibitor had the finest piece of Croton Weismanni we have seen either in or out of London this season. Exotic Ferns were well shown by Mr. Elliott, gr. to W. G. Bateson, Esq., and Mr. Gore, gr. to J. Holder, Esq.

Epiphyllums were well represented in pyramids and umbrella-shaped standards, and, as a class, were good throughout, the best coming from Mr. Tunnington and Mr. Nicholson.

Of fruit the principal prize was for a collection of twelve sorts, for which there were five competitors—Messrs. Mease, Hannigan, and Upjohn being the successful prizetakers. The Grapes from Mr. Mease were very creditable, especially his White Muscats and White Tokay, whilst Mr. Upjohn's Gros Colman and Black Alicante were also fine. The last-named exhibitor showed two bunches of Gros Colman in the class for two bunches of black Grapes, which were perfect in every respect, but were only awarded 2d prize—I suppose, on account of flavour—the 1st prize going to two bunches of Barbarossa, which were small in berry and of straggling habit. Muscat Grapes, as shown by Mr. Nicholson and Mr. Silcock, gr. to Sir Charles Shakerlay, Bart., are worthy of the highest praise, and were beautiful samples after such an untoward season for finishing fruit.

Of hardy fruits there was a grand exhibition, as there always is at Liverpool. Taken as a whole the size, and especially the colour, was something wonderful after we make due allowance for the season, and bearing in mind also that the terms of the schedule stipulate that the fruit shall be grown in Lancashire and Cheshire. Query: did some of the varieties not come from further South?

I suppose enthusiasts in Chrysanthemum culture will consider any report as imperfect that does not contain a list of the varieties that gained 1st honours, and I, therefore, give the names of Mr. Tunnington's prize flowers, other exhibitors showing all or nearly all the same varieties. They are as follows:—Princess of Wales, Prince Alfred, Queen of England, Nil Desperandum, Alfred Salter, Mrs. Heale, Beauty, Jardin des Plantes, Ossian, Empress of India, Mr. Gladstone, White Venus, Cherub, Eve, Prince of Wales, Isabella Bott, and Beethoven.

It may be as well to observe that these remarks must not be taken as emanating from any official source, being simply a few stray notes taken by a *Visitor*.

Croydon Horticultural: *Nov. 22 and 23.*—The first autumn exhibition of Chrysanthemums, &c., took place on Thursday and Friday last, at the Public Hall, Croydon, and considering the short notice given of the exhibition the show must be pronounced a success. A fine group of Palms, Tree Ferns, &c., were staged at the end of the hall by Mr. King, gr. to Stephenson Clarke, Esq., Croydon Lodge. Some fine Dracænas, Palms, &c., from the same exhibitor, formed a group for the centre of the hall. The specimen plants of Chrysanthemums, with one or two exceptions, were very poor. The 1st for six large-flowered varieties was taken by Mr. King, gr. to S. Clarke, Esq., as also was the 1st in the corresponding class for six Pompons. In the class for three large-flowered, Mr. Brett, gr. to Mrs. Charlton, Mitcham, was 1st, the same exhibitor also taking 1st for three Pompons.

The classes for cut blooms of the incurved varieties were well filled, some capital blooms being shown. The 1st for twenty-four incurved was taken by Mr. Orchard, gr. to F. W. Harris, Esq., Coombe House, Croydon, with fine-shaped blooms of Queen of England, Jardin des Plantes, Empress of India, Mr. Bunn (a new sport from Golden Beverley, but a brighter yellow), Venus, Lord Derby, Abbé Passaglia, General Bainbrigge, Prince Alfred, Mrs. Dixon, Mrs. G. Rundle, George Glenny, Mr. Gladstone, &c.; Mr. King being 2d. In the class for twelve incurved Mr. Orchard was again 1st, amongst others, staging fine blooms of Empress of India, Queen of England, Jardin des Plantes, and White Venus; Mr. Neale being a good 2d. For six incurved Mr. Chaff, gr. to C. H. Goschen, Esq., Ballards, Addington, was 1st; Mr. Jupp, gr. to Matthew Pratt, Esq., Thornton Heath, 3d, no 2d being awarded. For six cut blooms of Japanese Mr. Neale was 1st, showing among others a fine bloom of Elaine; Mr. Orchard 2d. The large and small Anemone-flowered Chrysanthemums were below the average quality. For twelve large Anemones Mr. Brett was 1st. Mr. Neale was awarded an extra prize for a collection not according to schedule. For twelve Anemone Pompons Mr. Brett was the only exhibitor, and was awarded the 1st prize.

There were a few fine bunches of Grapes shown in the class for three bunches of black, Mr. Chaff and Mr. Stephenson, gr. to F. Peek, Esq., Sydenham Hill, making equal 1st, Mr. Neale being 2d. For three bunches of white Grapes Mr. Chaff was again

1st, and Mr. Charman, jun., 2d. In the class for three dishes of Apples Mr. Chaff was 1st with fine fruits of Cox's Orange Pippin, Golden Noble, and Blenheim Pippin. A prize was offered for three dishes of Peas, but so scarce are they in the neighbourhood that not a single dish was shown. Vegetables were well shown, and made a fine feature in the show. For the three small prizes offered there were eight fine collections staged, being the finest collection of vegetables ever seen at a Croydon show. The awards fell—1st to Mr. Chaff, 2d, Mr. Orchard; 3d, Mr. Brett. Extra prizes were awarded to Mr. King and Mr. Hall, Mr. Cooper being Highly Commended. *C. O.*

Cheetham Hill, Broughton and Crumpsall Horticultural: *Nov.* 24.—The seventh annual autumn exhibition in connection with this Society was held on Saturday, November 24, at the school-room of St. Thomas Church, Cheetham. This society, which is now well established, and is every year increasing in favour with the residents of the districts, may be congratulated on the success which has again attended its efforts, the show in all respects being very satisfactory. A very fine lot of large-flowered Chrysanthemums in pots were staged, and among them were some that were remarkably well done; whilst amongst the Pompons, Poinsettias, Primulas, and Roman Hyacinths, were many examples that added considerably to the effect, and when the whole was lighted up with gas, the bright colours of the Epiphyllums and Poinsettias stood out in bold relief. For six exotic Ferns the 1st prize was taken by J. Lunt, gr. to J. B. Mason, Esq., the plants, though not large, were, however, well grown; the 2d prize fell to E. Barron, gr. to E. Muirhead, Esq. Four fine-foliaged plants: the 1st prize in this case was taken by J. Gresty, gr. to J. Kershaw, Esq. For three pans of Roman Hyacinths the 1st was awarded to E. Barron, J. Gresty taking 2d. Primulas were well shown by Mr. J. Rice and A. B. Hastings, the prizes taken in the order named. Mr. Handlay, gr. to Miss Pearson, succeeded in taking 1st with a device suitable for a dinner-table, and which compared with several others was very light and attractive, containing many very choice flowers. For a bride's bouquet and also a hand-bouquet, the 1st prize in both cases was taken by E. Barron, who was also 1st with three Epiphyllums. For four pots of Poinsettias, three plants in an 8-inch pot, the 1st prize was taken by J. Lunt, and were very well done, bracts very numerous and of large size. Mr. Beaver came 2d with a lot equally creditable. For twelve large-flowered Chrysanthemums in pots, the 1st prize fell to A. B. Hastings, who had a very compact well-flowered lot. These averaged scarcely 3 feet high, but were as vigorous and stout as many twice that height. Among them were good examples of Prince of Wales, Elaine, Empress of India, Hero of Stoke Newington, Nil Desperandum, and Barbara. The 2d prize was taken by J. Wood, gr. to R. Jones, Esq., who had a very creditable lot. For six plants the 1st prize was taken by J. Wood, who had fine examples of Dr. Sharpe, Princess Teck, and Mrs. G. Rundle. Mr. Hastings was 2d, who had Josiah Wedgewood in good form. For twelve cut blooms of large-flowered ones Mr. Croft was 1st, among whose lot we observed White Beverley, Golden G. Glenny, Prince Alfred, Mrs. Haliburton, Captivation, Elaine, Blonde Beauty, and Barbara. Mr. Hastings was 2d; he had fine blooms of Mrs. Cullingford, Golden Empress of India, and Hero of Stoke Newington. For six blooms the last-named exhibitor was placed 1st, and also 1st for six pots of White Primulas, he staging double ones in his group. For six Pompons J. Wood was placed 1st, Mr. Hastings 2d. This and another class of Pompons, though well represented, were certainly at a disadvantage, many of the blooms not yet being open, showing how very late these are in many places this year. Some good stands of cut miscellaneous blooms were staged by Mr. Gresty, Mr. Handley, and Mr. Hastings. Mr. Hall, gr. to J. Whittaker, sent some very fine bunches of Grapes, including Muscats and Black Alicante, which were remarkable for size of berry, colour, and general finish. The show remained open till 7 P.M., and was in all respects satisfactory. *W. S.*

Obituary.

We regret to record the sudden death of Mr. James Bowie, foreman in the greenhouse and ornamental department of Messrs. Thomas Kennedy & Co., nurserymen, Dumfries, which took place on the morning of the 21st ult. Mr. Bowie was a native of Cairney, near Huntly, Aberdeenshire, and had been with Messrs. Kennedy & Co. for the last eighteen years. He was well known and much respected, and the news of his death will occasion both surprise and regret to the many warm friends he had made in the district.

Law Notes.

First Prosecution under the Adulteration of Seeds Act, 1869.—The Charges.—The Evidence.—The Conviction.

At the Mansion House, on Monday, November 26, before the Right Hon. the Lord Mayor, at the instance of Mr. Alexander Francis, Thomas Strangeways, 3, Lawton Road, Mile End Road, appeared to answer a summons under the Seeds Adulteration Act, sec. 3, which charged him with having on October 30, in the City of London, with intent to defraud, sold to Alexander Francis 28 bushels of "killed Charlock," and there was a further summons of a like nature as to a sale on November 2.

Mr. Walter Beard, solicitor for the defendant, claimed that there was no jurisdiction, but it being stated that the transactions took place in Mark Lane, Mr. Besley (for the plaintiff) proceeded to open the case.

Mr. Besley said this was a very important matter for inquiry, being the first instance in which this Act of the 32d and 33d Vic. had been put into operation. This Act provides that whoever kills—a term defined by the Act as meaning to destroy the vitality of the seeds—or causes to be killed any seeds, or sells or causes to be sold any killed seeds, shall be subject to a penalty not exceeding £5 for a first offence, and for a second or subsequent offence a penalty not exceeding £50. Mr. Besley stated that although the defendant was charged with two offences, it was not desired, this being the first case of the kind, that the amount of the penalty under either summons should exceed the £5 fixed for a first offence, since the two summonses would be decided together; and he remarked that under the Act it was required that any complaint shall be commenced within twenty-one days from the offence, and the magistrate was compelled to adjudicate almost immediately after the offence had been committed. The object of "killing" seed is that the seed may not grow, and therefore may not betray the fraud committed. Charlock is a weed, and if Charlock were to grow in large quantities the farmer would know that the seed sold him was false; but if it were killed, so that it would not grow, then it had been the practice to mix the killed seed sometimes in the proportion of 50 per cent., so that a farmer instead of sowing his field with Turnips, would be sowing a mixture of half-and-half, and his pocket would be defrauded, because he paid for Charlock seed—which if it would grow would be valueless—the same price as for Turnip seed. The killing of the Charlock seed is the first necessity, and he would be able to satisfy the magistrate that in this case the seed was "killed seed." Mr. Besley said that he should show that the defendant deserved no consideration at his Lordship's hands, for previously to the passing of the Act he was well known as a vendor of "killed seeds."

Mr. Beard appealed to the Lord Mayor that reference to matters antecedent to the dates in the case should not be allowed, but his Lordship ruled that Mr. Besley was in order.

Mr. Besley, therefore, proceeded that it was desirable the magistrates should know whether they had before them a person acting in error or designedly, and stated that he would show the defendant had acted designedly, and said as for their Act of Parliament, "I don't care for the Act; I can snap my fingers at their Act of Parliament." First of all, as to the summons in respect of seven sacks of "old Charlock seed." A person of the name of Chapman who is recognised as the agent of the defendant, upon Monday, October 22, offered to Mr. Francis seven sacks of old Charlock "killed," and stated that it was the property of Strangeways, and produced a sample bag of bulk, which bag defendant afterwards handed to Mr. Francis, and that particular sample was in the hands of Chapman, offered by him as "killed" Charlock seed, and the price discussed. On October 26 Chapman again saw him a second time, and purported to communicate the decision of Strangeways, that Mr. Francis must buy the lot or none at all. On the 27th again there was an interview with Chapman, at which it was arranged that if delivery was made at the wharf selected by Mr. Francis (Chaplin & Horne's, Trig Wharf) all would be bought by Mr. Francis. On the 29th was the first absolute interview between Strangeways and Mr. Francis in the matter, between half-past 2 and 3 o'clock, and a conversation in which Strangeways fully recognised that Chapman had sold on his account, and he then produced an invoice. After looking at the invoice Mr. Francis said, "Why, there is nothing to fall back upon if the seed should happen to grow." The defendant said "None of it will grow, and if you find a single seed grow I will put the whole lot on the kiln again for nothing." He then produced another sample to effect another sale, offering it at 6*s.* 6*d.* per bushel, and an appointment was made by letter in which the seed was referred to by Mr. Francis as "dead seed." On the Tuesday an appointment was made to see him in reference to the first parcel, and 2*s.* 6*d.* was then given to Chapman and subsequently another 2*s.* 6*d.*, he giving a receipt for 5*s.* as commission—a sufficient authority to make Chapman the agent of the defendant. In accordance with the appointment Mr. Francis went to 3, Lawton Road, Mile End Road, and the transaction was completed. On the 31st there was then a further continuation of the previous offer of 6½ qr. referred to on the second transaction. He made this statement: "When he killed seed, he did not do it as Frith did it. I do it myself, and always carefully scrape the inside of the bags before refilling, so that not a single live seed remains." On that occasion he was pressed to take 6½ qr. of the second parcel and only bought 3 qr. The invoice was made out and paid. Mr. Besley then read letters which had passed between the parties, in which the seed was referred to by the trade mark of three noughts struck through; and said, in conclusion. This is a prosecution by a number of gentlemen who were the promoters of that Act of Parliament, and who desire by the punishment of the practice to put a stop to that which must be a most pernicious thing in reference to the standing of the country and of dealers in seeds. I will put these facts before you, and although the defendant may despise a penalty of £5, the country will be warned, and we may thus be able to put a stop to this very nefarious practice.

The Evidence.

Mr. Alexander Francis, of Barford Street, Islington, examined by Mr. Besley, deposed:—Was employed by the promoters of the Seed Adulteration Act in this case. On October 22 saw William Chapman at Mark Lane, and he produced the sample bag now in witness's pocket (bag produced). That bag was marked "seven sacks" on one side, and bore other marks on the other side. The marks were in Strangeways' handwriting. Was told by Chapman that the seed was "killed" Charlock seed belonging to Strangeways, and he offered seven sacks at 6*s.* 6*d.* per bushel. Witness took away a small quantity, and saw Chapman again on October 26, when he said Strangeways would not divide the quantity.

Mr. Beard objected that there was as yet no proof of agency on the part of Chapman for Strangeways.

Witness continued.—Gave Chapman 5*s.*, and took his receipt on a card, which he afterwards handed to Strangeways. The payment was for commission on the matter between defendant and witness, and was to be paid by defendant. Was told on the Friday by Chapman that he must take all or none. Saw Chapman again on Saturday, and then arranged that if delivered on Monday he would take the lot of seven sacks. Witness then wrote out the receiving note produced addressed to Chaplin & Horne, at Trig Wharf, authorising them to receive the goods on his account. Saw Chapman again about two o'clock same day, when he said he had sent on the receiving note. On the 29th (Monday), between half-past two and three o'clock, witness saw Strangeways himself at Mark Lane. Neither spoke, but defendant pulled witness by the coat, and witness followed him out round the corner into Mark Lane, and then turned down Hart Street. Conversation commenced when they got round the corner. Defendant said he had brought up the seven sacks that day; witness said "I was at Trig Wharf about an hour ago, and it was not there." Strangeways said, "It has been on the way some time now, it is sure to be there by this;" and he then produced the invoice. (Invoice put in.) Witness' name was not then on the invoice, which was not receipted. The seed was described as "old Char-

lock" on the invoice. Witness looked at invoice and said, "Old Charlock! We must have an understanding about this, that it does not grow; because if it does, according to this invoice, I shall have nothing to fall back upon." He then tapped me on the shoulder and said, "Well, between man and man, it does not grow—not a seed; if it does, I will put the whole lot on the kiln again for nothing. You know the state of the law; I cannot put anything into writing. You must trust me, and keep your own counsel." Defendant then gave witness the little sample bag marked "seven sacks," which he had seen in the possession of Chapman, and now produced. Strangeways then showed witness a sample of another parcel of 6½ qr. of the same kind of seed (sample produced), and said, "I have another lot of 6½ qr. here, which I have killed for a party in the country, and they have refused to take delivery because the bulk was not equal to sample. £5 expenses have been incurred, but I do not want to fall out with these people because they are very good customers of mine, and, therefore, I should like to sell the seed to somebody else." Witness looked at the sample, and said it was larger in the grain than the previous sample, and defendant said, "Yes, it will do very well if sifted; the larger seed for mixing with Swede, and the smaller with Turnip." Witness then told him he could not do with it at present, but might move it off in a little while, and would see him again shortly. Made an appointment to see him again at half-past 3 that afternoon, but was prevented from keeping it. Sent a letter to Strangeways October 29. (Notice to produce this letter had been served by Ryan, an officer of the Court, but, the original not being produced, copy was put in by the prosecution.) Witness identified the copy, which was read, and referred, in the trade term, three noughts, to killed seed. Went to Strangeways' house on Tuesday, October 30; on the way there had met Chapman at the corner of Hart Street, Mark Lane, and gave him 2*s.* 6*d.*, and got his receipt for 5*s.* on the back of a card. Was to get the money from Strangeways. Went to the house and saw Strangeways; said he was sorry he had not kept the appointment, and had come to pay for the seed. Witness said, "I thought you told me that you had sent the seed up to Trig Wharf yesterday. I called this morning and it was not there." Defendant said, "Well, I was very suspicious about you, and did not intend to part with the seed unless I got the money. I had the seed up there in the van, but as you did not come back to pay me, I brought the seed home again. It is now in the yard, and the van has not been unloaded." Witness said, "Well, I will pay you for the seed," and produced the invoice and defendant filled in witness's name, and wrote the receipt. Witness paid him £9 10*s.* in gold. He said, "We had better go out," and he then changed a sovereign, and handed back to witness the 5*s.* for Chapman and 1*s.* change. Witness left Chapman's receipt with defendant. At the time the money was paid, Strangeways called out to his boy, "Tom, go and tell that man to take the seed where I told you?" Witness afterwards saw the seed at Trig Wharf. Just as witness was leaving defendant produced a sample of thirteen sacks, and asked him if he could do anything with it. Witness asked to have the offer of it until the following Thursday, which was agreed to. Defendant said "Very well," and gave him the sample Whilst with Strangeways he said witness could thoroughly rely upon the seed being "well done; not like Frith's; they shot the seeds on the kiln, and did not scrape the sacks before refilling. I am very careful with the seed. I always scrape the seams of the sacks myself with a small needle, so that there cannot possibly be a single seed remaining in the sacks that will grow." Witness brought away the samples, and on Thursday wrote a letter to Strangeways, and posted it early in the morning. (Copy read, offering to take seed.) Went on Friday to Strangeways' house, and offered to take 2 qrs. first, but eventually closed for 3 qr. Was very much pressed to take the whole parcel, but witness told him he could not do it then. Defendant then wrote out the invoice as now produced, receipted it, and witness paid him £8 in gold. They went to the same house at the corner to get change. Witness had given him the receiving-order on Trig Wharf now produced. Received 4*s.* back as change. Defendant called the boy and told him to go and take six out of the thirteen sacks, and tell the man to take them to the place where he had the ticket for. Received a letter on November 8 (produced), believed it to be in the handwriting of Strangeways. Wrote on November 13 as copy produced. It takes about 3 lb. of Turnip seed to sow an acre; a bushel of seed weighs about 52 lb. The first lot of seed was sufficient to sow about 460 acres, and the second about 430 acres—enough "dead" seed, if mixed in the proportion of half-and-half, to sow, say, 1700 acres. Samples handed over for the purpose of testing were drawn from the bulk lying at Trig Wharf. Witness drew the sample from the second parcel, Mr. Ostler drew the other. They were both given to Mr. Charles Sharpe, of Sleaford.

CROSS-EXAMINATION.

Cross-examined by Mr. W. Beard: Not now in business. Had been in the seed trade upwards of fourteen years. Was engaged by Mr. Charles Sharpe, of Sleaford, to investigate and report to him upon the adulteration of seeds. Was in Mr. Sharpe's employ some time. Had not been a principal, but always in the employ of others. Had held situations in Sleaford, Edinburgh, and London.

The LORD MAYOR: That has nothing to do with the case.

Witness continued: Believed when buying these parcels that he was buying "killed" Charlock seed. Only knew by what he was told that it was "killed" seed. Did not, of course, mean to sell it again. The receipt for the first lot was given at Strangeways' house; both receipts were given there. The goods were delivered at Trig Wharf, Upper Thames Street. Would not have thought of selling them again.

JOHN CHARLES OSTLER was next examined. The witness lives at Walthamstow. Took a sample from the seven sacks or first lot, from the bulk at Trig Wharf, and handed the sample to Mr. C. Sharpe.

W. SCOTT, of Trig Wharf, in reply to Mr. Besley, stated that he is manager for Messrs. Chaplin & Horne at Trig Wharf, Upper Thames Street. Had already produced the receiving orders as put in evidence, and had in his capacity of manager received into Trig Wharf the parcels of goods mentioned in those receiving orders. The goods were entered in the housing account, and delivered out to the person on whose account the seed was held. The delivery to the wharf was made by Strangeways for Mr. Francis, and the document swere those produced, with witness's signature thereon.

MR. CHARLES SHARPE, examined by Mr. Besley, stated that he is a seed merchant at Sleaford, in Lincolnshire, and with others had promoted this Act of Parliament which came into operation in May, 1870. There had been no previous prosecution under this Act. It was correct that he had employed Mr. Francis to make the purchases in these cases expressly to obtain a conviction. Had not calculated the area that might be sown with the parcels in question in these cases if mixed in the proportion of half-and-half with other seed. Charlock seed was worth from 3*s.* 6*d.* to 4*s.* per bushel. Charlock seed is used to crush for its oil and for manure, not for the purposes of sowing. There is no genuine use of Charlock seed for sowing; people are too glad to get rid of it. When "killed" it is used for mixing with Swede or Turnip seeds, but has no market value. When "killed" it is not fit for crushing. By "killing" you destroy its manurial qualities, and it becomes of no use whatever except for mixing. Swede seed is worth from 65*s.* to 75*s.* or even 84*s.* per bushel. The trade term for "killed" seed is three noughts. People did not like to speak of "killed" or prepared seed.

In reply to the Lord Mayor, who asked the meaning of the trade term or sign, Mr. Besley said, "Nothing! nothing!! nothing!!!

Witness continued.—Killed seed has no value whatever. It is only sold for the purpose of mixing with seed of high value. I believe that in former times men were employed in killing seeds who were not experts and did not understand their business, because the seed grew and betrayed the fraud. The samples handed to witness were handed by him to Mr. Marriott, tester in his establishment at Sleaford. Witness kept the two samples and took them home. He knew of his own knowledge that they were killed seeds, because he had crushed them, and they had the appearance of killed seed, and he had sowed them and not a seed germinated.

Cross-examined by Mr. Beard: Was not aware and could not say that "killed" Charlock seed would be sold sometimes mixed up with bird seed—should say not. Should say that people would not go to the trouble of killing an article that would reduce it in price. Did not know that "dead" Charlock seed was mixed with bird seed. Old Charlock seed if crushed would yield oil. Witness had demonstrated before the Committee of the House of Commons, in the presence of some scientific witnesses, that killed seed could be detected.

JAMES MARROTT, examined by Mr. Besley.—He was tester for Mr. Charles Sharpe at Sleaford, and received from him two samples for careful testing. The samples were numbered respectively 1 and 4. Witness carefully prepared pots, and put into each pot 100 seeds. The samples 1 and 4 were the same as Charles Sharpe had spoken of.

ADMISSION OF GUILT.

At this stage Mr. BEARD said: I think, Mr. Besley, I won't trouble you to produce any more evidence. I think I cannot deny that we have sold this seed to Mr. Francis, and therefore plead guilty to both summonses, but I should ask you as to the question of fraud. He bought it as killed seed, and he says that he did not intend to sell it, therefore no one else could be defrauded.

The LORD MAYOR, referring to the Act, said that under section 5, by which he thought he must construe section 3, under which the summonses had been taken out, it was sufficient that the seed had been "killed" and had been sold as "killed" seed.

Mr. BEARD: I would only say that Mr. Francis was not defrauded; if you take the evidence it is quite certain, I think, that Mr. Francis was not defrauded.

INFLICTION OF PENALTY.

The LORD MAYOR: I inflict the full penalty for each offence and costs.

Mr. BEARD: As this is the first case, I do not think costs—

The LORD MAYOR: It is a very serious matter that the seeds of the country should be adulterated. I inflict the penalty of £5 for each offence—£5 for the offence of killing the seed and £5 for that of selling the killed seed, and £5 5*s.* costs.

The fines and costs were at once paid.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, NOV. 28, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Nov.	In.	In.	°	°	°	°	°				In.
22	29.06	−0.63	52.9	37.0	15.9	45.3	+ 3.6	38.2	76	S.S.W. S.W. W.	0.13
23	29.46	−0.23	49.2	37.9	11.3	43.5	+ 1.8	34.8	72	WNW	0.00
24	29.12	−0.56	43.8	34.4	9.4	39.0	− 2.6	37.2	94	N.E. E.	0.51
25	29.68	−0.01	42.8	36.5	6.3	39.2	− 2.4	31.8	76	WNW	0.01
26	29.56	−0.13	48.6	32.1	16.5	39.8	− 1.8	37.4	91	S.W. WSW	0.04
27	29.05	−0.65	53.4	41.2	12.2	47.2	+ 5.6	43.6	88	WSW S.S.W.	0.37
28	29.09	−0.62	47.8	37.0	10.8	42.3	+ 0.6	35.4	79	S S.W.	0.00
Mean	29.29	−0.40	48.4	36.6	11.8	42.2	+ 0.7	36.9	82	S.W.	sum 1.06

Nov. 22.—A fine day. Frequent showers. Strong wind. Gale at 6 A.M.

— 23.—A very fine day. Clear, cold, and windy. Lunar halo at night.

— 24.—Overcast, dull, and wet throughout. Barometer reading at 3 P.M., 29.083 in.; at 7 P.M., 28.891 in.; at 10.30 P.M., 28.971 in.; and at midnight, 29.029 in.

— 25.—A fine day, partially cloudy. Very cold. Barometer reading at 9 A.M., 29.606 in., and steadily rose to 29.823 in. at midnight.

— 26.—Fine, but cloudy till 4 P.M. Overcast, dull, and thin rain fell after. Slight fog in morning.

— 27.—Fine and bright till 3.30 P.M. Overcast and dull with continuous showers of rain after 4 P.M. A little rain fell before 8 A.M.

— 28.—Fine, bright, clear and cold.

LONDON: *Barometer.*—During the week ending Saturday, November 24, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.30 inches at the beginning of the week to 30.08 inches by the afternoon of the 18th,

increased to 30.11 inches by midnight on the same day, decreased to 29.57 inches by the morning of the 20th, increased to 29.82 inches by the morning of the 21st, decreased to 29.23 inches by the afternoon of the 22d, increased to 29 75 inches by about midnight on the 23d, decreased to 29.07 inches by 7 P.M. on the 24th, and was 29.21 inches at the end of the week. The mean reading for the week at sea level was 29.61 inches, being 0.23 inch below that of the preceding week, and 0.27 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 53° both on the 21st and 22d to 43¾° on the 24th; the mean value for the week was 49¼°. The lowest temperatures of the air observed by night varied from 33¾° on the 19th to 39° on the 18th; the mean for the week was 36°. The mean daily range of temperature in the week was 13¼°, the greatest range in the day was 19° on the 21st, and the least 9½° on the 24th. The mean daily temperatures of the air and the departures from their respective averages were as follows:—18th, 45°.2, + 3°.3; 19th, 42°.6, + 0°.8; 20th, 40°.3, — 1°.4; 21st, 43°.9, + 2°.2; 22d, 45°.3, + 3°.6; 23d, 43°.5, + 1°.8; 24th, 39°, — 2°.6. The mean temperature of the air for the week was 42°.8, being 1°.1 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 86¼° on the 22d, 82° on the 23d, and 80½° on the 20th; on the 24th the reading did not rise above 49°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 29° on the 19th and 24th; the mean reading for the week was 32°.

Wind.—The direction of the wind was mostly from the S.W., and its strength was brisk, particularly on the 22d and 23d days. The weather during the week was fine but cloudy, cool, and showery. A gale of wind prevailed during the 22d and the morning of the 23d. A lunar halo was seen on the 23d. Slight fog prevailed on the 24th.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 56° at Truro, 55½° at Plymouth, and 55° at Cambridge; the highest temperature of the air at Hull was 49°, and at Sunderland 50°; the mean value from all stations was 53¼°. The lowest temperatures of the air observed by night were 28° at Wolverhampton, 29° at Hull, 29½° at Nottingham, and 30° at Sheffield and Eccles; the lowest temperatures of the air at Portsmouth was 38°, and at Plymouth 36½°; the mean value from all stations was 32½°. The range of temperature in the week was the greatest at Wolverhampton, 25½°, and the least at Portsmouth and Sunderland, both 15°; the mean range from all stations was 20¾°.

The mean of the seven high day temperatures was the highest at Truro, 53°, Plymouth, 52°, and Portsmouth, 51°, and the lowest at Hull, 45¼°, and Bradford and Sunderland, both 46¼°; the general mean from all stations was 48½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 32¼°, at Nottingham, 33¾°, and Leicester, Cambridge, Eccles, and Hull, all 35¼°; and the highest at Truro, 42°, and Plymouth 40½°; the mean from all stations was 37°. The mean daily range of temperature in the week was the greatest at Wolverhampton, 15½°, and the least at Sunderland, 7½°; the mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 42½°, being 1¼° lower than the value for the corresponding week in 1876. The highest were 47° at Truro, 46° at Plymouth, and 45¼° at Portsmouth; and the lowest were 39¾° at Wolverhampton, and 40¼° at Hull.

Rain fell to the amount of 2 inches at Brighton, Bristol, and Bradford, whilst at Cambridge and Sunderland four-tenths of an inch only was recorded; the average fall over the country was 1¼ inch nearly.

The weather during the week was generally fine, but cool and showery. Thunderstorms occurred at Bristol and Bradford on the 22d.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 55° at Paisley to 46° at Glasgow; the mean value from all stations was 49¼°. The lowest temperatures of the air varied from 27° at Dundee, and 28° at both Edinburgh and Aberdeen to 34° at Glasgow; the mean value from all stations was 29¾°. The mean range of temperature in the week from all stations was 19½°.

The mean temperature of the air for the week from all stations was 40°, being 2° lower than the value for the corresponding week in 1876. The highest was 41°, at Glasgow and Leith, and the lowest 38½°, at Dundee.

Rain.—The amounts of rain measured at the several stations varied from 2 inches and four-tenths at Greenock, and 2 inches and three-tenths at Paisley, to three-quarters of an inch at Glasgow. The average fall over the country was 1 inch and four-tenths.

DUBLIN.—The highest temperature of the air was 54¼°, the lowest was 26¾°, the range 27½°, the mean 42¼°, and the fall of rain 1.04 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

216. SEEDLING AMARYLLIS.—Will some of your numerous practical correspondents kindly inform me how long it takes to bloom the Amaryllis from the time of sowing the seed, and under what treatment they will bloom the quickest? *Subscriber.*

Answers to Correspondents.

BRUSSELS SPROUT: *B. T. W.* Your new variety named Welch's Giant appears to be a very good one, but does not display any marked advance on other strains in cultivation.

CLERODENDRONS: *F. A. F.* C. fallax has much larger flowers than C. squamatum, with a smaller shorter-toothed calyx. The leaves of the latter plant are covered on the under side with minute flat scales—whence the name.

EXCHANGE: *W. A. E., Kilkea Castle, Mageney*, writes to say that he has the back numbers of the *Gardeners' Chronicle and Agricultural Gazette* to June, 1873, if any of our correspondents would like to exchange for some other standard work.

FUNGI: *Alex. Cummings.* The name of the larger Fungus is Coprinus atramentarius; the smaller, Agaricus terreus. Neither are of any value for the table, though the first is occasionally eaten by enthusiasts.

GRAFTING: *J. P.* You had better get a copy of *The Art of Grafting and Budding*, by Charles Baltet, published at 37, Southampton Street, Covent Garden, W.C.

NARCISSUS INJURED BY A GRUB: *A.* Your Narcissus bulbs are irretrievably injured by the grub of the Narcissus fly, Criarhina Narcissi, which was described and illustrated in this journal in 1842 under the name of Merodon Narcissi. It is there stated that in the

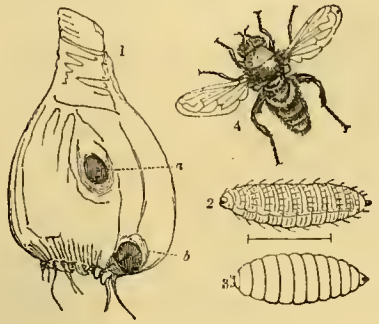


FIG. 135.—THE NARCISSUS FLY.

month of November one or two large roundish holes (fig. 135, *a*, *b*) are sometimes found in the outsides of the bulbs of these flowers, which are more or less decayed within, where a maggot will generally be found, which, by feeding on the heart during the summer and autumn months, has been the sole author of the mischief. Towards the end of November the maggot is transformed into a pupa, to accomplish which it eats its way out of the bulb near the roots, *b*, and buries itself in the surrounding earth, where it remains until the following spring, when the flies issue from their tombs.

HEATING GREENHOUSE: *T. E.* By all means adopt a small hot-water apparatus of light metal, the boiler being placed at one end, inside the house, and being set over a gas burner fixed in an ordinary greenhouse furnace not opening into the house, and provided with a flue pipe to carry off the fumes. As the gas burner can be fixed in any position high or low, you should have little difficulty in arranging a simple apparatus with the hot-water pipes working on the level. You will find this much easier to keep going than one depending on lighting a fire when heat is required.

INSECTS: *E. W.* Aleyrodes Chelidonii orallied species. *I. O. W.*—*C. R. L.* Your Cineraria leaf is ruined by the larvæ of a minute two-winged fly (Phytomyza sp.?). We know no other remedy than that of smartly pinching the infected part between the thumb and finger so as to destroy the larva. *I. O. W.*

MYRTLES: *A Constant Subscriber.* Good sandy loam mixed with a little peat or leaf-mould.

NAMES OF PLANTS: *J. M. W.* Abies Menziesii.—*W. R. S.* Myanthus deltoideus.—*S. E.* The plant with the black berries is the common Buckthorn, Rhamnus catharticus; the other is the common Spindle-tree, Euonymus europæus.—*W. Crampton.* 1, Eupatorium Weinmannianum *alias* E. ligustrina; 2, Sparmannia africana. Your specimens were unusually good ones as compared with many that we get.—*W. Howard.* Astelia Banksii.—*G. Parrot.* 2, probably Pyrethrum fruticosum. Send better specimens.—*Subscriber.* Tecoma jasminoides. The Pelargonium is not "New Life."—*A. Lee.* 1, Asplenium marinum; 2, Pteris hastata macrophylla; 3, Gasteria verrucosa. The Grape cannot be named from so poor a specimen; possibly it is Raisin de Calabre.—*O. S.* 1, Adiantum pentadactylon; 2, insufficient; 3, appear to be berries of Ardisia crenulata.—*H. C.* Euonymus europæus.—*G. Towill.* Correa cardinalis; propagated like other hard-wooded plants, by cuttings.—*Ebor.* Celsia arcturus.

TULIPS: *Ella.* Cover them the same as Hyacinths.

VINE DRESSING: *R. E. M., Bristol.* What you call "American blight" is no doubt the mealy bug, a very different insect. Your best plan will be to dress the canes with Gishurst Compound, which, together with instructions for its use, you can obtain from any nurseryman or seedsman.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

ERRATUM.—At page 661, for "Croton Heertii," read "C. Mortii."

CATALOGUES RECEIVED.—Messrs. J. Dickson & Sons (108, Eastgate Street, Chester), Catalogue of Forest Trees, Shrubs, Evergreens, &c.—Messrs. W. Smith & Son (Aberdeen and Kintore), Catalogue of Forest Trees, Shrubs, Conifers, &c.—Martin Grashoff (Quedlinburg, Germany), Wholesale Trade Catalogue of Agricultural and Garden Seeds.

COMMUNICATIONS RECEIVED.—R. C. E.—R. A. P.—W. C. S. (too late).—M. J. B.—H. C., jun.—W. B.—R. L. (not known).—R. P. B. (next week).—D. B. (we have not yet received the quill).—W. C.—C. O.—J. S.—A. B. (many thanks).—E. P. F.—M. P.—A. McD.—J. M. W.—W. B. S.

DIED.—On Monday, November 5, at Saint Mary's Hospital, Paddington, EDWARD JAMES DONNAN, eldest surviving son of Mr. Edward Donnan, Castle Bellingham, Co. Louth, Ireland, in his twenty-sixth year, late foreman in The Gardens at Cobham Hall, Gravesend, Kent, the seat of the Earl of Darnley.

Markets.

COVENT GARDEN, November 29.

Though trade has been quiet there has been a better demand for home-grown Grapes during the past week, though samples are now confined to the late keeping sorts, such as Alicante, Lady Downe's, and Gros Colman. Pines are still arriving in large quantities from the Azores, and in good condition, but prices are low. Kent Cobs are stagnant. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6– 5 0	Pears, per doz.	.. 2 0– 4 0
Grapes, per lb.	.. 0 9– 0 0	Pine-apples, per lb.	.. 1 6– 6 0
Lemons, per 100	.. 8 0–12 0	Figs, green, doz.	.. 1 0– 3 0
Nuts, Cobs, per lb.	.. 0 4– 0 6	Walnuts, per bushel	5 0– 8 0
Oranges, per 100	.. 6 0–16 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	.. 2 0– 4 0	Herbs, per bunch	.. 0 2– 0 4
Asparagus, Sprue, per bundle	.. 1 6– ..	Horse Radish, p. bun.	4 0– ..
Beans, French, per packet	.. 1 0– ..	Leeks, per bunch	.. 0 2– 0 4
Beet, per doz.	.. 1 0– 2 0	Lettuces, per score	.. 2 0– ..
Brussels Sprouts, p. bush.	.. 6 0– ..	Mint, green, bunch	0 6– ..
Cabbages, per doz.	.. 1 0– 2 0	Mushrooms, per pott.	1 0– 3 0
Carrots, per bunch	.. 0 4– 0 6	Onions, per bushel	3 6– ..
— new, Fr., bunch	1 6– ..	— young, per bun.	0 6– ..
Cauliflowers, per doz.	1 6– 4 0	Parsley, per bunch	.. 0 4– ..
Celery, per bundle	.. 1 6– 2 0	Radishes, per bunch	0 1– 0 3
Chilis, per 100	.. 3 0– ..	— Spanish, doz.	.. 1 0– ..
Cucumbers, each	.. 1 0– 6 0	— New Jersey, doz.	2 0– ..
Eodive, per doz.	.. 1 0– 2 0	Salsafy, per bundle	1 0– ..
— Batavian, p. doz.	1 6– ..	Seakale, per punnet	2 0– ..
Garlic, per lb.	.. 0 6– ..	Shallots, per lb.	.. 0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	.. 1 0– 6 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Azalea, 12 sprays	.. 1 0– 3 0	Mignonette, 12 bun.	4 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, (Paper White), per doz.	.. 2 0– 4 0
Camellia blms., doz.	2 0–12 0	Pelargoniums, 12 spr.	1 0– 3 0
Carnations, 12 blooms	1 6– 4 0	— zonal, 12 sprays	0 6– 1 6
Chrysanth., 12 bun.	6 0–18 0	Primula, double, per bunch	.. 1 0– 2 0
Cornflower, 12 bun.	6 0– 9 0	Roses (indoor), doz.	1 6–12 0
Epiphyllum, 12 blms.	1 0– 3 0	Stephanotis, 12 spr.	9 0–18 0
Eucharis, per doz.	.. 4 0–12 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz.	.. 5 0–12 0	Tuberoses, 12 blms.	2 0– 4 0
Heartsease, 12 bun.	4 0– 6 0	Violets, 12 bunches	1 0– 3 0
Heliotropes, 12 spr.	0 6– 1 0		
Hyacinths, Rom. doz.	2 0– 4 0		

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azalea, per dozen	..30 0–60 0	Ficus elastica, each	2 6–15 0
Begonias, per doz.	.. 6 0–12 0	Foliage Plants, various, each	.. .. 2 0–10 6
Bouvardias, do.	..12 0–24 0	Fuchsias, per dozen	.. 6 0–12 0
Camellia, var., doz.	30 0–60 0	Liliums in var., each	1 6– 6 0
Chrysanth., per doz.	5 0–12 0	Mignonette, per doz.	6 0– 9 0
Clematis	..12 0–24 0	Myrtles, do.	.. 6 0–12 0
Coleus, per dozen	.. 6 0– 9 0	Palms in variety, each	3 6–21 0
Cyclamen, per doz.	..12 0–24 0	Pelargon., scarlet, p. dozen	.. 6 0– 9 0
Cyperus, do.	.. 4 0–12 0	Solanums	.. 9 0–24 0
Dracæna terminalis	30 0–60 0	Scilla, per dozen	.. 6 0–12 0
— viridis, per doz.	18 0–24 0	Tulips, per dozen	..10 0–18 0
Erica Hyemalis, doz.	12 0–42 0	Valotta purpur., doz.	9 0–18 0
— gracilis, per doz.	6 0–18 0		
Euonymus, var., doz.	6 0–24 0		
Ferns, in var., p. doz.	4 0–18 0		

SEEDS.

LONDON: *Nov.* 28.—There is now an improved inquiry for farm seeds, and quotations generally exhibit extreme firmness. White Clovers, in particular, command a strong advance, a good business having been lately done therein. For Alsike, also, full prices are obtained. For both these varieties this year's crops are undoubtedly short, and of inferior quality. As regards red Clover the position remains unchanged. Owing to the abundance and comparative cheapness of French samples, there is no large export movement to this country from the United States. Mail advices just received from Illinois describe many of the parcels then being marketed as somewhat injured by the continued wet weather. Really good French Clover can now be bought in London at from 54*s.* to 56*s.* per cwt. Considering how short will be the supply of English seed these figures, in the opinion of many people, are perfectly safe. The tendency of American Timothy is upwards. In Trefoils there has been no business doing; holders, however, appear confident that still higher rates will prevail next spring. For foreign Italian there is an improved sale, the moderate terms now current having attracted attention. In Rye-grasses there is no alteration. Occasional sales of Canary seed are reported at last week's currencies: some heavy arrivals of this article have been lately reported into Liverpool. For Mustard and Rape seed there is a fair request at previous rates. Linseed, Buckwheat, Peas, &c., are without variation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was firm at Mark Lane on Monday. As regards Wheat there was invariably an improvement of 1*s.* per quarter as compared with the rates of the previous Monday. The inferior portion of the English supply was no dearer. Barley was well held, and on the value of grinding parcels there was an advance of quite 1*s.* per quarter on the week. Malt was quiet on recent terms. Oats were in limted request, and much the same in price. Maize was the turn in favour of the seller. Beans, Peas, and flour were quiet, but steady, small purchases being made at previous quotations.—On Wednesday dealing in Wheat and other descriptions of produce was upon the same limited scale as on Monday; but there being an impression that the lowest point has been about touched, while the weather has a hardening influence rather than otherwise, holders were not disposed to press sales. No change was reported in prices. —Average prices of corn for the week ending November 24:—Wheat, 51*s.* 5*d.*; Barley, 44*s.*; Oats, 24*s.* 3*d.* For the corresponding period last year:—Wheat, 47*s.* 5*d.*; Barley, 39*s.* 4*d.*; Oats, 25*s.* 9*d.*

CATTLE.

At the Metropolitan cattle market on Monday there was a larger supply of beasts, but the increase was not so great as was expected, seeing the restrictions on removal of cattle beyond the metropolis are entirely revoked. This circumstance, however, brought together a much larger number of buyers than for a long time past, consequently the trade was more cheerful, with an advance in prices. There was also a few more sheep; the trade for them was dull, at late quotations. Choice calves were scarce and dearer. Quotations:—Beasts, 4*s.* 8*d.* to 5*s.* 4*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.* 4*d.*; sheep, 5*s.* 4*d.* to 5*s.* 8*s.*, and 6*s.* 4*d.* to 7*s.*; pigs, 4*s.* to 5*s.*—Thursday's trade was without great feature. Supplies both of beasts and sheep were about an average for a Thursday, and business was quiet but steady for fine kinds, which maintained Monday's prices. Calves were scarce and dear.

HAY.

Tuesday's Whitechapel report states that good Clover was scarce and firm. Hay and straw, of which the supply was moderate, experienced a dull trade. Quotations:—Prime Clover, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 103*s.*; inferior, 75*s.* to 85*s.*; and straw, 44*s.* to 54*s.* per load.—On Thursday a large supply of fodder was offered for sale. There was a very dull trade, and prices, although not quoted lower, to effect sales had to be reduced on account of the weather. Prime Clover, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 103*s.*; inferior, 75*s.* to 85*s.*; and straw, 44*s.* to 54*s.* per load.——Cumberland Market quotations:—Superior meadow hay, 98*s.* to 110*s.*; inferior, 80*s.* to 90*s.*; superior Clover, 130*s.* to 140*s.*; inferior, 105*s.* to 115*s.*; and straw, 55*s.* to 60*s.* per load.

POTATOS.

The Borough and Spitalfields markets reports state that there prevails a steady demand for the better kinds of Potatos, and prices are fairly supported. Inferior descriptions remain a dull sale. Kent Regents, 160*s.* to 190*s.*; flukes, 150*s.* to 170*s.*; Victorias, 120*s.* to 140*s.* per ton.—The imports into London continue to increase in bulk. In the course of last week 131,418 bags were received from Hamburg, 7584 Bremen, 6758 Antwerp, 1647 Harlingen, 1541 Boulogne, 1564 bags 795 sacks Dunkirk, 1439 bags Brussels, 547 sacks Rouen, 591 bags Rotterdam, and 204 Caen.

COALS.

A good supply of house coals at market on Monday sold at last noted quotations; Hartley's, however, declined 6*d.* per ton. Prices on Wednesday showed no alterations, and were as follows:—West Hartley, 15*s.* 9*d.*; Walls End—Hetton, 20*s.*; Hetton Lyons, 17*s.* 9*d.*; Lambton, 19*s.* 6*d.*; Original Hartlepool, 20*s.*; Tunstall, 17*s.* 9*d.*; Chilton, 18*s.* 9*d.*; Tees, 19*s.* 9*d.*

E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MADE of PREPARED HAIR and WOOL.

A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for pits and Forcing Frames.

PROTECTION from COLD WINDS and MORNING FROSTS.

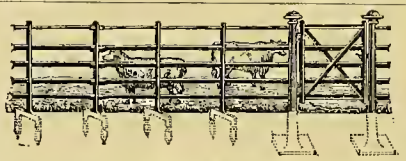
Improved "FRIGI DOMO" NETTING, 2 yards wide, 1*s.* 6*d.* per yard.

"FRIGI DOMO" CANVAS.

2 yards wide .. .. .. 1*s.* 10*d.* per yard run.
3 yards wide .. .. .. 3*s.* per yard.
4 yards wide .. .. .. 3*s* 10*d.* per yard.

ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen.

NOTICE.—REMOVED from 3, CANNON STREET, CITY.



BAYLISS, JONES & BAYLISS,

Patentees and Manufacturers of Wrought Iron

CONTINUOUS BAR FENCING,

Iron Hurdles, Strained Wire Fencing, Field and Entrance Gates, Tree Guards, &c.,

VICTORIA WORKS, WOLVERHAMPTON,

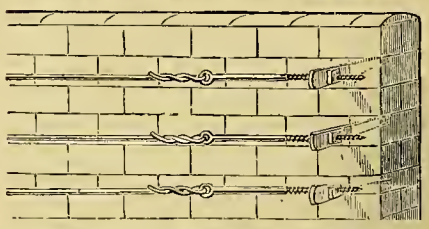
And 3, Crooked Lane, King William Street, London, E.C.

Catalogues free on application.

THOMAS'S

FITTINGS for WIRING WALLS.

NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall:	20 yds.		40 yds.		60 yds.		80 yds.		100 yds	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
No. 14 Gauge Wire	1	0	1	7	2	1	2	7	3	1
No. 13 ,, ,,	1	3	1	10	2	5	3	0	3	7

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.

Five per cent. discount allowed for prompt cash on Orders amounting to 20*s.* and upwards.

Special quotations for larger quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

THE THAMES BANK IRON COMPANY,

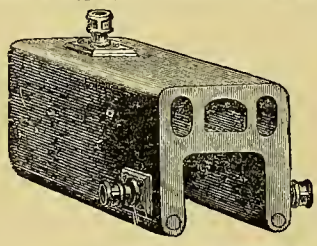
OLD BARGE WHARF,

UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



PRICE LIST on application, or Six Stamps for Descriptive CATALOGUE (Seventh Edition).

"GOLD MEDAL" BOILER.

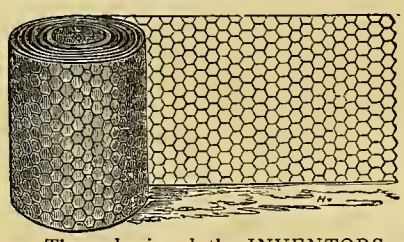
This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872).
PATENT "EXCELSIOR" BOILER (1871)
"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.
PATENT PAXTON INDEPENDENT BOILER.
"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

SPECIAL NOTICE.

IMPORTANT REDUCTION IN THE PRICE OF



GALVANISED WIRE NETTING.

The undersigned, the INVENTORS and ORIGINAL MANUFACTURERS, beg to give Notice that from this date they have reduced the prices of this article by one-third of the original rates. Delivery free. Stock sizes executed upon receipt of order.

BARNARD, BISHOP & BARNARDS,

NORFOLK IRONWORKS, NORWICH, and 93 and 95, QUEEN VICTORIA STREET, LONDON, E.C.—October 20, 1877.

Price 18s.

Petroleum Greenhouse Stove,

Complete with Evaporating Pan, will burn, without attention, for Twenty-four Hours.

No Smoke, no Smell, no Injury to the most delicate Plants.

Present price of Oil, 1s. 4d. per Gallon.

DEANE & Co. provide and fix Hot-water Apparatus for all Horticultural purposes.

Factory, 1, Jacob Sreet, Dockhead.

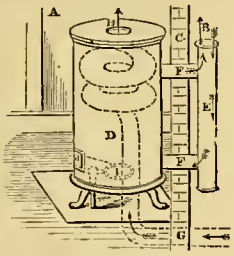
Illustrated Horticultural Catalogues Post-free.

DEANE AND CO. (46, King Wm.-st.), LONDON BRIDGE.

GEORGE'S PATENT CALORIGEN,

FOR

Warming and Ventilating Small Conservatories.



The only Gas Stove in which the product of combustion is entirely excluded from the Conservatory.

Made in Wrought Iron, £3 3s.

Made in Copper, £5.

Height, 28 inches; diameter, 14 inches.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Conservatories, Offices, &c. Exhibited at the Exhibition of 1871 (Department of Scientific Inventions).

Illustrated Prospectuses and Testimonials on application.

J. F. FARWIG AND CO., 36, Queen Street, Cheapside, E.C.

This Stove introduces a strong current of warmed (not burnt) fresh air.

WAGSTAFF'S

Patent Saddle and Cylindrical

BOILERS.

Efficient and Economical.

Awarded 6 Silver Medals.

Messrs. E. G. HENDERSON & SONS' Spacious Nurseries, Pine-apple Place, Maida Vale, are most satisfactorily Heated with two of these Boilers.

Plans and Estimates of Work in any part of the Kingdom gratis, and efficiency guaranteed. Price Lists, Prospectus, and Testimonials free on application.

THOS. WOLSTENCROFT AND CO., 46, Ludgate Hill, London, E.C.

J. G. WAGSTAFF, Albert Ironworks, Dukinfield.

PATENT PORTABLE SMOKELESS STOVES and PATENT FUEL.

For Heating Conservatories, Greenhouses, Halls, Shops, and Places without Chimneys. The Stoves burn with one supply of Fuel 12 to 24 hours, requiring no attention or re-filling.

NASH'S PATENT PORTABLE VAPOUR BATH and BRONCHITIS KETTLES, with Medical Testimonials.

Fretwork and Carving Tools, Saw Frames, Saws, Patterns, and Prepared Wood, &c.

S. NASH, Tool Warehouse, 119, Newgate Street, E.C., and 253, Oxford Street, London, W. Prospectus free.

AGRICULTURAL LOCOMOTIVES,

STEAM PLOUGHING MACHINERY,

ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,

STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers,

AVELING & PORTER,

ROCHESTER, KENT; 72, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

NOTICE TO THE TRADE.

TEBBS' UNIVERSAL FUMIGATOR

Can be obtained Wholesale of FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C.; and of CORRY AND SOPER, Shad Thames, London, S.E.

No one cultivating plants under glass should be without one.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners! This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

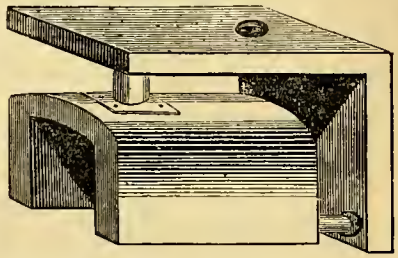
Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

WANTED, Second-hand 4-INCH HOT-WATER PIPING, for heating Vinery, 50 feet long, with one division and boiler complete.

Mr. HARRIMAN, 107, Grosvenor Road, Pimlico, S.W.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Batham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

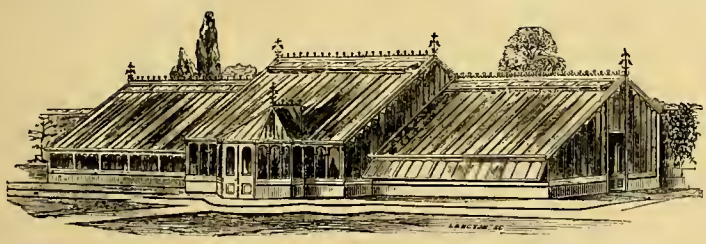
PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

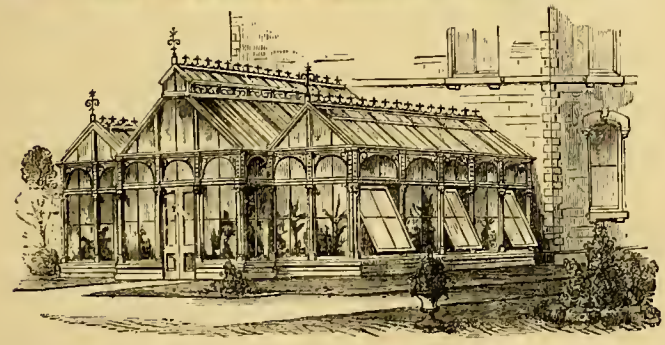
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

MESSENGER & COMPANY,

MIDLAND HORTICULTURAL BUILDING & HOT-WATER ENGINEERING WORKS, LOUGHBOROUGH.





Horticultural Buildings erected on Messenger & Co.'s Patent Method of Construction are very strong, *most durable, light, elegant, amply ventilated, perfect efficiency* for intended purpose is *guaranteed*, are economical *in cost and maintenance;* combine the peculiar advantages of Wooden and of Iron Houses, without their disadvantages.

MESSENGER AND CO., from their long experience, and having large Works exclusively devoted to the Construction and Heating of Horticultural Buildings, are in a position to execute with despatch, in the best manner, the Orders with which they are entrusted. Only thoroughly well seasoned timber used.

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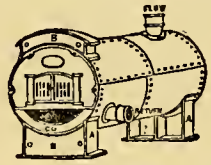

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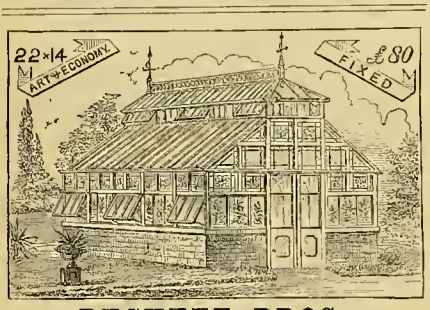

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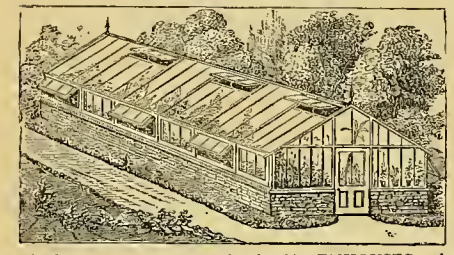

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THE

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With the Number for Saturday next, December 15, will be presented a beautifully Coloured Plate of "NEW BEGONIAS."

NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 are 1s. each.

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Lilium auratum from Japan.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, December 14, at half-past 12 o'Clock, several thousand fine BULBS of LILIUM AURATUM, just arrived from Japan, in the best possible condition.

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Consignments from Ghent and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 15, at half-past 12 o'Clock precisely, a Consignment of Plants from Ghent, consisting of CAMELLIAS, AZALEAS, GLOXINIAS, ARALIAS, FICUS, &c.; and a quantity of HYACINTHS, TULIPS, CROCUSES, and other BULBS, from Holland.

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10,000 Lilium auratum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 17, at half-past 12 o'Clock precisely, 10,000 magnificent BULBS of LILIUM AURATUM, just arrived from Japan in splendid condition, in large and small lots to suit all buyers.

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Established Specimen Orchids.

MR. J. C. STEVENS has received instructions from Messrs. James Veitch & Sons, of Chelsea, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on THURSDAY, December 20, at half-past 12 o'Clock precisely, a selection of choice Specimen and other ORCHIDS, which are being sold only in consequence of their houses being so crowded. Amongst the plants will be found strong Cattleyas of sorts, Aerides Fieldingi, very strong; A. virens, a perfect specimen; A. rubrum, rare; Cymbidium eburneum, Dendrobiums in variety, including the very fine D. Brymerianum, offered for the first time; the fine new hybrid D. Ainsworthii, Lycaste Skinneri alba, established plants of Odontoglossum Alexandræ and vexillarium; Vanda cœrulea, strong flowering plants; Masdevallias in variety, Aerides Schrœderi and crassifolium, Vanda Cathcartii, the finest specimen in the country; and many other fine kinds.

On view the morning of Sale, and Catalogues had.

Phalænopsis sumatrana, Vanda Lowi, Cypripedium BOXALLI.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 20, at half-past 12 o'Clock precisely, good plants of the rare and lovely PHALÆNOPSIS SUMATRANA, P. VIOLACEA, VANDA LOWI, upwards of 50 plants in flower or bud of CYPRIPEDIUM BOXALLI, upwards of 50 plants in flower or bud of ODONTOGLOSSUM CIRRHOSUM, PHALÆNOPSIS SCHILLERIANA and P. AMABILIS, fine strong plants, all with flower-spikes; DENDROBIUM WARDIANUM, with flower-buds; and other choice ORCHIDS.

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Whitecross Nurseries, Hereford.

CLEARANCE SALE of NURSERY STOCK, PLANT HOUSES, VINERIES, PITS, and their CONTENTS, in consequence of the Dissolution of Partnership of Messrs. Davison & Co.

MR. O. SHELLARD is instructed to SELL by AUCTION, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 10, 11, 12 and 13, at 11 o'Clock punctually each day, the whole of the STOCK and PLANT.

Full particulars in Catalogues, to be had on application to the Auctioneer, Hereford; or at the Nurseries.

FOR SALE, a SEED BUSINESS, in a leading thoroughfare in Belfast, Ireland—Stock, Fixtures, &c., of an improving Retail Seed Trade. Rent and taxes about £70 per annum.—G. M., 4, Duncan Terrace, Antrim Road, Belfast.

To Nurserymen, Florists, and Others.

TO LET, with Immediate Possession, all those extensive GREENHOUSES, MUSHROOM-HOUSE, RHUBARB-HOUSE, DWELLING-HOUSE, and other Buildings, together with the large NURSERY GARDEN adjoining and situate at Fairfield, Stockton-on-Tees, and late in the occupation of Mr. Joshua Grimwood. For particulars apply to

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TO LET, SIX GREENHOUSES, Furnaces complete, 38 feet by 9 feet each. Also large ORCHARD well stocked with good bearing Fruit Trees. Apply

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LILIUM NEILGHERRENSE. ONE of the BEST LILIES.

Flowers nearly 1 foot long, deliciously fragrant; this Lily is admirably figured in the last number of the *Botanical Magazine*. Special quotation by the dozen or half-dozen, on application to

Mr. WILLIAM BULL, Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

SEAKALE for FORCING.—Largest roots in the Trade, 90*s.* per 1000, and 2*s.* packing; 500 and under, 10*s.* per 100 and 1*s.* packing; many acres for sale. Remittances to accompany all orders.—ALFRED ATWOOD, Market Gardener, 3, Althorpe Road, Upper Tooting, Surrey (late of 5, Simpson Street, Battersea).

W. POTTEN can supply strong Standard ROSES, good sorts, W. P.'s selection, 12*s.* per dozen; RED CURRANTS, 3-yr., strong, 12*s.* per 100; 1-yr. AUCUBAS, strong, 40*s.* per 1000; QUICKS, 2 to 3 feet, strong, price per 100 or 1000 on application.

Camden Nursery, Sissinghurst, Staplehurst, Kent.

CHRISTMAS TREES.—Fine specimens, 12 to 16 feet, cut off at surface of ground, on application to THOMAS PERKINS AND SONS, 42, Drapery, Northampton.

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MANETTI and RHODODENDRON.—Apply early, because I have never yet been able to supply the demands made upon me.

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HURST AND SON can offer Surplus Stock of HYACINTHS, TULIPS, and other BULBS, at greatly reduced prices, which may be had on application.

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WILLIAM CUTBUSH AND SON beg to announce that they have still a fine lot of the above. Sorts and prices on application.

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OSBORN AND SONS call attention to their extensive collection of HARDY, ORNAMENTAL, DECIDUOUS, and EVERGREEN TREES and SHRUBS, CONIFERÆ, &c., a Descriptive Catalogue of which will be forwarded, post-free, on application.

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HOLLIES and YEWS.—A large quantity of Green and Variegated, both new and old varieties, to be Disposed of, in large or small lots; all recently transplanted, and in good condition for removal. Many of the Hollies are beautifully berried and admirably adapted for Christmas Trees.

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FOREST TREES, well transplanted and good.

LARCH, 2 feet, fine and good leads.

FIR, Scotch, 1 to 1½ foot, 1½ to 2 feet, twice transplanted.

" Spruce, 1½ to 2 feet, 2 to 2½ feet, twice transplanted.

Send for samples and prices to

W. JACKSON AND CO., Nurseries, Bedale, Yorkshire.

SUPERB NEW BEGONIAS.—Hybrids of the finest new named sorts. Some of these Seedlings have this year been valued by the best English authority at Ten Guineas each. Will prove most magnificent Bedding as well as House Plants. Per packet, 2*s.* 6*d.* and 5*s.*

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For Sale for Cash.

ADIANTUM CUNEATUM, the lot, 500, £2 10*s.*; DRACÆNA TERMINALIS, the lot, 500, £3 10*s.*; CZAR and VICTORIA REGINA VIOLETS, 6*s.* per 100. Packed free, out of pots, and samples sent, by applying to

JACOB VERDIGAN, Florist, Long Melford, Suffolk.

Laurels, Larch, Spruce, Scotch Fir.

REUBEN TOWLER has to offer 2000 fine transplanted LAURELS, 3 to 4 feet, well furnished plants, splendidly rooted; also 40,000 strong LARCH, 2½ to 3½ feet, 2-yr. bedded, 2-yr. transplanted, fine, healthy, and well-rooted; 50,000 SPRUCE, 1 to 2½ feet, fine feathered stuff; 20,000 good SCOTCH FIR, 1 to 2 feet. Price on application.

Mowbray Vale Nurseries, Bedale.

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H. J. HARDY begs to offer, to the Trade, SEED of his SELECTED STOCK of the above, by the 100 Seeds or the Ounce. Cash or reference. Price on application to

H. J. HARDY,
Stour Valley Seed Grounds, Bures, Suffolk.

SEAKALE.—Extra fine Forcing, very strong clean roots, with good crowns, 8*s.* and 10*s.* per 100. Unknown correspondents are requested to remit cash with order.

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ROSES, Tea and Noisette, in pots; immense stock of fine plants.

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Fruit Trees, Deciduous and Evergreen Shrubs, CONIFERÆ, &c.

CHARLES TURNER'S New CATALOGUE of the above is now ready, and can be had post-free on application.

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Special Culture of Fruit Trees and Roses.

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DWARF ROSES, on the cultivated Seedling Brier, of the leading Exhibition varieties, 9*s.* per dozen, package free. Cash to accompany order.

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VINES, VINES, VINES.—Strong Fruiting Canes of Black Hamburgh, Mrs. Pince, Foster's Seedling, Gros Colman, and Lady Downe's, 5*s.* 6*d.* each. Strong Planting Canes of Black Hamburgh, Foster's Seedling, Muscat of Alexandria, White Tokay, and Black Alicante, 3*s.* each. The above are well ripened, short-jointed stuff.

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TUBEROSES (American grown).—Guaranteed the finest Bulbs ever offered; per 1000, £10; in lots of 5000 or more, £8 per 1000; second quality roots, also very fine, £6 per 1000 Delivered on steamer without extra charge. WORTHINGTON G. SMITH, Esq., 15, Mildmay Grove, London, N., will have a sample of the roots.—Address with draft or post-office order for amounts, HENRY E. CHITTY, Florist, Paterson, New Jersey, U.S. America.

WELLINGTONIA GIGANTEA, 50 fine plants, 5 to 6 feet, in large pots, 10*s.* 6*d.* each. Also 400 CEDRUS DEODARA, 10 to 15 feet, in pots, all safe to transplant, at 10*s.* 6*d.* each.

A large assortment of tall EVERGREEN TREES, 8 to 10 feet and upwards, grown expressly for Screens, Blinds, and Planting for Immediate Effect.

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Tree Ferns, Tree Ferns, Tree Ferns.

DICKSONIA ANTARCTICA.—The Advertiser continues to offer the above at greatly reduced prices. All trunks carefully selected by an English gardener from the coolest districts of Tasmania, from 1 foot upwards. They are carefully dressed and packed, and put on board ships sailing direct to London. Special terms to large buyers. For particulars apply to

Mr. WALKER, 9, Mount Pleasant, Tunbridge Wells.

To the Trade.—Azalea amœna Caldwellii.

W. G. CALDWELL AND SONS beg to offer strong bushes of this fine improved variety (which at this early season is blooming profusely), at 18*s.* per dozen, £5 per 100.

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F. AND A. SMITH are now sending out strong, well established plants of their new and superior early and free flowering Pelargoniums—an acquisition to any collection. Prices on application.

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GIANT LILY OF THE VALLEY.—Strong blooming Roots, 2*s.* per dozen, 12*s.* 6*d.* per 100, package free.

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To the Trade Only, for Cash on Delivery.

DIELYTRA SPECTABILIS, strong, 20*s.* per 100.

VESUVIUS GERANIUM, bloom splendid trusses, 10*s.* per gross.

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F. AND A. SMITH can supply strong plants of Ivies. Also strong, close jointed, Fruiting and Planting Canes of all the leading sorts of Vines. Price on application The Nurseries, West Dulwich, S.E.

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Beautiful Flowers for Winter and Spring.

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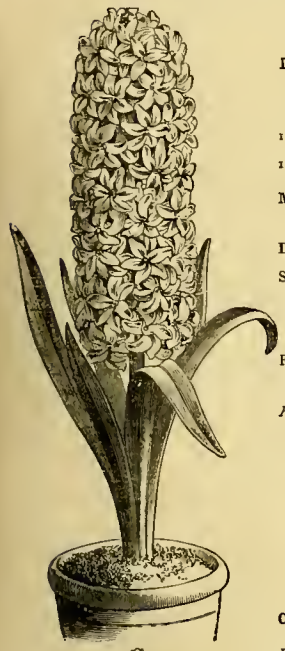

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12 in 12 extra fine sorts, 12*s.*
12 in 12 choice sorts, 9*s.*

Mixed Hyacinths, For Beds or Open Borders.

Double Red, White } 3*s.* 6*d.* per doz.
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Miniature Hyacinths. Fine named varieties, 5*s.* per dozen.

From F. R. BARKWAY, Esq., *Grove House, Lavenham, March* 5.—"The Hyacinths and other bulbs, which I had from you for the greenhouse, have turned out exceedingly well—the Hyacinths are especially fine."

SUTTON'S **CHOICE TULIPS. Single Early.**

Finest Mixed, 1*s.* per doz., 7*s.* 6*d.* per 100.
Scarlet Duc Van Thol, 2*s.* per doz., 14*s.* per 100.
Duchesse de Parma, La Reine, Yellow Prince, 1*s.* per doz.
Brutus, Couleur de Cardinal, 1*s.* 6*d.* per dozen.
Lac Van Rhein, 1*s.* per dozen.

Large Double.

Finest Mixed, 1*s.* per doz., 7*s.* 6*d.* per 100.
Duc Van Thol, 9*d.* per dozen.
Tournesol, Scarlet and Yellow, 2*s.* per doz.
Imperator Rubrorum, 1*s.* 6*d.* per dozen.
Purper Kroon, Rex Rubrorum, 1*s.* per dozen.

Mixed Parrot Tulips, 9*d.* per dozen.

Late Single Tulips. 100 in 100 choice varieties, £1 10*s.*
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GARDEN NARCISSUS.

Double White, 1*s.* 6*d.* per dozen, 10*s.* per 100.
Pheasant's Eye, 1*s.* per dozen, 7*s.* 6*d.* per 100.
Double Daffodils, 6*d.* per dozen, 3*s.* 6*d.* per 100.
Bicolor, 3*s.* 6*d.* each, do. Horsfieldi (or Empress) 2*s.* 6*d.* each.

Campernelle Jonquils, 1*s.* per dozen.

SUTTON'S SUPERB CROCUS.

100 in 10 named sorts, 4*s.*

	Per 100—*s.*	*d.*		Per 100—*s.*	*d.*
Large Blue	2	0	Large Striped, Mixed	2	0
,, White	2	0	Versicolor, Striped	2	0
Largest Yellow	2	6	Large Mixed, all colours	1	6
Cloth of Gold	2	0			

SNOWDROPS.

Double flowering, extra large } 3*s.* 6*d.* per 100.
Single flowering, extra large }

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Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

NEW PLANTS.

MR. WILLIAM BULL

IS NOW SENDING OUT:—

HÆMANTHUS RUPESTRIS.

A new species received from my collector in the West Coast of Africa. Its flowers are bright red, freely produced in dense umbels, the latter 3 to 4 inches in diameter, bracteated by three to four oblong-lanceolate reflexing leaves, which are about an inch long; the pedicels are from ½ inch to 1 inch in length. A very desirable introduction, seeing that only a few species of this handsome group of Hæmanthi are at present in cultivation.

Price 10*s.* 6*d. each.*

CIBOTIUM MENZIESII.

A fine dwarf-stemmed Tree Fern, inhabiting the Sandwich Islands, long since known to botanists, but only recently introduced to our collections in a living state. The trunk is comparatively stout, densely hair-scaly at the crown. The fronds are bipinnate, thick, and coriaceous in texture, glabrous, the pinnæ large oblong acuminate, pinnatifid, the segments oblong, blunt, almost entire. The base of the frond-stems is densely furnished with a very dark hair-like covering. Mr. William Bull received a First-Class Certificate for this Fern in 1875 from the Royal Horticultural and Royal Botanic Societies. It is closely allied to C. pruinatum, which differs in having the under surface glaucous. C. Menziesii is the same plant as that shown at the recent International Exhibition at Carlisle, under the provisional name of C. nigrescens. Only imported trunks can be offered.

Price on application.

CIBOTIUM PRUINATUM.

A noble-looking arborescent Fern, from the Sandwich Islands, very nearly allied to C. Menziesii, from which it differs in the silvery or glaucous under surface of its fronds. It has stoutish stems furnished at the crown with a covering of hair-like dark coloured scales; the fronds are bipinnate, as in C. Menziesii, with comparatively shallow ovate-oblong lobes, but the pinnæ and primary pinnules more acuminate; they are smooth on both surfaces; the base of the frond-stems is densely furnished with a dark-brown hair-like covering. This distinct Fern has been awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society. Only imported trunks can be offered.

Price on application.

ANTHURIUM VEITCHII.

An extremely effective and handsome decorative Aroidaceous plant, received by Mr. William Bull from his collector, Mr. Carder, from the United States of Colombia. In the striking character of the leaves principally consists its great beauty; their blades are remarkably long, leathery in texture, and of a bright green; in shape entire, ovate-oblong, and cordate at the base, the two rounded lobes being separated by a funnel-shaped sinus. The young leaves have a glossy metallic hue. The midrib is much thicker near the basal than in the other portions of the leaf; on the upper surface near the base it is rounded, while near the apex it becomes depressed. The spathe is white and oblong; the spadix is scarcely as long as the spathe. This new Aroid has been figured in the *Gardeners' Chronicle*, December, 1876, p. 773, and there fully described by Dr. M. T. Masters, F.R.S., from specimens sent to this country by Mr. Wallis. Fine plants can be offered.

Price on application.

LOMARIA DISCOLOR BIPINNATIFIDA

This beautiful Fern is certainly one of the most handsome of the Lomarias yet introduced. It is of symmetrical habit, its broad sterile fronds rise evenly from the crown, spread outwards in all directions, and arch in an exceedingly graceful manner. Their pinnæ are closely set, so that their parts overlap each other, and divided to the mid-rib, the segments being very much toothed and somewhat crisped, which gives the fronds an elegantly fringed appearance. As the plants mature they throw apparently fertile fronds; these, however, in all cases have as yet proved abortive.

This was one of the twelve new plants with which Mr. W. Bull gained the First Prize at the International Horticultural Exhibition held at Dundee in September, 1876.

The specimens offered have been imported from Victoria, and are of various sizes.

Prices of which can be had on application.

TULIPA STELLATA.

A handsome species, collected and sent from the Himalayas. In colour it appears to be variable, for the collector writes some are white, others are white and pink. The specimens sent with the bulbs are white, with a broad distinct stripe of crimson down the centre of three of the petals; these are lanceolate, slightly concave, obtuse, the three outer larger than the rest, and bright yellow at the base within. It is an attractive and handsome species, and will doubtless be a favourite with those who cultivate hardy bulbous plants.

Price, 5*s. each.*

NEW PLANTS—(Continued).

ÆCHMEA VEITCHII.

This is a very fine new Bromeliad, discovered and sent me from the United States of Colombia by my collector, Mr. Shuttleworth, in 1874, and again found and sent by my collector Mr. Carder, in 1875. Its flowers are produced in a dense oblong head, each subtended by a squarrose bright scarlet horny-toothed bract, the rich colour of which renders the plant highly attractive. Sepals lanceolate-deltoid, bright scarlet in the lower flowers of the head, white in the upper ones. This new plant has been also sent from the United States of Colombia by Mr. Wallis, and has been described and admirably figured in the November number of the *Botanical Magazine.* Mr. Shuttleworth, however, says that in its native habitat the flower-heads are fully double the size of the one figured, and present a most effective appearance, hence doubtless three collectors being struck with it and sending it home.

Price 1½ *guinea each.*

PAVONIA WIOTII.

A very remarkable Malvaceous plant. Its flowers are very persistent, freely produced, and borne in subterminal corymbs; the bracteoles are of a lively red, long, narrow, and slightly ciliate; the folded corolla is dark purple, from the mouth of which protrude the stamens, crowned with bright blue anthers. Mr. William Bull has received a quantity of this interesting species from his collector in Brazil, and can offer fine imported plants.

Price on application.

NEPHROLEPIS DUFFII.

This may be regarded as a variety of Nephrolepis analagous to the variety of Lady Fern known as Frizelliæ. The fronds are considerably narrowed, and have a gracefully pendent habit, while the apex is more or less divided in a multifid manner into separate lobes, exactly as occurs in the better forms of the Frizelliæ type of Athyrium. The plant comes from the South Sea Islands, and was collected by, and is named in compliment to, Mr. Duff, the Superintendent of the Sydney Botanic Gardens.

Price 1½ *guinea each.*

Establishment for New and Rare Plants,
KING'S ROAD, CHELSEA, LONDON, S.W.

To the Trade.

H. B. SMITH has for Sale a good stock of Short and Half-Standard GLOIRE DE DIJON, Standard and Half-Standard HYBRID PERPETUALS, leading sorts.
Ealing Dean Nursery, Ealing, W.

BOX EDGING, 10,000 Nursery Yards, Dwarf and fine, at £10 per 1000. ORCHID SPHAGNUM, very superior, at 6*s.* per cwt., £5 per ton; for Cash with Order.
J. B. YOUNG, Landscape Gardener, Bridge of Allan.

Cucumber Seed (true).

W. TODD has for Disposal a good stock of ROLLISSON'S TELEGRAPH and COX'S VOLUNTEER, grown in separate Houses, and saved from finest fruit. Price on application to
W. TODD, Nurseryman and Seedsman, 35, Watergate, Grantham.

Lily of the Valley.—Imported Clumps.

WILLIAM CUTBUSH AND SON beg to announce that they have a fine lot of the above, strong, for Forcing, 15*s.* to 18*s.* per dozen.
Highgate, N., and Barnet, Herts.

Special Offer.

JOHN LUFF, St. Helen's Nursery, Hastings, offers as under, at very low prices for Cash:—
LAURUSTINUS, bushy, 1 to 2 feet, 4*s.* per dozen; 2 to 3 feet, 6*s.* per dozen.
,, splendid specimens, well rooted, 3 to 4 feet, 18*s.* per doz.
LAURELS, extra bushy, 3 to 4 feet, 6*s.* per dozen.
,, single specimens, 4 to 5 feet, 12*s.* per dozen; 5 to 6 feet, 18*s.* per dozen.
PRIVET, Evergreen, stout and well rooted, 3 to 4 feet, 20*s.* per 1000.
ASPARAGUS, 2-yr., 3-yr., and 4-yr., 10*s.*, 17*s.* 6*d.*, and 25*s.* per 1000.
IVIES, of sorts, strong, in pots, 3 to 5 feet, 6*s.* per dozen.

PENGILLEY AND POOL'S GUINEA COLLECTION of BULBS for General Cultivation. Packing and Carriage Free, 59, Queen Victoria Street, London, E.C., contains:—
18 HYACINTHS, in 18 choice named varieties,
12 POLYANTHUS NARCISSUS, in 12 varieties,
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25 ,, Prince Albert,
25 ,, Caroline Chisholm,
12 SCILLA SIBIRICA,
50 SNOWDROPS, double,
12 TULIPS, Duc Van Thol,
6 ,, Tournesol,
6 ,, Rex rubrorum,
6 ,, Lac Van Rhyn,
6 ,, Molière,
6 ,, Queen Victoria,
6 ,, Souvenir,
6 ,, Royal Standard,
6 ,, Yellow Prince,
6 ,, Couleur Ponceau,
3 IRIS PAVONIA,
9 IXIAS, in variety,
9 SPARAXIS, in variety,
12 TRITELEIA UNIFLORA,
3 LILIUMS, in variety,
1 Clump, LILY OF THE VALLEY.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING," price 21s. and 42s. each. For Detailed List and Descriptions, see BULB CATALOGUE.

NEW FIG, "HARDY PROLIFIC," price 10s. 6d. each. Extra sized fruiting plants, 21s. each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

SEED POTATOS.

H. AND F. SHARPE'S SPECIAL PRICED LIST of SEED POTATOS is now ready. It comprises all the best sorts, both English and American. They have all been grown from carefully selected stocks, are free from disease, and the prices will be found very reasonable.

Seed Growing Establishment, Wisbech.

Cabbage Plants, Cabbage Plants.

S. BIDE can supply, for Cash, good strong plants of Enfield Market, Imperial, Improved Nonpareil, and Drumhead or Cattle CABBAGE, at 3s. per 1000, free on rail and package free; Red or Pickling CABBAGE, 5s. per 1000. All the above are grown on light land, and are beautifully rooted. Send orders early to

S. BIDE, Alma Nursery, Farnham, Surrey.

Florists' Flowers, and Roses.

Autumn Edition.

THOMAS S. WARE has pleasure in announcing that the above new CATALOGUE is now ready; it includes Winter-Flowering Carnations and Pinks, Fancy, Self and Show Pinks, Daisies, Pansies, Pæonies, Phloxes, Violas, Violets, &c. Free on application.

Hale Farm Nurseries, Tottenham, London.

LADY HENNIKER APPLE.—

FINE STANDARDS, 2s. 6d. each, 24s. per dozen.
PYRAMIDS, 2s. 6d. to 3s. 6d. each.
ESPALIERS, 5s. to 7s. 6d. each.
MAIDENS, 2s. each.

Price to the Trade on application to

EWING AND CO., The Royal Norfolk Nurseries, Eaton, near Norwich.

Pansies, Pansies.

WILLIAM PAUL, Paisley, N.B., has upwards of 20,000 Show and Fancy PANSIES, in splendid condition, 4s., 6s., to 12s. per dozen.

W. P. was awarded Silver Medal and six First Prizes at Scottish Pansy Show, June, 1877. First Prize of £6 for 24 Show Pansies (open to all) at Paisley, July, 1877. First Prize for 24 Pansies, at Newtownards, Ireland, July, 1877, &c.

Orders carefully forwarded by Post or Rail. The Trade supplied.

Fruit and Forest Trees, Ornamental Shrubs,

SEEDS, &c.

J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.

The "ORCHARDIST," price 3s. 6d. The best work on Fruit Trees and their cultivation in the English language.

TO EFFECT A CLEARANCE the following little LOTS are offered:—

5000 ASH, 1½ to 5½ feet, for 150s.
5000 RHODODENDRONS, 3 to 4 ft., fine, 75s. per 100.

Free into railway truck.

CHARLES NOBLE, Bagshot.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

CHARLES B. SAUNDERS, Cæsarean Nurseries, St. Saviour's, Jersey, respectfully solicits Orders for the following NURSERY STOCK:—

ELMS, 5000 Guernsey, fine upright trees, 7 to 12 feet, 30s. to 100s. per 100.
OAKS, 5000 Evergreen, carefully grown, 8 inches to 8 feet, 8s. to 150s. per 100.
EUONYMUS, 10,000 Golden, Green, and Silver, 8 inches to 2 feet, 12s. 6d. to 50s. per 100.
BULBS, CAMELLIA STOCKS, CARNATIONS and PICOTEES, FRUIT and FOREST TREES, SHRUBS, &c.

CATALOGUES of which may be obtained on application.

TREES.—For Sale (from a Private Nursery, overstocked), at a low price for Cash:—

3000 ELM, 5 to 7 feet high.
500 SYCAMORE, 5 to 8 feet high.
500 MAPLE, 7 to 8 feet high.
700 LIME, 2 to 3 feet high.
700 LARCH, 3 to 4 feet high.
500 YEW, 3 to 4 feet high.
500 BOX, 2 to 3 feet high.

Mr. W. S. HOSLEY, Audley End, Saffron Walden, Essex.

One out of Thousands.

CATALOGUE OF MY FOUR HUNDRED VARIETIES, post-free.

To Mr. H. Cannell. Naseby Woolleys, Rugby.

Dear Sir,—At the Northampton Chrysanthemum Show I exhibited very fine blooms, and gained the following prizes:—

Special Prize for 12 Cut Blooms	First.
12 Cut Blooms, incurved	First.
6 Cut Blooms, incurved	First.
6 Cut Blooms, Japanese, Anemones and Reflexed	First.
6 varieties, 3 in a bunch, large flowers	Second.
24 large varieties (not for competition) ..	Very highly commended.

The above were cut from plants that I got from you as cuttings. They were acknowledged by all to be equal to those shown at the Metropolitan Exhibitions.

Such success speaks highly for your system of sending cuttings in the country by post.

Yours respectfully, H. HARRIS.

Gardener to Captain G. Ashby Ashby.

H. CANNELL, Swanley, Kent.

ROSES,

STANDARDS and DWARFS, each sort on its proper Stock.

PAUL & SON,

THE "OLD" NURSERIES, CHESHUNT, N.,

Hope to have completed by end of this week all accumulated Orders, and will be able to execute as received all Orders given them now. The stocks of most sorts are still unexhausted; good Standards, Half-Standards, and Dwarfs, of nearly all kinds, can be yet supplied.

Carefully prepared ROSE, FRUIT, and HARDY TREE CATALOGUES, post-free on application.

ADDRESS—

PAUL & SON, The "Old" Nurseries, Cheshunt, N.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 13, at half-past 12 o'Clock precisely, 1200 ODONTOGLOSSUM CRISPUM, just received, *ex* "Moselle," from the United States of Colombia; among these will doubtless be many beautiful varieties, and most likely a number of the rare O. ANDERSONIANUM, and the still more rare O. CHESTERTONI, several of these two beautiful kinds having bloomed among the previous importation of O. crispum from the same district; and an importation of fine plants of the rare and beautiful ONCIDIUM TETRACOPIS; also an importation, in excellent condition, of the handsome ODONTOGLOSSUM LINDENI. At the same time will be sold some good established Plants of ODONTOGLOSSUM VEXILLARIUM, and various other Orchids.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, December 14, at half-past 12 o'Clock precisely, a quantity of extremely choice BULBOUS PLANTS, including several that are quite new to this country; among them TULIPA STELLATA, from the Himalayas; several NEW TULIPS, from Central Asia; IRIS KOLPAKOWSKYANA, a new species from Turkestan, offered for the first time; a new HÆMANTHUS, from the West Coast of Africa, offered for the first time; FRITILLARIAS, from California; and a collection of choice LILIES, comprising a large number of the rare LILIUM NEILGHERRENSE, also LILIUMS HANSONI, PURPUREUM, HUMBOLDTII, KRAMERI, COLUMBIANUM, and many other choice sorts.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

ESTABLISHED SPECIMEN ORCHIDS.

MR. J. C. STEVENS has received instructions from Messrs. JAMES VEITCH & SONS, of Chelsea, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on THURSDAY, December 20, at half-past 12 o'Clock precisely, a selection of choice Specimen and other ORCHIDS, which are being sold only in consequence of their houses being so crowded. Amongst the plants will be found strong CATTLEYAS, of sorts; AERIDES FIELDINGI, very strong; A. VIRENS, a perfect specimen; A. RUBRUM, rare; CYMBIDIUM EBURNEUM; DENDROBIUMS in variety, including the very fine D. BRYMERIANUM, offered for the first time; the fine new hybrid D. AINSWORTHII; LYCASTE SKINNERI ALBA; established plants of ODONTOGLOSSUM ALEXANDRÆ and VEXILLARIUM; VANDA CŒRULEA, strong flowering plants; MASDEVALLIAS, in variety; AERIDES SCHRŒDERI and CRASSIFOLIUM; VANDA CATHCARTII, the finest specimen in the country, and many other fine kinds.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

PHALÆNOPSIS SUMATRANA, VANDA LOWI, CYPRIPEDIUM BOXALLI.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 20, at half-past 12 o'Clock precisely, good plants of the rare and lovely PHALÆNOPSIS SUMATRANA, P. VIOLACEA, VANDA LOWI, upwards of fifty plants in flower or bud of CYPRIPEDIUM BOXALLI, upwards of fifty plants in flower or bud of ODONTOGLOSSUM CIRRHOSUM, PHALÆNOPSIS SCHILLERIANA and P. AMABILIS, fine strong plants, all with flower-spikes; DENDROBIUM WARDIANUM, with flower-buds, and other choice Orchids.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

By Her Majesty's Royal Letters Patent.

RENDLE'S PATENT SYSTEM OF GLAZING.

This Invention is now adopted by Her Majesty's Government, all the leading Railway Companies, Public Buildings, Winter Gardens, &c., throughout the Country.

ROOFS, &c., Lately Glazed on Rendle's Patent System.

Albert Hall, Sheffield.
Batley Markets,—Batley Corporation.
Boat House and Club House, Kew.
Blackpool Winter Gardens.
Brick Lane Stables,—Great Northern Railway Company.
Bath Goods Station,—Great Western Railway Company.
Corporation of Leeds Corn Exchange.
Cardiff Station,—Great Western Railway.
Chatham Royal Dockyard.
Ceres Works, Wolverhampton.
Cambridge Barracks, War Department.
Evesham Corn Exchange.
Glasgow Cab Sheds,—Enoch Square Railway Station.
Great Northern Railway Company.
Great Malvern Station,—Great Western Railway.
Keyser's Royal Hotel, Blackfriars.
Knostrop Sewage Works,—Leeds Corporation.
Lecture Hall, York.
Leicester Tramway Stables.
Leicester Opera House.
Lett's Wharf,—Commissioners of Sewers, Lambeth.
Manchester,—De Bergue & Co.
Manchester, — Vickers & Sons' Warehouses.
North Road Railway Station, Plymouth,—Great Western Railway Company.
Neath Railway Station,—Great Western Railway Company.
Neath Goods Station, — Great Western Railway Company.
Plymouth, — Willoughby Brothers, Warehouses.
Perry & Co.,—Warehouses, Birmingham.
Paddington Station, Departure Platform, —Great Western Railway Company.
Paddington Station, Engineer's Office,—Great Western Railway Company.
Royal Aquarium, Westminster.
Rhyl Winter Gardens.
Rawdon Convalescent Home.
Smithfield Warehouses, Parker's Works.
Sparbrook Nail Works, Birmingham.
Sheffield Vegetable Markets,—The Duke of Norfolk.
Southend Skating Rink.
Swimming Baths, Chelsea.
Sewage Farm,—Corporation of Birmingham.
Torquay,—G. S. Bridgman, Esq.
Thornfield,—J. R. Armitage, Esq.
Woodside Railway Station, Birkenhead,—Great Western and North-Western Joint Station.
Wolverhampton Skating Rink.
Wolverhampton,—H. Lovatt, Esq., Workshops.
Wolverhampton,—Perry, Esq., Orchard-house.
Wolverhampton,—Corrugated Iron Company's Warehouses.
Wolverhampton,—S. C. Riddle, Esq.
Wolverhampton, — John Harper & Co., Workshops.
Woolwich Royal Arsenal, — Contract Stores.
Woolwich Royal Arsenal,—Carriage Department.
Woolwich Royal Arsenal,—Greenhouses.
Woolwich Royal Arsenal,—Rocket Shed.
Woolwich Royal Arsenal,—New Smithy.
Woolwich Royal Arsenal,—Shell Foundry.
Woolwich Barracks,—Stables
Westminster,—Hankey, Esq., Mansions.
Wolverton Carriage Sheds,—London and North-Western Railway.
Willesden Junction,—London and North-western Railway Company.
Winter Gardens, Aston Park, Birmingham.
Weaving Sheds—Messrs. Marshall & Co., Leeds.

SPECIAL ADVANTAGES OF RENDLE'S PATENT System of Glazing.

This system is now being universally adopted by Her Majesty's Government, several of the leading Railway Companies, some of the principal Corporations, including the Metropolitan Board of Works, Commissioners of Sewers, and the New Winter Garden Companies throughout the country.

There is an enormous Saving in the Maintenance and Repairs of Roofs on this System—say from 80 to 90 per cent.—and there is no reason why a Roof should not be as perfect in 20 years as the first week, because all the perishable Materials, such as wood, iron or paint, are completely covered by the glass from the destructible influences of the weather.

Another great recommendation is, that there is no breakage from contraction or expansion either from heat or cold, as the glass has full play in every direction. Tens of thousands of squares are broken from this cause every year. Nor is there any breakage from vibration of large Railway Roofs in heavy gales of wind, or from the passing of express or fast trains. Indeed, it is well known that a puttied roof is never perfect in a station where express trains run through.

In adopting this system, all the everlasting expenses of repainting or reputtying are completely done away with; and as it is now used by several of the Great Railway Companies, an enormous saving will be effected—it will have a considerable influence in supplying an addition to the yearly dividends.

SUMMARY OF SPECIAL ADVANTAGES.

1.—*Saving of from 80 to 90 per cent. in maintenance and repairs.*
2.—*No breakage from contraction or expansion, from heat or frost.*
3.—*No breakage from vibration caused by heavy winds or passing trains.*
4.—*Squares of glass can be instantly replaced.*
5.—*The construction is very strong and durable.*
6.—*The glass can be put on in one-fourth the time of the old plan.*
7.—*No drip from condensation.*
8.—*Putty, cement, felt, &c., are entirely dispensed with.*

PLANT HOUSES, Conservatories, &c., *Erected and Glazed on the Rendle System.*

His Royal Highness the Prince of Wales.
His Royal Highness Prince Christian.
His Royal Highness the Maharajah Duleep Singh.
Her Majesty's Commissioners for Parks and Gardens.
His Grace the Duke of Portland.
His Grace the Duke of Rutland.
His Grace the Duke of Sutherland.
His Grace the Duke of Devonshire.
His Grace the Duke of Beaufort.
His Grace the Duke of Norfolk.
The Right Hon. the Earl of Normanton.
The Right Hon. Lady Llanover.
The Right Hon. the Earl of Stamford and Warrington.
The Most Noble the Marquis of Exeter.
The Right Hon. the Earl of Romney.
The Right Hon. the Earl of Charlemont.
The Right Hon. the Earl of Macclesfield.
The Right Hon. the Earl of Dartmouth.
The Right Hon. the Earl of Portsmouth.
The Dowager Countess of Aylesford.
The Right Hon. Lord Ebury.
The Right Hon. Lord Vernon.
The Right Hon. the Earl of Carnarvon.
The Right Hon. Lord Aberdare
The Right Hon. Lord Alfred Churchill.
The Right Hon. the Earl of Bradford.
The Right Hon. the Earl De La Warr.
The Right Hon. Sir W. G. Hayter, Bart.
The Right Hon. Lady Rayleigh.
The Right Hon. Lord Charles Russell.
The Right Hon. Lord Berkeley Paget.
The Right Hon. Lord Boulton.
The Rt. Hon. Lord De l'Isle and Dudley.
The Viscountess Galway.
The Lord Bishop of Bath and Wells.
The Hon Arthur Kinnaird, M.P.
The Hon. Martin Sackville West.
The Hon. Ashley Ponsonby.
Sir Daniel Gooch, Bart., M.P.
Count Heinrich Zichy, Vienna.
Sir Frederick Fitzwygram, Bart.
Sir Alexander Bannerman, Bart.
Sir William Forbes, Bart.
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S. Majendie, Esq., M.P.
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Miss E. H. Nugent.
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David Ainsworth, Esq.
Chatham County Asylum.
Major Fitzgerald.
George Blackburn, Esq., Batley.
G. Frankum, Esq.
Thomas Pickard, Esq.
T. H. Bryant, Esq.
Mrs. York.
Miss Sandars.
Mortimer Collier, Esq.
Corn Exchange, Mark Lane.
Bartholomew's Hospital.
Victoria Skating Rink, Scarborough.
Royal Horticultural Society.

And One Thousand of the leading County Families in Great Britain and Ireland.

For all other information see ILLUSTRATED CATALOGUES and BOOKS of DESIGN, which can be obtained from the Inventor and Patentee—

WILLIAM EDGCUMBE RENDLE, 3, Westminster Chambers, Victoria St., London, S.W.

PAXTON'S CALENDAR.

Now Ready, a new and thoroughly Revised Edition of the

COTTAGER'S CALENDAR OF GARDEN OPERATIONS.

ORIGINALLY COMPILED BY THE LATE SIR JOSEPH PAXTON, M.P.

Price 3d., Post Free 3½d.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, LONDON, W.C.

Nursery Stock.

TO be SOLD, at low prices, as the ground must be cleared:—
SPRUCE FIR, from 7 to 12 feet.
BEECH, 8 to 9 feet.
BIRCH, 14 to 15 feet.
LIMES, 12 to 14 feet.
NORWAY MAPLE, 14 to 16 feet.
PINUS AUSTRIACA, from 5 to 7 feet.
SCOTCH FIR, 6 to 8 feet.
OAKS, English, from 7 to 10 feet, &c.
Prices on application to
HV. MINCHIN, The Nurseries, Hook Norton, Oxon.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.
The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to
R. AND G. NEAL, Chief Office, Wandsworth Common.
The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

To the Trade.

AGRICULTURAL and GARDEN SEED.
H. AND F. SHARPE'S WHOLESALE SPECIAL CATALOGUE of HOME-GROWN SEEDS is now ready, and will be forwarded on application. Every variety named in it is of the very finest quality in every respect. The prices are very low.
Seed Growing Establishment, Wisbech.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

To the Trade, &c.

LIMES, large Red-twigged; Giant and other ELMS; HORSE CHESTNUTS, &c.; extra fine, clean, well grown, and well rooted trees, suitable for Street or Avenue Planting, or for Immediate Effect in Parks, &c. Particulars and prices on application to
EWING AND CO., The Royal Norfolk Nurseries, Newmarket Road, Eaton, near Norwich.

Special Offer to the Trade.

C. DIMMICK AND SONS beg to offer their VICTORIA COS LETTUCE, and NONPAREIL RED BEET, in packets to the Trade only. Price will be furnished on application.
146 & 147, High Street, Ryde, Isle of Wight.

FOR SALE.—Standard APPLES, named, 40s. and 60s. per 100; CUPRESSUS LAWSONI, 7 to 9 feet, 24s. and 30s. per dozen; also HOLLIES, AUCUBAS, EUONYMUS, CUPRESSUS, &c., for pots, at very low rates for Cash.
J. B. BUTTERFIELD, Nurseries, Baker Street, Enfield.

KENTISH FRUIT TREES.—One of the largest and cheapest stocks in the county, consisting of tall Standard CHERRIES, Standard, Pyramid, and Espalier APPLES, PEARS, and PLUMS, from 70s. per 100; GOOSEBERRIES, CURRANTS, &c.
CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers.
T. EVES, Gravesend Nurseries. Established 1810.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to
EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

MESSRS. CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, London, W., have much pleasure to offer the following very beautiful and interesting NEW FRUITS, now offered by them for the first time:—

RUSSIAN TRANSPARENT APPLE.—In the *Journal of Horticulture*, December 21, 1876, "J., Lincolnshire," describes this valuable Apple as giving a "never-failing crop," and as being "a rent-paying tree" for cottage gardens. Mr. BEULAH, an experienced Lincolnshire Orchardist, confirmed this evidence of the usefulness and profitableness of this much neglected but desirable Apple. A tree that bears a never-failing crop, of excellent quality, as stated below by Dr. HOGG, must be as near perfection as possible, and a desideratum that cannot fail to be appreciated by Orchardists in general. The Russian Transparent Apple was brought from Moscow during Napoleon's campaign in Russia, by General Boucheret, who, noticing its hardiness and free growth, and believing it would be suitable for English gardens, brought a quantity of grafts to his home in North Lincolnshire, round which it became and has remained up to this time localised; and now, through the kindness of Mr. Beulah, we have been enabled to purchase all the available grafts from the original stock.

The following is from Dr. HOGG's *description*:—"Fruit large, roundish, somewhat oblate, narrowing towards the crown, where it terminates in several prominent ridges, flat at base; skin smooth and shining, grass green, strewed with large russet dots. Eye closed. Flesh very tender and juicy, with a pleasant sub-acid flavour, and a peculiar and agreeable aroma. I am convinced that this is one of the most valuable culinary Apples in cultivation, and is worthy of more than local fame."

Messrs. Charles Lee & Son have much confidence in introducing this desirable and profitable Apple to more extended cultivation. Strong Maiden Plants now ready, price 7s. 6d. each.

HENSON'S SEEDLING GOOSEBERRY.—This excellent variety was figured in the *Florist and Pomologist* for May, 1874, a First-class Certificate having been awarded to it by the Fruit Committee of the Royal Horticultural Society in 1873. It was described as "a new and distinct variety of exceedingly good quality, of the hairy red section, and a good dessert fruit of medium size."

Messrs. Charles Lee & Son having purchased the entire stock of this valuable Gooseberry, they are now prepared to distribute it to the Public. Price per Plant, 3s. 6d.
The usual discount to the Trade.

DICKSON'S "EXQUISITE" MELON.

Awarded a First-class Certificate by the Royal Horticultural Society, November 6, 1877.

FRANCIS & ARTHUR DICKSON & SONS,

106, EASTGATE STREET, AND THE UPTON NURSERIES, CHESTER,

Have much pleasure in announcing that they have received from Mr. TYLER the whole Stock of this, THE FINEST MELON IN EXISTENCE, and they beg to offer it for the first time.

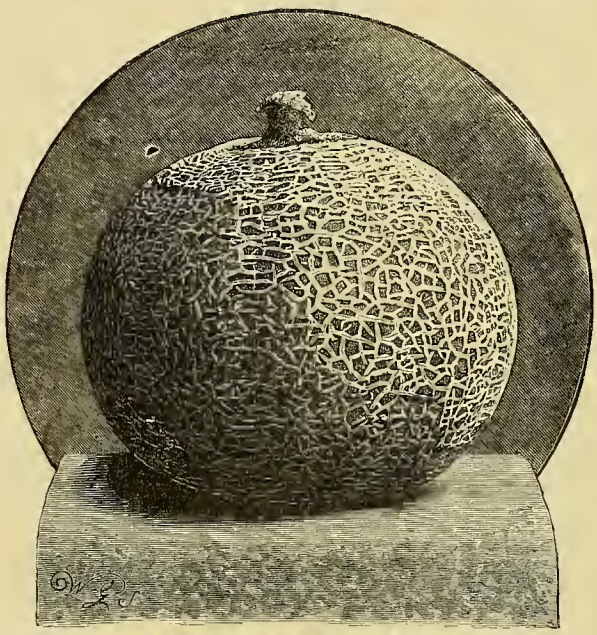
Early Trade Orders are necessary as the Stock is very limited, and only a certain quantity can be offered to the Trade. Wholesale Terms on application.

Retail Price :—Per Packet, 2s. 6d. and 5s.

Description of Exquisite Melon.

"'Exquisite' is one of the deepest-fleshed Melons, the seeds occupying the smallest possible space. The flesh is a beautiful green, moderately firm, yet exceedingly juicy, and ripening well back to the rind, leaving it no thicker than a sixpence. THE FLAVOUR IS, I BELIEVE, UNEQUALLED. Plant vigorous, the original one this year having ripened four crops—in all twenty fruits, which also proves it a remarkably free setter. We are still at this date (December 1), cutting fruits of splendid quality." C. TYLER, *Gardener to* R. Gosling, Esq., *Hassobury, Bishops Stortford.*

From Mr. T. SELWOOD, *Gardener to* His Grace the Duke of Westminster, *Eaton Hall, November 29th*, 1877.—"One scarcely expects to see Melons so late in the season, much less one so exquisitely flavoured as the one I tasted to-day. I NEVER TASTED SO DELICIOUS A MELON before, not even a 'Colston Bassett,' in July, which previously I had considered the best flavoured Melon. 'Exquisite' is very handsome, beautifully netted, and with an unusually thin rind."



"EXQUISITE" MELON.
(From a Photograph.)

Opinions of the Press.

From the "Gardeners' Chronicle," July 28, 1877. — "Tunbridge Wells Horticultural Society's Show : There was an abundance of Melons—one in particular, a green-fleshed variety, named 'Exquisite,' appeared to have ATTAINED TO PERFECTION in Melons."

From the "Journal of Horticulture," October 4, 1877.—"Mr. C. Tyler, gardener to R. Gosling, Esq., Hassobury, Bishops Stortford, sent a green-fleshed Melon named 'Exquisite.' It was VERY FINE INDEED, and the committee asked to see it again when quite ripe."

From the "Journal of Horticulture," November 8, 1877.—"A green-fleshed Melon named 'Exquisite,' was exhibited by Mr. Tyler. It was, considering the lateness of the season, OF REMARKABLY FINE FLAVOUR. It received a First-class Certificate."

From the "Gardeners' Chronicle," November 10, 1877.—"Mr. C. Tyler again sent a specimen of his seedling green-fleshed Melon, 'Exquisite,' which proved to be of EXCELLENT QUALITY, and was awarded a First-class Certificate."

Seakale, Asparagus and Rhubarb.

ROOTS FOR FORCING.

EXCEPTIONALLY FINE, VERY LOW PRICES

For Special Quotations apply to
H. THORNTON,
12, MAXWELL ROAD, FULHAM, S.W.

Camellias and Azaleas, well Set for Bloom, of VARIOUS SIZES.

CHARLES TURNER has a fine healthy stock to offer of the above.
The Royal Nurseries, Slough.

Queen of Lilies, Lilium auratum.

As this year's shipments will be shortly arriving from Japan, WILLIAM GORDON begs to call attention to the following low prices :—sizes : No. 1, *6d.* ; No. 2, *1s.* ; No. 3, *1s. 6d.* ; No. 4, *2s.* each. Sampling orders are supplied only in the following quantities, and are carefully packed in tin boxes to contain only the following number of bulbs, the prices quoted including carriage to any part of the United Kingdom :—2 bulbs, *6d.* extra ; 4 bulbs, *1s. 6d.* ; 8 bulbs, *2s.* ; 12 bulbs, *2s. 6d.*, added to the foregoing prices. Quantities of 18 bulbs and over package and carriage free, less 10 per cent. discount. LILY LIST on application.
WILLIAM GORDON, Lily, Bulb, and Plant Importer, 10, Cullum Street, London, E.C.

Fine SPRUCE FIRS, 6 to 8 ft., for Christmas Trees.
Fine CHICHESTER ELMS, 16 to 20 feet.
Fine NORWAY MAPLE, 16 to 20 feet.
Large HORSE CHESTNUTS, 16 to 20 feet.
Good HORNBEAM, 4 to 6 feet.
Good BEECH, 6 to 8 feet.
Also 500 fine BUSH APPLES of best kinds in bearing.

Price on application to
ROBERT F. DARBY,
THE CIRENCESTER NURSERIES.

THE PLANTING SEASON.

MESSRS. CRANSTON & CO.

Beg to invite Gentlemen, Gardeners, Foresters, and all who are engaged in Planting, to inspect their

EXTENSIVE COLLECTION OF TREES AND PLANTS,

Cultivated for Sale in the various Departments of the King's Acre Nurseries.

NURSERY DEPARTMENT.

COMPRISES

FOREST TREES of all kinds, including very large breadths of Transplanted LARCH, SCOTCH, SPRUCE, AUSTRIAN PINES, ASH, CHESTNUT, ELM, OAK, POPLAR, THORNS, &c., of every size, suitable for Transplanting.

FRUIT TREES.—A most unique Collection (extending over 20 acres) of APPLES, PEARS, PLUMS, CHERRIES, PEACHES, NECTARINES, APRICOTS, VINES, &c., grown in every variety of form, suitable for the Garden or Orchard.

CONIFERS, EVERGREENS, and ORNAMENTAL TREES.—A most complete Collection, including all the New and Rare Trees of recent introduction.

AMERICAN PLANTS, including all the finest varieties of Hardy Scarlet and other RHODODENDRONS, AZALEAS, KALMIAS, &c.

PLANT DEPARTMENT.

ROSES.—The Largest Collection in England (See Descriptive Catalogue.)

CLIMBING and WALL PLANTS.

GREENHOUSE PLANTS, comprising fine Collections of CAMELLIAS, AZALEAS, ERICAS, FERNS, &c.

BEDDING PLANTS, HERBACEOUS and ALPINE PLANTS.

DUTCH FLOWER ROOTS, Imported. (See Descriptive Catalogue.)

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GARDEN and FLOWER SEEDS. (See Descriptive Catalogue.)

AGRICULTURAL SEEDS. (See Descriptive Catalogue.)

GRASS SEEDS for Permanent Pasture. Lawns, &c.

To Purchasers of large quantities of Trees or Plants special quotations will be given.

CATALOGUES Post-free on application.

CRANSTON'S NURSERIES, KING'S ACRE, HEREFORD

VEITCH'S SELF-PROTECTING AUTUMN BROCCOLI,

AWARDED A

FIRST-CLASS CERTIFICATE

BY THE ROYAL HORTICULTURAL SOCIETY, DECEMBER 4, 1877.

JAMES VEITCH & SONS

DESIRE TO DIRECT ATTENTION TO THIS

VERY VALUABLE BROCCOLI FOR AUTUMN AND EARLY WINTER USE.

The plant is of robust but upright growth, and the heads, which are beautifully white, firm, and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

Mr. WESTCOTT, *Gardener, Raby Castle*, says:—" It is evidently a variety distinct from any one I am acquainted with, and from its splendid protecting habit, short and immensely hard woody stem, I am under the impression it will withstand uninjured many degrees of frost, which will ensure it to be a great acquisition as an early winter variety. The plants are of immense strength, and the heads, both in size, texture, and colour, all that can be desired."

Mr. PERKINS, *Gardener, Thornhall Hall*, says:—" It comes in just as the 'Autumn Giant' and other Cauliflowers are going out, and is, therefore, most invaluable. It is quite distinct, and also wonderfully self-protecting; some rows of it at this place withstood 13 degrees of frost."

Mr. THOMAS EADES, *Gardener, The Cedars, Northampton*, writes:—"At our recent show I took first prize for a collection of vegetables containing some really splendid heads of 'Veitch's Self-protecting Autumn Broccoli,' which is the best novelty that has come under my notice for some years."

Extract from *Journal of Horticulture*:—" We have had brought to our notice one of the most perfect self-protecting Broccolis it has ever been our fortune to meet with. So thoroughly self-protecting is it that the beautiful white head is hidden completely in a mass of foliage. It is the model of what a head of Broccoli ought to be—even and solid, of perfect colour, and not more than 4 to 5 inches in diameter—just such an object as families of refinement would like to see on their table."

Extract from the *Gardeners' Chronicle* of December 1, 1877:—" A large breadth of 'Veitch's New Winter-Protecting Broccoli,' now growing in the kitchen garden at Heckfield Place, presents a capital example of the great value of this fine kind as an early winter variety. It makes a good succession to the 'Autumn Giant Cauliflower,' turning-in at the end of November, and will probably continue to furnish a supply for a couple of months. The breadth is marked by singular evenness and truthfulness to character, whilst its protecting character is seen in the fact that the leaves entirely cover and enclose the head of flower. It it a really genuine novelty, that is worthy of all praise and wide cultivation."

Mr J. SHEPPARD, *Gardener, Woolverston*, writes:—In this Broccoli we have what has long been wanted, and there will be no difficulty in compassing the whole year through, as it will exactly fill up the void, and last on till Snow's, Backhouse's and others come in."

Mr. MYLES, *Gardener, The Grange, Lamberhurst*, writes:—" I have been cutting for three weeks, and several of the heads weighed 6 lb. when trimmed ready for cooking, and perfectly firm and solid. I have now plenty from that size to the size of a hen's egg, so that I hope to have a supply to the middle of January."

Mr. LESSELS, *Gardener, Aqualate Hall, Newport*, writes:—" Your Autumn Protecting Broccoli has turned out first-rate with me this season. I am cutting it from 6 to 8 inches in diameter, as close and fine as any Cauliflower: it is a great acquisition."

Per Packet, 1s. 6d.

PRICE TO THE TRADE ON APPLICATION.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

HENRY ORMSON,

HORTICULTURAL BUILDER, AND HOT-WATER APPARATUS ENGINEER.

THE BEST BUILT HOTHOUSES, CONSERVATORIES, &c.,

AT THE LOWEST PRICES.

Plans and Estimates given for Horticultural Buildings of every description, either in Wood or Iron.

H. ORMSON'S WORK, on an extensive scale, both Building and Heating, may be seen at the Royal Gardens, Kew, and at many of the Seats of the Nobility and Gentry throughout the Country.

PLAIN AND INEXPENSIVE HOTHOUSES

Designed and Built with a strict regard to Economy in Price, the best of Materials and Workmanship, and Practical Adaptation.

Unsurpassed Boilers and Heating Apparatus erected and fitted in all parts of the Kingdom.

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HENRY ORMSON,

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TO THE TRADE ONLY.

HURST & SON,

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The following Peas of Mr. Laxton's raising were sent out by us in 1875, but, in consequence of the failure of the crop, we were unable to supply them last year. We now re-introduce them to notice, as they have proved fully equal to Mr. Laxton's descriptions. Mr. TILLERY, of Welbeck, writing of them says :—"I consider them all well worthy of cultivation, even in the most select collections."

For further particulars of these Peas see "HOGG'S GARDENERS' YEAR BOOK for 1873 and 1874."

THE SHAH.

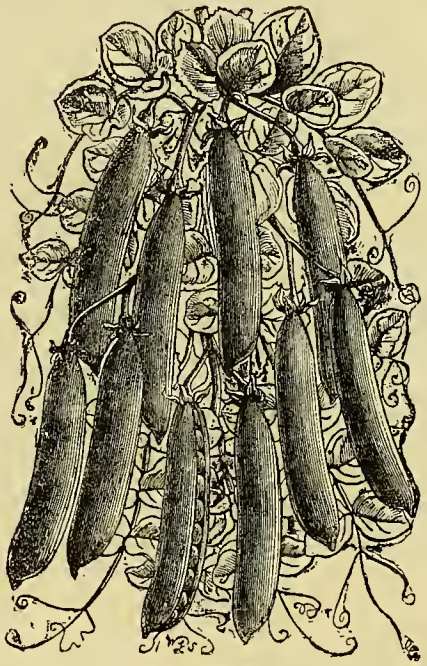
A short-strawed early white wrinkled marrow of the same height and as early as "Ringleader," described by the Royal Horticultural Society as having very full pods, produced abundantly, and containing from eight to nine very large Peas of very fine quality, and as being an exceedingly fine and early prolific white wrinkled variety. Received a First-class Certificate.

Per Quart, 5*s*.

UNIQUE.

A very handsome and prolific dwarf early Pea, with long deep green coloured pods, coming into use same time as "Little Gem." First-class Certificate Royal Horticultural Society.

Per Quart, 5*s*.



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STANDARD.

Unquestionably the most useful maincrop blue wrinkled Pea yet raised, and will take the same place as a prolific market Pea of high quality amongst blue wrinkled marrows, as "Fillbasket" has in round Peas. Described by the Royal Horticultural Society as having long curved pods, containing from nine to eleven Peas of large size and excellent quality in each, and as being a very handsome and prolific Pea. Height 3 feet.

Per Quart, 5*s*.

CONNOISSEUR.

A most distinct and delicious late Pea, raised from "Ne Plus Ultra." Height 6 feet.

Per Quart, 5*s*.

Dr. HOGG.

An early "Ne Plus Ultra," coming in one week after "Dillestone's." Height 3 feet. Described by the Royal Horticultural Society as "a very handsome Pea." The earliest green wrinkled marrow, very sweet, and of excellent quality, pods being very well filled and of a beautiful deep green colour like the "Ne Plus Ultra." Awarded a First-class Certificate Royal Horticultural Society.

Per Quart, 5*s*.

We have also harvested good crops of the following very excellent varieties, which have proved thoroughly satisfactory during the last few seasons, and we have great confidence in recommending them for extensive planting :—

FILLBASKET PEA:
A dwarf and much improved "Supreme." Height 3 feet, pods long and well filled; exceedingly productive.

SUPPLANTER PEA:
Is an improved stock of "Scimitar," handsome and very prolific, of fine quality, and one week earlier than the old variety.

HURST'S IMPROVED SANGSTER'S No. 1 PEA:
The best and earliest white variety.

MARKET FAVOURITE PEA:
Second early, producing a most abundant crop of large well filled pods—excellent market variety.

DR. Mc LEAN (Turner's) PEA:
The finest of all the wrinkled marrows.

CANADIAN WONDER DWARF BEANS.

SNOW'S WINTER WHITE BROCOLI (true).

VEITCH'S AUTUMN GIANT CAULIFLOWER (true).

FRENCH BREAKFAST RADISH.

RED ITALIAN TRIPOLI ONION (true Genoa saved).

For Wholesale Prices see our LIST of NOVELTIES, which will be forwarded on application.

Send for a PRICE LIST of

BLAKE'S SELF-ACTING HYDRAULIC RAMS,

For Raising Water for the Supply of Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive Power, which is obtained from the Stream of Water passing through the Rams.

NO OILING OR PACKING REQUIRED.

Made in sizes to raise from 300 to 100,000 Gallons per day.

WILL FORCE TO A HEIGHT OF 1,500 FEET.

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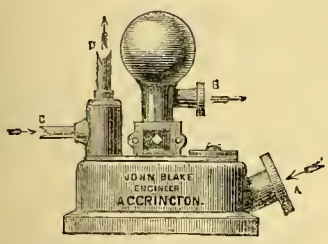

This Ram will raise a part of the same water that works it, or will raise pure water from a well whilst it is worked by a stream of impure water.

TESTIMONIALS.

From the Right Hon. T. SOTHERN ESTCOURT, *Estcourt Park, Gloucestershire. September* 6, 1875.

"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful."

(The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

From Captain TOWNSHEND, *Wineham, February* 10, 1877.

"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000."

From JOHN BARNES, Esq., *Contractor, Chatburn and Hellifield Railway, Contractor's Office, March,* 1877.

"Dear Sir,—I have the pleasure to inform you that the three Hydraulic Rams you erected for me on this contract about two years ago, have continued to work very satisfactorily, without requiring any repairing. With a fall of 5 feet sufficient water has been raised daily by each Ram to supply two of my locomotive engines: they have fully answered my expectations and all that has been said of them."

Deanwater, Wilmslow, November 20, 1873.

"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house aboout 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required, namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—I am, yours truly, L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.

"Sir,—Your self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours to a height of 194 feet."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.

"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

JOHN BLAKE,
ENGINEER, ACCRINGTON.

HARDY TREES AND SHRUBS.

MESSRS. J. VEITCH & SONS

Beg to call attention to and solicit an inspection of their fine and extensive stock of all the most useful Ornamental Hardy Trees and Shrubs, at their Nurseries, Coombe Wood, Kingston Hill.

CONIFERS.

A most complete collection, many of the species and varieties being of their own introduction. Specimens for Lawns, Parks, and Pleasure Grounds. All the kinds suitable for every purpose for which this class of plant is required.

AMERICAN PLANTS.

RHODODENDRONS, AZALEAS, KALMIAS, ANDROMEDAS, HARDY HEATHS, &c.

An exceptionally fine stock of healthy plants, especially recommended as being dwarf, compact, and well set with buds, and in fine condition either for forcing or for pleasure-ground planting.

EVERGREEN SHRUBS.

All the leading kinds, also many rare and choice species of very distinct character, forming a new feature in the Shrubbery. A very large stock of Standard, Pyramid, and Bush Green, Gold, and Silver Variegated Hollies, in great variety and of various sizes.

DECIDUOUS TREES and FLOWERING SHRUBS.

A very extensive collection, including all the best known kinds, with many novel and interesting varieties. Japanese Acers, Weeping Trees, and other Trees and Shrubs with Variegated and Coloured Foliage.

FOREST TREES,

For AVENUES, BELTS, PLANTING, &c.

All the most desirable kinds. Plane, Chestnut, Elm, Lime, Birch, Oak, Maple, and Larch; Pines, Firs, and Cedars.

ROSES.

Strong healthy Plants as Standards, Half-Standards, and Dwarfs, of all the best varieties of Hybrid Perpetuals, Tea-scented and Noisette Roses, Moss, Climbing, and other kinds. An extensive stock in pots of all the best Roses suitable for Forcing, &c.

PLANTS for WINTER BEDDING.

Coniferæ, Retinosporas, Junipers, Lawson's Cypress, &c., in many variegated and beautiful forms; Euonymus and Dwarf Hollies, both Silver and Golden Variegated, in many varieties. Aucubas, Ericas, Dwarf Rhododendrons, &c.

PLANTS for FORCING.

All the most useful and effective, including Andromeda floribunda; Azalea amœna, pontica (yellow, sweet-scented), and Belgian varieties; Clematis in variety, Deutzia gracilis, Lilac Charles X. and Persian, Double Chinese Prunus, Rhododendrons, R. Early Gem, very superior; Rhodora canadensis, very early; Spiræa Thunbergii.

CLIMBING PLANTS,

Well established in Pots.

Clematis, a very extensive collection of all the leading kinds, and of Garden Hybrids. Ivies in great variety. Fine healthy Plants of the free flowering Exmouth variety of Magnolia grandiflora, Honeysuckles, Jasmines, Ampelopsis, &c.

A CATALOGUE
OF
Hardy Trees and Shrubs, Ornamental Grasses, Hardy Aquatics, &c.,
Will be forwarded on application.

The Nurseries at Coombe Wood may be reached from the Malden and Norbiton Stations on the South-Western Railway, being not more than twenty minutes' walk from the latter, and where conveyance can always be procured.

Royal Exotic Nursery, King's Road, Chelsea,
LONDON, S.W.,
And Coombe Wood, Kingston Hill.

SATURDAY, DECEMBER 8, 1877.

THE REST OF PLANTS.

THE season is appropriate for considering the question, Do plants ever get tired? It would almost seem so at times. How weary they look, how they droop and flag under the mid-day sun's broad glare. How flaccid and faint they seem after a week's drought or a few days' drying wind. The wind also bruises and batters them so that they exhibit every symptom of fatigue and distress, and make, as it were, mute appeals for rest and shelter in some cosy nook or quiet spot shut in from the scorching sun and parching winds. And then towards the end of the growing season, as it is perhaps erroneously called, plants exhibit almost every symptom of exhaustion. The changes of texture, function, colour of the leaves and flowers, all seem preparatory for rest—a season of repose and time of leisurely balancing up the products of one season's growth and starting for another.

No doubt the rest of plants is not absolute any more than that of animals. At no season, perhaps, from birth to death, is any living thing absolutely at rest. Sleep, the most profound rest of all, only rests certain powers and organs of the body and mind. The vital powers sleep not, rest not. Imagination is probably as active during sleeping as waking hours. The rest of plants is even less complete and absolute, assuming that they do rest. Hardly have the vital powers of plants relaxed into repose than they stiffen again for work. Even the beautiful poetry of the fall of the leaf is a fairy web of fiction, not a record of sober fact. The leaf falls at the summons of advancing life, not at the bidding of death, with its sleep and its rest. Bud growth, like the operations of vital organs, the heart and lungs, &c., is continuous. The buds rest not. Spring does not find them as the autumn leaves them, but far advanced many stations onwards along the line of growth. They may have travelled in winter by the slowest Parliamentary train, and had many stoppages by the slipperiness of the rails and the lowness of the fire, by frost and cold, but still they have made progress. They go by express in the spring. That is the chief difference between bud progress in the two seasons. The rate varies widely, that is all. But possibly the vital power expended in the two seasons may not be so widely different as is generally assumed.

Two or more forces are concerned in all plant growth. They may be broadly defined as internal and external. The one is what, for want of a better name, we term vital force; the other outward conditions. In winter these two are very much pitted, the one against the other, in cold or even temperate climes. At other seasons external conditions foster and strengthen growth. Hence chiefly the difference of the rate of growth. It is quite possible that the plant struggles most to grow when it makes least progress. If so it must needs be a difficult matter to determine at what season plants rest the most. It has been too readily taken for granted that the winter season, or the time of bare boughs, is the proper resting season for deciduous plants. It may or it may not be so, and great practical results depend on the solution of this problem.

It is wise to start with the fact that the rest

of few or no plants—in our climate, at least—is absolute, unless they be succulents, epiphytes, bulbs, or Orchids. But all our fruit and other trees and shrubs, flowers, and most of our cultivated plants rest, if at all, with one eye open. They neither die nor sleep nor hardly rest in the sense of ceasing to grow at any season. The rest of plants is more a change of function and of work than any absolute cessation of motion. The changes are largely determined by the alternations of light and darkness, heat and cold, drought and moisture, and the abundance or scarcity of food. Most of these determining powers in growth or rest are largely in the power of cultivators, and hence the great practical importance of the question.

Effect of Light.

Light is largely beyond our power—the amount of it—the season of it quite so, but not so its admission. The amount of light at our command under glass is largely an affair of horticultural architecture and daily management. The opacity of roofs may be reduced to a minimum, the clearest glass only may be used, and that again may be kept so spotless as to maintain its conducting power at a maximum. Attention to such precautions may double the energy of solar light at the growing season.

Possibly the rest of plants is more a matter of the alternation of light and darkness than is generally supposed. With each such change there is a reversal of function. Broadly stated, exposed to light plants absorb carbonic acid gas and evolve oxgen. In the dark they absorb oxygen and give out carbonic acid gas. From this it has been, perhaps, too hastily assumed that the day is the time for plants to work, night, or in darkness, the season for them to rest. This is a very pretty theory, but there are some awkward facts that seem strongly against it, such for example as that night is often the season when most obvious growth—that is, the greatest extension of parts—is made. To maintain the theory intact some have affirmed that mere extension is not growth, a statement that no practical man will accept, though there may be much truth in it. But be all this as it may the reversal of function or change of labour may prove equivalent to rest; and if so the whole of the plant may be rested every twenty-four hours, or during every succession of darkness after light. Many plants, notably Convolvulaceæ, Sensitive Plants, and many others, either close their flowers or fold their leaves with the decline of the sun or removal of the light. These evidently rest till the light arouses them anew, for it seems almost impossible to conceive of their working to any good purpose in such unworkmanlike positions. But the majority of plants are less demonstrative and rest as they are, or even expanding to fuller size or a richer beauty during the darkness of the night; so that judging by mere appearances some plants would seem to rest by day and others by night. Different principles, or powers, or parts, probably rest at different times. For example, flowers may be chiefly coloured by day, they are assuredly refilled with fragrance at night, the majority of plants will be found far sweeter at midnight than at mid-day, it is so probably with the other functions and secretions of plants. Plant life is less a unity than a community, all the members of which rest and work by turns as the nature and merits of the plants require.

Heat and Cold.

Heat and cold are far more in the power of cultivators than light or darkness. Heat is motion or life working in plants—cold, rest or death: that is, if the latter be sufficiently intense, plants must rest—their fluids, on which all their work depends, become congealed into solids, and there is an end of work. Every cultivator, however, knows the extreme danger of forcing rest by frost. In congealing the fluids of growing plants into absolute inaction there is always the danger of rupturing their tissues by the expansion of their fluids in the act of freezing. There is almost equal danger in stimulating life with abnormal activity by an excess of heat. Each plant may be said to have its own thermal place in the world, and the nearer our practice can approximate to that natural climate, the better for the plants. We may take a useful lesson from lifting-cranes or locomotives in this connection. These are warranted to lift a certain weight, working in safety up to a certain pressure. Each has been tested and proved before being sent out. It is just so with plants. Each has its own place and climatal zone; they were made for it, tried and proved in it, and changes of heat affect them powerfully and if carried to extremes destroy them. Hence whilst cold or a low temperature is a legitimate weapon to use to arrest or moderate growth, or force plants to rest, it needs to be employed with the utmost caution and moderation.

Drought.

Drought is another means of forcing plants to rest. Without a certain amount of moisture any—all growth becomes impossible. This is so obvious as to need no proof, for cultivators are familiar with the power of drought as a means of checking growth either above or below ground. Nature also employs the same power to compel plants to rest in the open air on a larger scale. In tropical climes, where cold is not available as a check to growth, the dry season succeeds the rainy one with the utmost regularity. The plants grow and rest there for so many months or weeks at a stretch. The rest, however, even there, can hardly be termed one of absolute inaction; there is no extension or enlargement of parts, but there may be—there is, in fact—maturation, consolidation. The growth is so excessive during the rainy period that probably a season of forced repose is needful to finish or complete it. Nature, however, also furnishes illustrations of the evils of excessive drought. Many plants are over-dried to such an extent as to be crippled, if not killed outright. The roots and leaves, and also the stems and pseudobulbs, perish, and there is an end of them. The majority, however, pass through the resting, which is also a semi-wasting, period unscathed, the completeness of their rest being to a large extent the measure of their beauty.

It is important to note that the resting period from drought is mostly associated with a high temperature. Much disappointment, many losses have occurred to cultivators by forgetting this. Caladiums, Gesneras, Gloxinias, and other stove bulbs, have been lost by wholesale by attempting to force them to rest dry in a low temperature. Very often, too, the drought has been carried to excess. The plants of temperate climes will not bear so much drought as those of tropical climates. It seems quite a mistake to attempt to force Pines, Peaches, or other fruits to rest by such a degree of drought as is often brought to bear upon their roots. The dryness forcibly arrests growth, no doubt checks the roots, weakens them, and makes them a prey to fungoid growths that weaken and prematurely wreck more fruit trees than all other causes put together. Drought will no doubt force plants to rest, but it should be used with caution, and never to extremes, unless to plants inured to such extremes in their natural habitat. And even in regard to these two extremes, drying off is preferable under cultivation, inasmuch as neither the moisture, heat, nor light is so extreme in degree as in their native climates.

Low Diet.

Finally, a starving regimen, or the withholding of food, will ensure the rest of plants. Over-feeding is perhaps the most crying evil among plants. Remove a plant from its scanty or full diet in its native position, and feed all alike with almost equally rich food, and overgrowth, with all its evils, are almost sure to follow. The plants should be fed more at one season than another. Plants in a state of Nature are not seldom forced to rest from short supplies of food. The roots have exhausted all within range—the crops of flowers or fruit have used up all forwarded to the front. The plants rest until a fresh fall of leaves enrich the soil, or the roots have run into new feeding places. They then start with fresh vigour. But supposing a dunghill is laid over the roots, or a sewer is turned on to them, would the plants rest? Assuredly not. And it is thus so much immature wood is formed in glass-houses and open gardens, with pith like Elder boughs, and of which the winter and spring frosts make a greedy meal, instead of assisting the drought and the cold to make them rest well, as the best possible preparation for a safe, pleasant, and profitable awakening. The over-feeding of plants, like the heavy rich suppers of bipeds, induce feverish dreams, late struggles or efforts at growth, not sound, sweet sleep or rest.

Where top-dressing, liquid manure, or rich comforts have been used too freely the shortest cut to forcible healthy rest is through the roots. Thus, though we are neither able to remove the food from the roots nor the roots from the food, we may hinder the latter from overfeeding by judicious and timely root-pruning, and so enforce a period of partial rest by a season of short supplies.

Probably it might be added that perfect maturity is not only a product of the rest of plants but a cause of it. This is, however, doubtful. Perfectly ripe wood and buds are probably inclined to rest and be thankful, then to burst into new life and expand into higher beauty; and so on and on for ever, until they finally rest in the weakness of disease, the chapter of fatal accidents, or the grip of death. *F.*

New Garden Plants.

Carludovica Drudei, *Mast., sp. nov.**

This fine stove-plant was introduced to the nurseries of Mr. Bull by one of his collectors, who met with it in Columbia. Its general appearance is shown in the illustrations (fig. 136, p. 715, and fig. 139, p. 721), from which it will be seen that in habit it resembles a dwarf Fan Palm, with bold very deep green lustrous leaves. The flowers are borne on a stalked erect spadix of cylindrical form and of ivory-white colour, and resembling a bottle-brush by reason of the long barren stamens which project horizontally from the female flowers.

The leaves are tufted, transversely oblong in outline, palmately 3 lobed, the lobes plicated, and deeply and regularly incised at the margin; the central lobe is deeply bifid, so that the leaf appears to be 5-lobed. The leaves are of firm texture, glabrous, rich deep green in colour, and measure about 17 inches in length by 33 inches in transverse diameter. The petioles are sheathing at the base, where they are so arranged as to form a triangular pseudo-stem, invested by a fibrous network as in some Palms, terete above, thickly covered with grey furfuraceous down, and measure about 37 inches in length, the diameter being about that of a swan-quill.

The flowers are borne on an erect terete peduncle less than half the length of the petiole, and terminating in a thick fleshy cream-coloured spadix 4—5 inches long, nearly an inch in diameter, cylindrical, rounded at the end, provided at the base with three or four deciduous boat-shaped fleshy cream-coloured spathes, and covered entirely with flowers, some male, others female. The male flowers are regularly arranged in groups of six (rarely four or five) around each female. The male flowers have a thick flattened wedge-shaped stalk, and a perianth of two rows of small overlapping roundish scales surrounding a cluster of numerous erect stamens with fleshy filaments and two-lobed oblong anthers. The pollen grains are oblong elliptical, with two or more bands, and mixed with needle-shaped raphides. The female flowers consist of a four-lobed perianth, inseparate at the base from the ovary. The staminodes are superposed to the perianth segments, and are very long and threadlike, cream-coloured, and widely spreading. Ultimately they become detached, leaving only a small portion attached to the persistent perianth segment. The ovary is one-celled, with four parietal placentas, and surmounted by a sessile four-rayed stigma. The ovules are very numerous and anatropous. Of the group with palmately-divided leaves, to which the present species belongs, there are but two species, C. palmata and C. incisa, hitherto described. From the latter, which is imperfectly described (from leaves only) by Wendland, *Index Palm.* 1854, p. 67, our species differs in the leaves not being glaucescent, the terete petioles, and in other particulars; from C. palmata as figured by Ruiz and Pavon, the very elongate cylindrical spadix, with the male flowers arranged regularly in groups of six around each female flower, and the long spreading nearly straight staminodes distinguish it.

* *Carludovica Drudei*, Mast., sp. nov. — Acaulis; foliis flabellatim 3—5 partitis nitide viridibus glabris; petiolis (metralibus et ultra) ascendentibus quam folia pedunculique multo longioribus teretibus parce furfuraceis; spathis 3—5 cymbiformibus deciduis; spadice (12—14 cent. long., 2—3 cent. lat.) crasso cylindrato tereti apice rotundato; floribus masculis circa femineos singulos 6, raro 4 vel 5; floris feminei staminodiis, perlongis horizontalibus.—E Columbia in hort. Bull introduct.

The London herbaria containing oo material sufficient for the identification of the species we availed ourselves of the kindness of Dr. Drude, of Gottingen, at present making a special study of Palms and their allies. That gentleman, with great kindness, compared the drawings made by Mr. Worthington Smith, and our own notes, with the available material at Vienna, from Ruiz and Pavon, Schott, &c., and arrived at the conclusion that the species was new to science. Concurring with his opinion, we do ourselves the pleasure of attaching his name to it.

The species of this genus grown in the Paris garden according to M. Verlot in 1861 were the following :—C. atrovirens, Wendl.; C. bipartita, Port.; C. humilis, Pœpp.; C. incisa, Wendl.; C. lancæfolia, Brongn.; C. latifolia, Ruiz and Pavon; C. Liboniana, Hort.; C. microcephala, Hort.; C. macropoda, Klotsch; C. palmata, Ruiz and Pavon; C. plicata, Hort.; C. purpurata, Hort.; S. subacaulis, Poiteau. Lemaire, *Ill. Hort.* 1855, mentions some others which are not yet in cultivation.

They may be arranged in two groups according as they have twining stems or are acaulescent (with very contracted stems), and then again according as the leaves are two-lobed or palmately divided. Our present species differs from all that we know of in the cylindrical spathe; but it is certainly very like C. incisa, so far as the leaves are concerned. Most of the species are fine decorative stove plants, the present one especially so. C. palmata, moreover, is the plant from which the famous Panama hats are made.

References.—A, upper end of spadix, with male and female flowers, natural size; B, C, longitudinal and transverse sections of the spadix, showing the position of the female flowers, with their long false stamens, and surrounded by male flowers; D, male flower at the base of the female flower, the latter seen in section, and magnified three diameters; E, the perianth scales of the male flowers; F, the point of disarticulation of the false stamens; G, section across the female flower; H, stigma; I, stamen, with two perianth scales at the base; K, ovule; L, pollen and raphides, magnified 160 diameters.

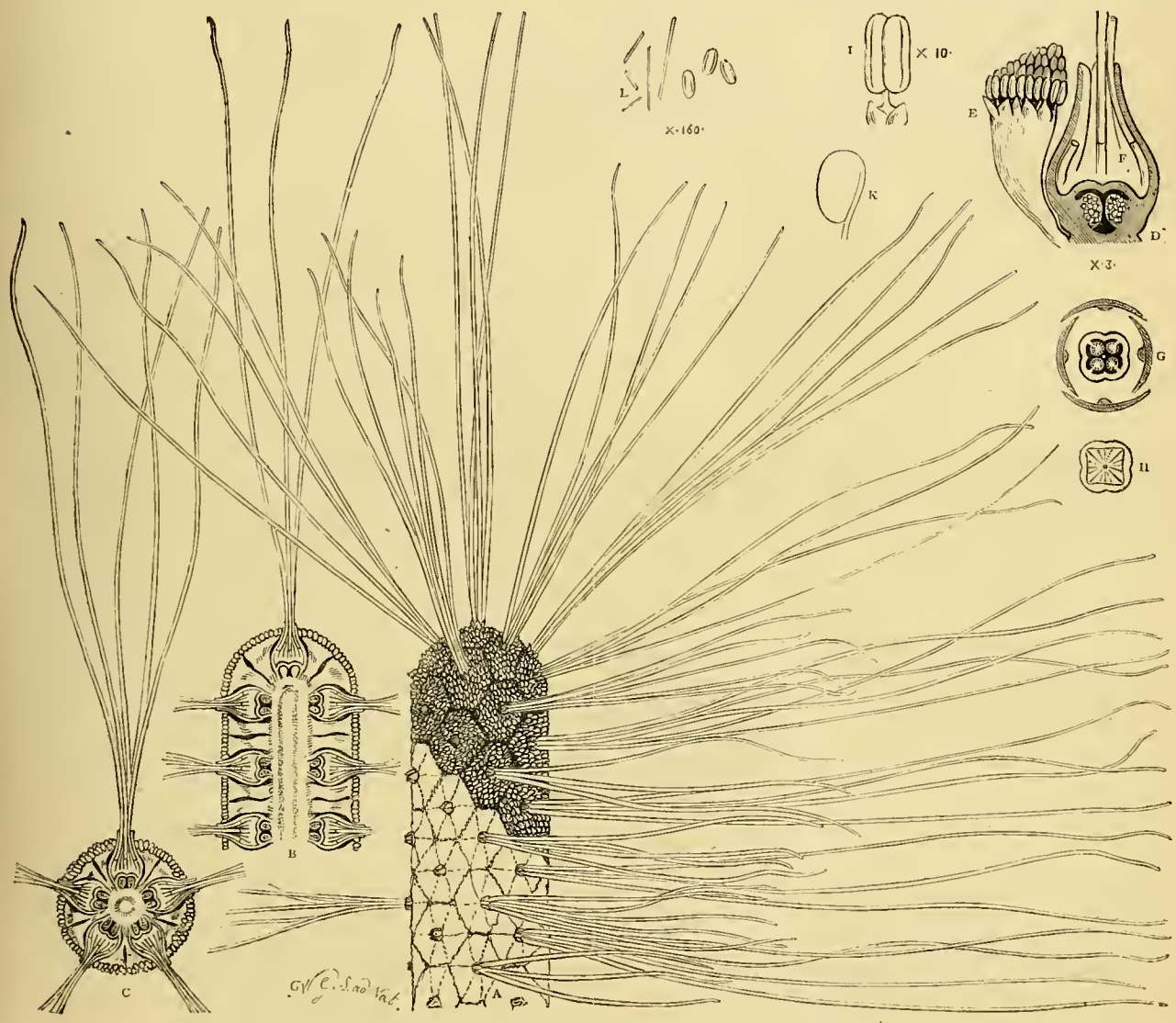

Fig. 136.—Carludovica drudei.

THE ROYAL SOCIETY.

On the 30th ult. the anniversary meeting of the Royal Society was held in accordance with the terms of the Charter granted by Charles II. The President, Sir Joseph Hooker, C.B., K.C.S.I., in the course of his address alluded to

The Arctic Expedition,

which he said appeared to have quite come up to our expectations. Considering that but one season was available for collecting and observing (and we all know how short that is in the arctic regions), the results are indeed most creditable to the gentlemen who contributed them. Geology has proved by far the most prolific field of research. Perhaps botany comes next. The researches in this department and the insects, which have been worked up by Mr. M'Lachlan, prove that between 80° and 83° N. in Grinnell's Land, the conditions for the existence of these organisms are far more favourable than are those of lands a long way to the southward. The flora of the series of channels between 80° and 83° N, the shores of which have been botanised by the officers of the Polar expedition, have yielded upwards of seventy flowering plants and Ferns, which is a much greater number than has been obtained from a similar area among the polar islands to the south-westward, and is unexpectedly large. All are from a much higher latitude than has elsewhere been explored botanically, except the islets off the extreme north of Spitzbergen. The species are, with two single exceptions, all Greenlandic. Spitzbergen, altogether to the south of these positions, contains under 100 flowering plants and Ferns, though its west coast is washed by the Gulf Stream, and its shores have been diligently explored by many trained collectors. Its north coast has yielded fewer plants, and no less than fifteen of the plants collected by the expedition have not been found anywhere in Spitzbergen. Contrasted with Melville Island, in lat. 75° N., and Port Kennedy in 72° N., the contrast is even more striking, these well-hunted spots, both so much further south, yielding only sixty-seven and fifty-two species respectively. This extension of the Greenland flora to so very high a latitude can only be accounted for by the influence of warm currents of air, or of the air being warmed by oceanic currents, during some period of the summer; and we look with great interest to the

meteorological observations made during the voyage, which are being discussed by Sir George Nares, who hopes to have it completed in a couple of months. The observations on the temperature of sea-water will, he expects, give new information; and great interest is attached to the study of certain warm gales and warm currents that were experienced in lat. 82° and 83° N. May not these phenomena of vegetation and temperature indicate the existence of large tracts of land clothed with vegetation in the interior of Greenland, far within the mountain ranges of its ice-clad coast, and protected by these from the heavier snow-falls, and hence from the accumulation of glacial ice that surrounds it on all sides?

Professor Heer, of Zurich, has examined the fossil plants, the most important of which are those he states to be of miocene age. There are twenty-five identifiable species, of which all but one have been found also in Spitzbergen. This tracing the miocene flora so far to the northward was one of the principal scientific objects to be accomplished by the Polar Expedition; and the fact that its character continues to be neither polar nor arctic, but temperate, supports the hypothesis that during the æra in question a vegetation analogous to that now inhabiting the temperate latitudes entirely capped the North Polar area of the globe. Sir G. Nares had supplied to the President the following *resumé* of some of the principal meteorological results, and their comparison with those taken at Polaris Bay in 1871-72:—

	Mean Annual Pressure.	Mean Annual Temperature.	Minimum Temperature.
Alert, Floeberg Beach ..	29.869	—3.467	—73.75
Discovery, Discovery Bay ..	29.887	—3.932	—70.8
Polaris Bay	29.970	+4.196	—45.5

Minimum temperature of earth 20 inches beneath surface —13°.

The warmer temperature at Floeberg Beach was due to its exposure to the warm winter gales from which Discovery Bay was cut off. The still warmer temperature of Polaris Bay is partly attributable to there being some uncovered water in the neighbourhood. The tidal observations have been entrusted to the Rev. Dr. Haughton, who hopes to present his results before the end of this session of the Society. He has already arrived at the following general conclusions:—1, The tide which comes down Smith's Sound from the north is generically distinct from the Behring's Straits tide and from the Baffin's Bay tide; 2, it must, therefore, be the East Greenland Atlantic tide, and consequently Greenland is an island; 3, this new tide contains a sensible tertio-diurnal component of much interest.

AMERICAN SCIENTIFIC SURVEYS.

After a sketch of the history of the Government surveys, the President continued. The most important scientific results hitherto derived from the labours of Dr. Hayden and his parties are unquestionably the geological: such as the delineation of the boundaries of the cretaceous and tertiary seas and lakes that occupied more than one basin of the mountains of Central North America, and the marvellous accumulation of fossil vertebrates that these ancient shores have yielded. Over an area of many hundred thousand square miles in North America there have been found, within the last very few years, beds of great extent and thickness, of all ages, from the trias onwards, containing the well-preserved remains of so great a multitude of flying, creeping, and walking things, referable to so many orders of plants and animals, and often of such gigantic proportions that the palæontologists of the States, with museums vastly larger than our own, are at a loss for space to exhibit them. So common indeed are some of these remains, and so beautifully preserved, that numbers of them, especially insects, plants, and fishes, are exposed for sale with confectionery and fruit at the stalls of the railway stations, from the eastern base of the Rocky Mountains all the way to California, and are eagerly purchased by travellers. An examination of some of these fossils has yielded the important fact that in North America there is no recognised break between the cretaceous and tertiary beds, a vast lignitic series occupying a position that has long been disputed, and the evidence of whose fossils is very conflicting. In respect of this bed Dr. Hayden, who has traced it over many hundred miles, observes that the character of its palæontological, as well as of its strictly geological results is such that it is not a matter of importance whether the entire group be placed in the lower tertiary or upper cretaceous; and it is most probable that the testimony of palæontologists will always be as conflicting as it is at present. Professor Marsh, one of the highest authorities in America, has not found that even fossil animals afford a satisfactory solution of the difficulty. "Invertebrate remains," he says, "throw little light on the question;" and he is obliged to assume that "the line, if line there be, must be drawn where the dinosaurs and other mesozoic vertebrates disappear, and are replaced by the mammals, henceforth the dominant type."

FOSSIL BOTANY.

In reference to the disputed horizons of the cretaceous and eocene beds, he concludes that plants afford unsatisfactory measures of geological time—an opinion which I had long ago expressed. We are also agreed as to a chief cause of this being the comparatively low organisation of plants, which are hence less subject to the influences of environing conditions; to which cause might be added, almost as a corollary, the feeble conflict among the members of the vegetable kingdom as compared with the animal, their stationary habits, and that consequent duration of similar, if not identical, forms, through long geological ages, which has always appeared to me to be one of the most signal characteristics of the early condition of the higher plants as compared with the higher animals. Other, and perhaps even more sufficient, reasons for plants being so little satisfactory is that their reproductive organs, those upon which the classification is principally based, are rarely preserved, and seldom in connection with the vegetative organs, which are abundantly preserved; and that with regard to these, the vegetative organs, their prevalent and best preserved characters, outlines and venation, vary in individual species to a surprising degree, and, being repeated in groups otherwise in no way related, become too often fallacious guides. Another result, foretold in respect of other organisms, but ably worked out by Professor Marsh in respect of the vertebrates, is that all the tertiary beds of North America—eocene, miocene, and pliocene—are of older date than the corresponding ones in Europe. A few words on the magnificent collection of vegetable remains, cretaceous and others, that have been studied and published by Mr. Leo Lesquereux in various reports of the United States' Geological Survey, and in separate works issued under its auspices, may be fitly spoken here. It would be difficult to over-rate the value of these contributions to fossil botany in the present state of that branch of phytology, which is, unfortunately, a most unsatisfactory one, in so far enabling us to follow the migrations of plants during the tertiary epoch, or by their study to fix with precision the horizons of periods, or trace the devious paths of evolution. In the whole range of the natural sciences none is so difficult, and at the same time unsatisfactory, if we regard the amount of results accepted by botanists as compared with the prodigious labour their acquisition by palæontologists has demanded. Of all the orders of fossil plants of the formations referred to, the gymnosperms alone have, as a rule, yielded much trustworthy information; and this is due to their texture, to the peculiar character of their vegetative and reproductive organs, to the adhesion of these to the branchlets, to their gregarious habits, to their wide distribution, and to their close affinity with existing species. Of other orders and genera of plants, with the exception of a few with well-characterised foliage, as the Palms, the identifications of the majority hitherto published are not recognised by those who have the largest acquaintance with the varied forms of the vegetative organs of plants (such as keepers of herbaria, systematic botanists, and morphologists) as having much claim to confidence. And if the identification of the fossil leaves of one country is so hazardous, what must be that of identifying the fossil leaves of one continent with those of another—a forlorn hope which has constantly to be resorted to? The result, in the case of the North American cretaceous and tertiary floras has been the discovery of certain well ascertained plants, which would appear to show that various prevalent existing American genera have inhabited that continent from a very early period; but that, along with them, there existed types of European, Asiatic, and Australian genera, temperate and tropical, that are no longer associated anywhere on the globe in a state of Nature. It is well, under such perplexing conditions, that men of ability and unconquerable zeal (such as Heer, Saporta, and Lesquereux) are to be found who will undertake to investigate them; and while thanking them cordially for what they had done, I would urge upon all their association in their labours with the keepers of great herbaria when dealing especially with foliar organs.

GEOGRAPHICAL DISTRIBUTION OF AMERICAN PLANTS.

The results of his personal investigation of the flora of the districts were thus referred to:—Though I have as yet little to say of the results of Dr. Gray's and my own investigations under the survey, I have every reason to hope that, having extended these across the Sink, Salt, or desert regions west of the Rocky Mountains, and thence across the Sierra Nevada to the Pacific coast, they will, with the materials previously obtained by my fellow-traveller and myself, enable us to correlate our several researches into the distribution of North American plants, and to show the lines along which the migrations of the existing types have been directed, and the countries whence they have immigrated. As regards the components of the United States flora, these seemed to us to be threefold and to be intermixed throughout the continent—an endemic American, a European, and an Asiatic; it seemed that the flora was a ternary compound, so to speak, while that of the temperate Old World was, in a continental point of view, binary, Europe and Asia having many types in common, while neither of them possessed any, or but very few, representatives of the strictly American flora. In respect of the distribution of North American plants, it is in a meridional direction, the difference of the floras of the Eastern, Central, and Western States being wonderfully great—far greater than those of similarly situated regions in the Old World. The European components occupy the whole breadth of the continent of America, diminishing, however, to the westward. The American components present many localised genera, inhabiting the Eastern, Central, and Western States respectively; they increase in numbers and peculiarity towards the west, as also in restriction of range. The Asiatic components are found both in the Eastern and Western States, but hardly at all in the Central; and some of them are common to both the East and West, while others are peculiar to each. But whereas the European components prevail on the side towards Europe, the maximum of Asiatic representation is on that remote from Asia. This has been conspicuously shown by Gray's discovery, in the Eastern States, of single representatives of Japanese genera previously supposed to be monotypic; and what is most noteworthy is, that such representatives are in some cases extremely rare and local plants, found in single and restricted areas, indicating a dying-out of the Asiatic representation in America. The evidences of climatic changes in past epochs of the existing flora of the continent are seen in the prevalence of arctic and northern species of plants in the alpine zones of the meridional mountain-chains, the Appalachian, Rocky Mountains, and Sierra Nevada, even as far south as the 33d parallel. These plants had spread southwards during a period of cold, and on its subsequent mitigation had retired to the lofty situations they now inhabit. To the former existence of a warmer climate we may partly look for the extension of Mexican types to the dry regions west of the Rocky Mountains up to the 41st parallel, and to it may be attributed the remarkable northward extension of the Cacti in a very narrow meridional belt, scarcely 100 miles broad, along the eastern flanks of the same mountains, from their headquarters in New Mexico, in the 33d, almost to the 50th parallel. Of existing influences that determine the development in amount of the vegetation of a country, and the extension in various directions of its components, none are so powerful as the distribution of rainfall and of vapour in the atmosphere. This subject will repay a careful study in America, especially in connection with the presence or absence of woodlands and forests; an excellent map of which, by Professor Brewer, of Newhaven, was published in 1873 by the supreme Government, in which the density of the forests in each State is portrayed by five shades of colour. I must not close my notices of some of the labours of our scientific brethren in the United States without expressing my admiration of the spirit and the manner in which the Government and people have co-operated in making known the physical

and biological features of their country, and my conviction that the results they have given to the world are, whether for magnitude or importance, greater of their kind than have been accomplished within the same time by any people or Governments in the older continents.

THE GENUS AGAVE.

(*Continued from p.* 683.)

SERIES II.—CARNOSO-CORIACEÆ.—Texture more fleshy and pliable than in the Coriaceo-carnosæ. End-spine not pungent. Teeth never large.

Group VIII. ALOIDEÆ.—Edge of the leaf furnished with distinct teeth.

The present paper will be devoted to the smaller Aloideæ with oblanceolate-oblong or lanceolate leaves.

* Leaves oblanceolate-oblong.

81. *A. Bernhardii*, Jacobi, Nachtrage, i., p. 38.—Shortly caulescent. Leaves oblanceolate-oblong, 7 inches long, 3 inches broad at the middle, narrowed to 2¼ inches above the base, light bright green, the face rather concave, the chestnut end-spine short and slender, the teeth rather crowded, deltoid-cuspidate, castaneous, fragile, deciduous in the old state, with small ones sometimes interspersed between the large ones. Inflorescence unknown.

A native probably of Mexico. Described by Jacobi about 1868, from a specimen in the Botanic Garden at Leipsic. Not seen in the English collections.

82. *A.* (*Littæa*) *rupicola*, Regel; Jacobi, Monogr., pp. 134 and 311.—Shortly caulescent. Leaves about 20 in a rosette, oblanceolate-oblong, 12—15 inches long, 3½—4 inches broad above the middle, narrowed to 2½—3 inches above the base, bright green, 1 inch thick at the base, ⅛ inch thick in the centre, the end-spine, small and weak, the centre of the face flat, the edge irregularly jagged rather than regularly toothed, the tips of the jags horny and castaneous. Scape 6 feet high Flowers in a dense spike about 2 feet long, 6—7 inches. in diameter when expanded. Perianth, including the ovary, under 2 inches long; ovary oblong, ½ inch; segments oblong, yellowish, as long as the tube. Filaments 2—2¼ inches long, inserted at the throat of the tube; anthers ½—⅝ inch long. Style nearly as long as the filaments.

A native of Mexico, described by Dr. Regel in 1858 from specimens sent to the St. Petersburg Garden by Karwinski. It flowered at St. Petersburg in the summer of 1863, and is figured at tab. 410 of the *Gartenflora* under the name of A. densiflora, Hook. The true plant of that name which belongs to the group Rigidæ, differs by its firmer texture, larger pungent end-spine and regular deltoid teeth. The two may be seen at the present time growing side by side at Kew, and there can be no doubt that they really belong to two different groups, as here defined.

83. *A.* (*Littæa*) *Bouchei*, Jacobi, Monogr., p. 120.—Stem reaching 1 foot in length below the rosette. Leaves 20—30 in a rosette, oblanceolate-oblong, 12—18 inches long, 3½—4½ inches broad at the middle, narrowed to 2½—3 inches above the base, bright light green, rather glaucous in a young state, the base 1 inch, the centre ⅛ inch thick, the brown-black subpungent end-spine about ½ inch long, the brown deltoid teeth crowded and very minute. Scape about 6 feet long. Perianth yellowish-green, under 2 inches long, inclusive of the elliptical ovary; segments as long as the tube. Filaments under 2 inches long; anthers long and narrow. Style 2½ inches long. Capsule oblong; seeds black, semicircular.

A native probably of Mexico. Introduced to the Berlin Gardens in 1861, and flowered there by Inspector Bouche in 1864. I have seen it at Reigate, and there is a small specimen now at Kew.

84. *A.* (*Littæa*) *micracantha*, Salm-Dyck; Jacobi, Monogr., p. 135; Baker, in Saund. Ref. Bot., t. 327.—Shortly caulescent. Leaves 20—30 in a rosette, oblanceolate-oblong, 15—18 inches long, 3—4 or even 5 inches broad above the middle, narrowed to 2—3 inches above the base, bright green, the face flattish above the centre, the base ¾ inch, the centre ⅛—$\frac{1}{12}$ inch thick, the end-spine red-brown and moderately firm, the copious close reddish brown deltoid-cuspidate horny teeth about $\frac{1}{12}$ inch long, the upper ones ascending, the lower deflexed. Barren part of the scape twice as long as the leaves. Flowers in a dense spike 3—4 feet long, 6—7 inches broad when expanded. Bracts red-brown, linear, from a deltoid base. Perianth 18—20 lines long; ovary oblong, ½—⅝ inch long; segments yellowish, spreading, about as long as the tube. Filaments 2 inches long, inserted below the throat of the perianth-tube; anthers ⅝—¾ inch long. Style reaching to the top of the anthers.

A native of Mexico, introduced about 1860. It flowered three times with Mr. Saunders at Reigate about 1870, and a coloured figure will be found in the *Refugium*, as just cited. It may be seen at the present time in all the larger English collections, and is the best known of all the smaller Aloideæ.

85. *A.* (*Littæa*) *mitis*, Hort. Monac.; Salm-Dyck; Jacobi, Monogr., p. 134; Nachtrage, ii., p. 82; tab. nostr. (fig. 137).—Shortly caulescent. Leaves about 30 in a rosette, oblanceolate-oblong, 12—15 inches long, 3 inches broad at the middle, narrowed to 2 inches above the base, bright green, ¾ inch thick at the base, ⅛ inch thick in the centre, the upper part of the face flat, the end-spine weak, the crowded deltoid teeth about half a line long, either entirely green or only obscurely tinted brown at

FIG. 137.—AGAVE MITIS.

the very tip. Scape about 6 feet high. Flowers in a dense spike 3—4 feet long, 6—7 inches in diameter when expanded. Perianth, including the ⅝ inch ovary, 2 inches long; segments under 1 inch long, yellowish. Filaments above 2 inches long; stamens ¾—⅞ inch. Style above 3 inches long.

A native of Mexico, introduced about 1860. The inflorescence is described by Jacobi from a plant that flowered at Berlin in 1869. It differs from micracantha mainly in the smaller almost colourless teeth, and is probably a variety only. I have seen it both at Reigate and Hammersmith, and there is a small specimen at present at Kew.

FIG. 138.—AGAVE ALBICANS.

86. *A.* (*Littæa*) *albicans*, Jacobi, Monogr, p. 137; tab. nostr. (fig. 138); *A. Ousselghemiana*, Jacobi, Nachtrage, i., p. 41; *A. concinna*, Hort. Angl.—Acaulescent. Leaves about 30 in a rosette, oblanceolate-oblong, 12—15 inches long, 3—4 inches broad above the middle, narrowed to 2—2½ inches above the base, persistently glaucous, ¾ inch thick at the base, ⅛ inch thick in the centre, the face flat above the middle, the end-spine brown, about ½ inch long, the close, deltoid, brown horny teeth under a line long. Barren part of the scape 2 feet long. Flowers in a dense spike, 1½ foot long. Perianth 2 inches long; segments ¾ inch. Filaments above 2 inches long; anthers ⅝ inch long. Capsule oblong, ½ inch in diameter; seeds semicircular, black.

A native of Mexico, introduced about 1860. I have seen It in England, both at Hammersmith and Reigate. The inflorescence is described by Jacobi from a plant that flowered about 1867, with Count Kerchove d'Ousselghem. It is scarcely more than a variety of micracantha.

87. *A. Thomsoniana*, Jacobi, Monogr., 249.—Acaulescent. Leaves 30—40 in a rosette, oblanceolate-oblong, 12—15 inches long, 3½—4½ inches broad above the middle, narrowed to 2½—3 inches above the base, a very bright green, the base 1 inch, the centre ¾ inch thick, the subpungent brown end-spine ½ inch long, the close red-brown horny teeth very irregular, the largest about $\frac{1}{12}$ inch long. Inflorescence unknown.

Described by Jacobi in 1865 from a plant in the Kew collection, imported from San Luis Potosi and named by him in compliment to Dr. Thomson. The plant is still there, and has never flowered.

** Leaves lanceolate.

88. *A. Wallisii*, Jacobi, Nachtrage, ii., p. 78.—Acaulescent. Leaves few, lanceolate, 9—10 inches long, 2 inches broad at the middle, narrowed to 1½ inch above the base, a rather shining slightly primrose-green, the end-spine castaneous, the teeth minute, crowded, deltoid, horny, chestnut-brown. Inflorescence unknown.

A native of Columbia; sent by Gustave Wallis to Linden in 1867. I have not seen it in the English collections.

89. *A.* (*Littæa*) *chloracantha*, Salm-Dyck; Jacobi, Monogr., p. 167.—Stem reaching a length of half a foot. Leaves 1 foot long, lanceolate, 2½ inches broad at the middle, narrowed to 1¼—1½ inch above the base, bright green, the end-spine slender, castaneous, the margin minutely serrated, the teeth whitish-green at first, becoming black as they grow old. Scape 5 feet high, with the flowers in a dense spike. Perianth bright green, 1½ inch long. Filaments 2½ inches long. Style falling short of the anthers.

A native probably of Mexico, introduced in 1842. The inflorescence is described by Salm-Dyck in the seventh volume of the *Bonplandia*, p. 73. I have not seen it in the English collections.

90. *A. Brauniana*, Jacobi, Monogr., p. 240.—Nearly stemless. Leaves 30—40 in a rosette, lanceolate, 15—18 inches long, 2¼—2½ inches broad at the middle, narrowed to 1½—1¾ inch above the base, bright green, the face flat in the centre, where it is ⅛ inch thick, the subpungent chestnut-brown end-spine about ½ inch long, the moderately close deltoid-cuspidate brown teeth ½—1 line long, sometimes confluent into a continuous brown border, the upper ones curved up and the lower ones curved down. Inflorescence unknown.

Described by Jacobi in 1865 from a plant in the Kew collection, imported from San Luis Potosi. It is still there, and has never flowered. This concludes the group Aloideæ. *J. G. Baker.*

THE SPARKHILL PRIMULAS.

FINDING myself in Birmingham, I felt a great desire to see these Primulas, of which I saw so favourable a notice in last week's *Gardeners' Chronicle*, and your correspondent in no way over-rated their qualities. There is a marked character about them which undoubtedly distinguishes them from other "strains," especially in the thick, sturdy, fine foliage and enormous flowers of thick, waxlike substance.

Princess Louise (or Marchioness of Lorne, its original name), a very fine white, and Marquis of Lorne, a very fine red, were raised at Mr. Tomkins' nursery a few years since. The Marchioness originated from a seedling sport with a compact sturdy habit and stout foliage, which was marked for breeding from, and the two varieties named above were the result of careful crossing. Scarlet King, which is a seedling not yet sent out, is remarkable for its brilliant colour. Mr. Tomkins has made colour his aim for many years, taking for the colour-parent the old carminata originally and crossing from his brightest-coloured flowers. The bright-coloured Marquis of Lorne was the result of crossing the white-flowered variety, the Marchioness, with an ordinary red kind, the result of which was a pale-coloured flower, again crossed and recrossed with brighter shades until the result looked for was obtained.

In fern-leaved varieties Mr. Tomkins is doing wonders, the flowers having all the qualities of the preceding and the same sturdy thickness of foliage. Sunrise, a seedling not yet sent out, is of a brilliant rosy salmon colour, very fine indeed; Bride is of a beautiful delicate rosy blush shade, a striking and lovely variety; Monarch has an immense flower, somewhat curled, but of wonderful substance, and, with careful crossing, will be the forerunner of some extraordinary double-flowered kinds. Then there are many other shades of colour, and it is impossible to

predict what, under the careful handling of Mr. Tomkins and his foreman, we shall by-and-bye find in the Chinese Primula.

The difficulty in the way of the general cultivation of these grand varieties lies in the scarcity of seed they produce, for they are so highly bred that very little seed can be obtained from them; and to get even this the camel's-hair pencil has to be freely used. They come quite true from seed, and it is as well here to caution others that it is of no use substituting seed of ordinary strains for this, because their sin is sure to be found out, as they form a thoroughly distinct type from the ordinary "strains" advertised. They can, however, be easily propagated and perpetuated, and bloom as freely and well from cuttings as from seed, and I will presently give details as to culture.

To Mr. Frederick Rose (everybody about Birmingham knows him as Fred), who for twelve years has been Mr. Tomkins' right-hand man, great credit is due for the manner in which he cultivates this plant and his persevering energy in improving the varieties. Nor do they confine their attention to single kinds only, but several very fine double kinds have originated here, and the cry is still they come. There is now in bloom a very handsome double kind, jus christened lilacina grandiflora, of quite a new shade of colour; Queen of Roses is also another beautiful recently named seedling, which is very bright in in colour and of fine form. Alba magnifica won its laurels from the Royal Horticultural Society some time since, and is one of our finest doubles; while Emperor, a bright rosy fern-leaved variety, extra fine; and Magenta Queen, pale magenta and very fine, two of Henderson's best kinds, are in fine character, and so also is Smith's rubra grandiflora, a fine bright rosy purple variety.

The system of culture practised at the Sparkhill Nurseries is one easy to follow, and it is this:—The compost used is a mixture of burnt earth, stiff loam, old mortar, charcoal, very rotten cow-dung and leaf-soil, well mixed together, the roots having a great liking for the pieces of mortar and charcoal, and this compost does not necessitate much drainage, as it is sufficiently porous in itself. Mr. Rose recommends the crowns to be kept low down in the soil in potting, as he finds that they throw out a great many surface-roots, which add much to the vigour of the plants. Seed is sown from March until May so as to insure a succession, the earliest batch of course for the earliest bloom. Cuttings are struck in the spring in a gentle bottom-heat. The plants are grown in a low span-roof house, with side ventilation as well as at the top, and in brilliant weather the light is subdued by a little shading. Too much exposure is carefully avoided, and careful watering is essential. Tepid water is always used, watering over the foliage until the plants begin to flower. Manure-water is used most carefully, for the roots are so sensitive that mischief is soon done from an overdose. It is used frequently at Sparkhill, but very weak, and always with tepid water. Primulas are grown extensively here, for the flowers of the double kinds are in great request for buttonhole flowers. A visit to the nurseries will, moreover, give practical evidence that Primulas are well grown here under somewhat adverse circumstances, as the Birmingham district is not remarkable for its clear, bright day atmosphere throughout the autumn and winter months. In order to show you that the varieties really deserve the celebrity they have, flowers and foliage of some of the kinds are sent to you that you may see what they are. *B. C.* [Very fine indeed. EDS.]

THE SOCIETY OF PAINTERS IN WATER COLOURS.

THE sixteenth winter exhibition of this Society opened to the public on Monday last. The collection of pictures is one of the best we have ever seen in the Society's rooms, though it must be confessed that this particular exhibition appears every year to depart more and more from its programme, which indicates an exhibition of "sketches and studies" only. Each December one sees a large number of highly-finished water-colour pictures in these rooms mingled with about an equal number of more roughly executed works. We never remember having seen a better collection of landscape paintings in water colours, but they are too numerous for us to mention in succession, as views of meadows, woods, mountains, sky and sea are dotted all over the walls of the exhibition room. 12, The Teme at Ludlow, George P. Boyce, is correct, but presents in dirty colours the beautiful Teme in its dullest and most uninteresting aspect: the same criticism holds good of nearly all Mr. Boyce's pictures—even in the Venetian scene, 197, the sky is painted dull indigo. When the Woolhopeans were at Ludlow one dull October day, a year or two ago, an artist was espied in the middle of a scrubby field (with his back to the magnificent castle) apparently very busy painting nothing. From the nature of the spot and the day one of the fungologists declared the artist must be Boyce; and judging from the Ludlow pictures in the present exhibition, the guesser was probably not far wrong. 13, Lac de Combal, south side of Mont Blanc, W. Collingwood, is remarkable for the natural effect of the storm-clouds with the descending lightoing. 15, A Caravan Overtaken by a Sand-storm near the Pyramid of Geezeh, E. A. Goodal, is an excellent picture of a storm of sand, but the pyramids lean over to one side. 18, A Root of Celandine, Maria Harrison, is a sketch of average quality, but with little character, of a plant of Ranunculus Ficaria: the root is introduced in the catalogue with eight well-known lines from Wordsworth. 29, Okehampton from the East, David Cox, jun., is a harvest scene, with a rainy "Coxean" sky. Regardless of the rain two rustics are sitting down courting by the corn in the foreground. 59, one of a series of nameless figure and landscape subjects, by J. D. Watson, is remarkable for its excellent drawing and rich harmonious colour. The subject represents a bevy of healthy country girls snowballing a jester in a field where the snow lies thick. 81, A Branch of Red Roses, Maria Harrison, represents a couple of ill-grown Roses and some weather-beaten, colourless, ragged leaves. The picture quite fails to give any idea of the true character of a Rose or its foliage. 110, Edward the Confessor's Chapel, Westminster Abbey, 1852, George P. Boyce: we stop at this elaborate picture to note its extraordinary beauty and correctness of drawing. It is dated 1852-73: this can mean no other than that the picture remained unfinished for twenty-one years. The architecture and perspective is photographically perfect, but architecture and perspective (in buildings) are always perfect with Mr. Boyce (see 124, The Church and Back of an Old House at Ludlow). 115, The Route, Sir John Gilbert, R.A., occupies the position of honour, and displays all the bold and dashing qualities of this admirable painter. 119, The Earth Taking Refreshment, Albert Goodwin, is a remarkable picture on account of the natural effect of a local and heavy downpour of rain on a quiet day in the country. 119, The Gardener's Cottage, a Study in Sussex, Josh. J. Jenkins, is an excellent picture, well drawn and painted, of a gardener in a green (not blue) apron, attending to the plants near his own cottage; the latter is covered with Clematis Jackmanni, in the foreground are well-painted Pelargoniums and other plants. 225, Spring-time, Bird's-nest and Apple-blossom, Maria Harrison, tolerably well sketched; but how many times too often has the same subject been painted before. 259. Study for a Panel, by the same artist, represents a plant of Richardia æthiopica, but it gives no idea of the handsome character, grace, and colour of the real plant. 268, Unfinished Sketch of the Old-fashioned Cabbage Rose, by the same artist, is far better than this artist's other efforts. 299, An Evening in July, E. K. Johnson, is a beautiful garden scene in the twilight, and is notable for the correct drawing and painting of the Roses, Violas, and Pansies. 286, A Study—Cabbages, J. Parker, a group of Cabbages growing in a garden, is very correct in drawing and colour. 300, Finished study for exhibited drawing—Winter Twilight, C. Branwhite, arrests attention on account of its bold true drawing, and its rich and beautiful colour. 322, Great Expectations, E. K. Johnson, represents two figures in a spring orchard where blossoming Apple and other fruit trees are admirably painted. 329, Marigolds, J. Parker, is a small but most truthful painting of Marigolds set off to their fullest advantage by a purple-blue vase. 334, Roses, by the same artist, is a good picture, but the Roses are uncommonly bad and ill-grown varieties. 337, a study made in a garden of standard Roses, Maria Harrison, is as unsatisfactory and formal a picture of Roses as could be conceived. 342, Water Lilies, J. Parker, an uncommonly bold and good sketch of white Water Lilies growing in a pool. 394, Flora, L. Alma Tadema, A.R.A., is one of this artist's excellently painted classical subjects. It represents a youthful female figure, clad in blue, stooping down to gather Anemones. In the background is a strong burst of light falling on a path in the Anemone-dotted grass, and a white marble fountain. 427, The Blush Rose, Maria Harrison: in addition to the Blush Rose there is an unhappy spray of Begonia together with a few white Grapes: dewdrops, too, are introduced. As a rule we are prejudiced against dewdrops, for we have observed that painters who fail with fruits, flowers, and foliage, too often have a faculty of studding these organisms with anything but natural drops of moisture.

Notices of Books.

The Forest and Chace of Malvern, &c By Edwin Lees, F.L S. *Worcester Herald* Office, 1877.

Mr. Edwin Lees has reprinted from the *Transactions of the Malvern Naturalist's Field Club* his account of the forest and chace of Malvern, with notices of the most remarkable old trees within its confines. Beginning with a brief historical sketch, in which the distinction between a forest and a chace is pointed out—the former being Royal property, the latter could be held by a subject—Mr. Lees proceeds to tell of the forest laws and customs, such as those which are the plague of foresters and forest conservators. The meaning of the term "homble" or "humble pie" will be probably new to many readers. Mr. Lees' account is that "it has been generally said that homble pie was a dish made from the entrails of deer, and only served to those who sat at the lower end of the great table in the hall in the 'good old time.'" The "hombling of dogs" was a less pleasant process for the poor animals: "such manner of dogs as were found unlawful, that is to say as could not be drawn through a certain sterop of 18 inches and a barleycorn in length and breadth compass, the farther joints of the two middle claws were to be cut clean away, and the master and owner of the dog were to be amerced 3*s.* 1*d.*" Notes on the natural history, and especially of the old trees of the district, naturally follow. Oaks with variegated leaves occasionally occur, and were considered to be curiosities and prodigies with which superstitions beliefs were connected. "Some are of opinion," says Heath in his *History of Cornwall*, "that divers ancient families of England are pre-admonished by Oaks bearing strange leaves." Referring to the Pear orchards of Worcestershire, Mr. Lees writes that no historical evidence of their existence prior to the time of Drayton (temp. Henry V.) exists, but as that poet alludes to the banner borne by the Worcestershire men at Agincourt, as having for its device "a Pear tree laden with its fruit," it must needs be that the Pear orchards had already assumed considerable importance. A slight account of the remarkable Barland Pear orchard is given—a sight that is well calculated to impress a stranger, and to astonish those accustomed to see Pears trained on walls, or at most as pyramids. To see Pear trees as big as Oaks, with boles 14 to 20 feet in girth at a yard from the ground, and with a spread of branch sometimes equal to 100 yards in circuit, is a new sensation. The crop appears to be a very variable and precarious one, for whereas in favourable years one orchard has yielded 200 hogsheads of perry, in another season the produce has only been three hogsheads. That some quantities are required is evident from the statement that at harvest time "the claim of the labourer to his stipulated dozen or more quarts (of cider or perry) per diem being never abated, but added to if possible." We have said enough to show that Mr. Lees' little book is both entertaining to the general reader and valuable to the natural historian of our country districts.

—— The last *fascicle* of the *Flora Brasiliensis* contains a monograph of the Lythraceæ by Dr. Koehne, of Berlin. The greater portion is taken up with the genus Cuphea, which is very largely represented in Brazil, and several species of which are highly ornamental. The coloured calyx of these plants is gibbous at the base, the stamen or stamens are suppressed in the same side of the flower, but at the base of the ovary is a nectariferous gland also an the side next the spur. The object of this arrangement is obvious. In some of the species, as the fruit ripens, the placenta escapes through a chink in the capsule, and becomes sharply reflexed, leaving the seeds exposed to the air.

PUBLICATIONS RECEIVED. — Sempervirens. — Farmers' and Gardeners' Almanac.—Floral Magazine. — Grevillea. — Journal of Botany. — Familiar Wild Flowers.—Journal of Forestry.—Revue de l'Horticulture Belge.—Villa Gardener.—The Rosarian's Year Book. — Gartenflora. — Science Gossip. — Journal de la Société Centrale d'Horticulture.— Monatschrift des Vereins zur beförderung des Gartenbaues in den K. Preuss. Staaten.—Revue Horticole.—Live Stock Journal Almanac.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS. — That most acceptable winter-flowering hard-wooded plant, Daphne indica, where the bloom is wanted as soon as may be, should occupy a position a little warmer than an ordinary greenhouse, say 45° in the night. Here, if the plants have been so treated as to induce an early growth, they will come into flower without anything approaching a forcing temperature which it is well to avoid. One of the most effective plants that have ever been introduced to this country is the Australian Clianthus Dampierii; its singularly formed and still more distinct coloured, black and crimson flowers, are always a source of attraction, especially in the conservatory, where it is a fitting subject to mix with other things of a more everyday character, and yet it is comparatively seldom seen, no doubt through the fact that it will not conform to the treatment by which most things can be made to succeed. Two essential points in its cultivation are, to grow it on the one-shift system, as its roots will not bear the slightest disturbance, such as is unavoidable in repotting even with the greatest care, and it likes to be kept a little warmer through the winter than ordinary greenhouse stock; 45° during night, with a proportionate rise in the day, I have found answer best for it, keeping the soil and atmosphere moderately moist.

Camellias.—Where these are at all backward and yet wanted in flower as soon as possible, their blooming may be accelerated by placing them in a temperature of from 45° to 50° in the night, but anything in the shape of forcing must be avoided, and where fire-heat at all is used the atmosphere must be supplied by some means with a sufficient and continuous amount of moisture, otherwise the buds will be liable to drop off.

SOFT-WOODED GREENHOUSE PLANTS. — Imatophyllums.—These stately and free-flowering plants are so accommodating that they will grow in almost any temperature, but in no way are they more useful than to come in further on in the season than if subjected to more warmth, which they will do if now kept from 45° to 50° in the night. If several plants are grown, and some kept quite cool, these again will come later still, keeping up a succession for months. Where Cinerarias were sown early, and the plants subsequently received the requisite attention, their flower-stems will now have made considerable progress. The blue forms afford a colour acceptable for cutting, and where it is desirable to have them in bloom with the least delay they should be kept in a temperature of 45° at night, but no attempt at forcing should be made, as they are ill-calculated to bear it. If a pit or small house can be devoted to these and things of similar character it is a great boon to those who have large quantities of flowers to supply; and even in the case of such plants as have ultimately to be subjected to a still higher temperature the effect of thus gradually keeping them slowly moving is a decided advantage over at once removing them from a comparatively cool to a higher temperature. Chrysanthemums.—It often happens that plants that are exceptionally easy to cultivate are indifferently managed. There is no plant probably of which this holds true more than the Chrysanthemum; not only is it the freest of free growers, but it is so manageable in the matter of propagation that cuttings will root at any time of the year when they can be obtained. Many put off striking cuttings until spring, but there are several disadvantages connected with this delay; the first is that it entails the necessity of wintering the old plants in pits or frames, which thus are unnecessarily occupied by them, and the cuttings from plants so wintered are frequently in a weak, unsatisfactory condition, whereas if they are taken off during the present month, whilst the plants are in flower, or have just completed their blooming, they can be either thrown away or turned out of the pots and heeled-in out-of-doors, or at once planted where they are to remain, if required for such purpose. But this is not the whole gain: by timely propagation the wood of the plants struck early gets better solidified before the time the buds set towards the close of the ensuing summer, and will produce a larger number of perfect flowers than obtainable from softer later struck plants. This is more apparent in some kinds than others, but that such is the case I have proved several times by actual experiment. Cuttings put in now half-a-dozen together in 3-inch pots, or, proportionately more, in such as are a little larger in free sandy soil, and covered with hand or bell-glasses stood upon the front shelf of a greenhouse or the floor of a vinery, keeping them moist, but giving a little air by tilting the glasses that cover them just so as to prevent damping, will root in a few weeks, after which they can be moved singly into small pots. The extraordinary examples of individual flowers seen at the exhibitions have been the means of casting in the background many of the best varieties for general decorative purposes, that is those that attain a medium size, the plants possessing a natural ability to perfect a much greater number of flowers than the generality of the show varieties that individually attain a large size. In this some of those with reflexed petals are much superior to the majority of the incurved kinds, though this does not in all cases hold good. The medium-sized white Mrs. George Rundle is probably the best decorative Chrysanthemum in existence; the pale yellow sport from it, George Glenny, is an exact counterpart in everything but colour. Amongst old kinds that for general effect are equalled by few may be named Annie Salter, sulphur-yellow; Orange Annie Salter, a sport from the original; Florence Nightingale, white, shaded with sulphur; Hermine, blush, tipped with purple; Golden Hermine, rich yellow. Amongst others of later introduction:—Princess Louis of Hesse, rosy pink; Julie Lagravère, dark velvety crimson, one of the very best and most effective; Norma, ivory-white; Eve, sulphur-yellow; Little Harry, Lord Clyde, Bernard Palissy, fiery orange; White Globe, Lord Derby, Princess Teck, and Guernsey Nugget. In the small-flowered section the three forms of Cedo Nulli, blush-white, lilac, and yellow, are not easily surpassed for the profusion of flowers they produce; Marabout, white, a most effective flower; Mrs. Dix, Mr. Astey, Aurora Borealis, Salamon, White Trevenna, Rose Trevenna, Lizzie Holmes, Jason, Florence, Fabiola, and Danäe. The above may be relied upon as amongst the very best for conservatory decoration and the production of cut flowers for general purposes. *T. Baines.*

FRUIT HOUSES.

STRAWBERRIES IN POTS.—A prolonged continuation of temperate weather has been the means of greatly accelerating the growth in these plants, and notwithstanding the backwardness of the layers this season the plants should at the present time be in an excellent condition for the purpose required; and, if not already done, they should now be placed where they are to remain until required for forcing operations, since very adverse conditions exteroally may at any time be expected. If it be absolutely necessary to have ripe Strawberries at the earliest period possible, start a good batch of plants at once and make ample provision for the defective ones, as these will be sure to abound amongst the lot; but if they are not required to be ripe before the end of next March, another fortnight's rest may with benefit be accorded the plant. Vineries, peacheries, or similar houses, when the trees are very gradually stimulated, will afford suitable conditions for starting these plants. But there is much risk arising from the fact that that terrible enemy the red-spider will be introduced into the houses with them; and therefore as far as practicable we avoid the use of these means, and select for the purpose pits which are adapted to the requirements, and in these employ fermenting beds, which are brought up in close proximity to the glass; on these beds the plants are stood, and obtain valuable assistance at this early period from the gentle heat which is present at the base of the pots. Avoid premature excitement by means of supplying an abundance of air whenever necessary. A temperature of about 50° at night, and 60°, with a slight admission of air, in the daytime, will be suitable. The best sorts for starting now may be selected from Black Prince, Keens' Seedling, Vicomtesse Héricart de Thury (which is identical with Garibaldi), or La Grosse Sucre. *Geo. Thos. Miles, Wycombe Abbey.*

VINES.—Where the latest houses were allowed to struggle through the past cold unfavourable spring without the assistance of steady fire-heat — many people labouring under the mistaken idea that late Grapes cannot be too late—the chances are in favour of imperfectly ripened wood still carrying foliage and half-coloured fruit, which no autumn firing can bring to perfection. In cases of this kind, although matters may look fairly promising for a time, the berries will be sure to shrivel immediately after the fall of the leaves, and the attempt to keep the Grapes till May will end in disappointment. To make the best of this position, steady firing with liberal ventilation on all favourable days must be followed up, but the house must be kept cool at night, with a little air at the apex to allow of the escape of moisture. If not already attended to, no time should be lost in the removal of extra growths, laterals and foliage, as it parts freely from the Vines, but the wood of the past year should not be shortened back too near the bunches if they are to be removed to the Grape-room. Vines in pots and inside borders which were started early in November under the influence of fermenting leaves and horse-dung will now be breaking, although very little fire-heat, owing to the mildness of the season, has been applied. Let the rods be syringed with tepid water twice a day. Give a little air when fine to sweeten the atmosphere, and slightly raise the temperature when the weather is bright, but a low night heat must be maintained until after the turn of the season—58° at night with a rise of 10° or 12° by day will be quite sufficient for the present. If it is intended to apply fermenting materials to the outside borders of these early houses a good body of warm Oak leaves should now be laid on and covered with wooden shutters, which should be supported above the top of the leaves with a sharp slope to the front for throwing off water. Get succession houses ready for starting, follow up pruning, cleaning, and painting, and keep the work well in hand. Cut down young Vines intended for growing into fruiting canes, and keep them in a dry cool house, also select and preserve thoroughly ripened prunings for eyes and grafts. The latter upon the bottle-system may now be put on with every chance of success. *W. Coleman.*

KITCHEN GARDEN.

Luxuries in this department are always highly appreciated, and a standing one is New Potatos. Where there are proper conveniences for growing them now is a good time to select sound tubers, and place them on sand in any structure where there is a gentle heat secure from frost. The object is to get them to start, and when they have sprouted 1 inch they will be ready for potting, which is the easiest way to secure this the very earliest crop. As a rule I do not consider it necessary to use large pots; I have known a single tuber to fill a 5-inch pot with young tubers of a fair size, but an 8-inch pot with four good-sized tubers, will better recommend itself for general purposes to the cultivator. I think the reason why pot culture in the early forcing of this vegetable is to be recommended is on account of the limited amount of soil at the disposal of the roots, which predisposes them to a limited growth of haulm, and a consequent diversion of nourishment to the tubers. I have found the Coldstream when true an excellent sort for the purpose; for frame work I prefer Veitch's Improved Ashleaf and the old Early Frame if it can be procured true, which is rather doubtful; failing that I should adhere to the Coldstream as a very excellent early frame Potato. The space in frames being so limited it becomes an object to secure the germination of each tuber before being planted, for amongst the modern high-bred early sorts we often find many which never sprout at all, owing probably to their extreme smoothness of outline, which is one of the first characteristics of highly bred Potatos, but which renders them liable by friction in moving about to be entirely denuded of their embryo buds. Such tubers will remain sound in the ground for many months, but will never make a start into growth. In order to obviate this, where there is much early work required, it is always best to begin in time to spread them out singly on sand on the floor, under stages in greenhouses, or in any other such-like place where they can have a temperature secure from frost, but by no means a high temperature: spread plenty out, and the chances are that a good proportion of the lot will begin to sprout some considerable time before the remainder, and thus a succession will be maintained and a certain growth of those planted secured.

Again, with reference to luxuries, the forcing of Asparagus will now form an important item of work. At this dormant and dull time of the year there is always a difficulty (in forcing by means of fermented manure in frames) in maintaining an equal balance between the bottom and top-heat. It often happens that, in order to obtain a sufficiency of top-heat, the bottom-heat must be maintained at so high a degree as to destroy the vitality of the roots, and to ruin the crops, so that in the case of forcing by means of fermented dung it is better to wait awhile until the sun can be brought in as an auxiliary. In the meantime, if a supply at this season is indispensable, the aid of bottom-heat from hot-water pipes must be called in, and provision made to carry the heat through the bed by means of vertical pipes so as to supply top-heat, by which means that great necessity, top-ventilation, may be applied under the most favourable conditions, and thereby both colour and flavour be insured. The roots may be covered about 3 inches above the crowns, and the surface of the soil should not be much more than 4 inches from the glass.

French Beans will also require the aid of a sufficient command of heat, and there is no better erection for the purpose than a pit heated by hot-water pipes having a stage over them on which to stand the pots, that is, if pot culture is preferred, which possesses many advantages where a sufficiently moist atmosphere can be insured to keep down their greatest enemy, the red-spider. If required early, the first batch may be sown at once in 8-inch pots. Fill the pots two-thirds of their depth with light rich soil, and on this place six seeds, say of Osborn's forcing, which is a good setter for early work; cover the seeds more than an inch, and place the pots in the pit. From the first, endeavour to avoid a close and stagnant atmosphere by frequent ventilation, and as soon as the rough leaves are well above the rims of the pots soil them up. Keep them as near the glass as possible, and never let them want for water at the roots and a moist atmosphere. The forcing of Seakale and Rhubard must also have the necessary attention, as recommended last month. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 8, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Dec. 12 — Sale of Bulbs and Plants at Stevens' Rooms.
THURSDAY, Dec. 13 { Sale of Imported Orchids, at Stevens' Rooms.
FRIDAY, Dec. 14 { Sale of Lilium auratum (from Japan), at Stevens' Rooms. Sale of Nursery Stock and Lease of the Mansfield Road Nursery, Gospel Oak, by Protheroe & Morris.
SATURDAY, Dec. 15 { Sale of Roses, Shrubs, Dutch Bulbs, &c., at Stevens' Rooms.

IT is rather amusing to see what an outburst of virtuous indignation has arisen in the public journals since the publication of the SEED-ADULTERATION CASE at the Mansion House on November 26, when judgment was obtained against a noted seed-doctor. A report in the Police Court attracts public attention much more forcibly than any number of Blue-books, or of denunciatory articles in class journals. At the time when the seedsmen were engaged in promoting the passing of the Act, we stood almost alone among our contemporaries in pointing out the nature and extent of the evil, and in urging the necessity of legislation. The daily press either would not or did not take up the matter. What were the interests of farmers and gardeners to them? But once the case comes into the Police Court, and a wail is uttered loud and far-reaching, correspondents inundate the Editors with suggestions half of which betray only the ignorance of the writers, and the remainder are for the most part either inapplicable or already well known and acted on by the prudent ones. All this, however, is a matter of little consequence in comparison with the fact that public attention has been called to the matter, and that in consequence it will be increasingly difficult for seed-doctors to carry on their nefarious practices, and for purchasers to maintain so iniquitous a system. The *Times*, in its newly-excited wrath, has made the discovery that seed adulteration is the latest novelty, or, as immediately qualified, "so far as the disclosure is concerned." It is pretty obvious from this what degree of information on such matters may be expected in Printing House Square. Nevertheless, in the interests of the public we can but rejoice at the publicity which has been given to this case. One thing, however, we must protest against, and that is the indiscriminate aspersion of all dealers, honest and dishonest alike. Some firms indignantly deny that at any time they have had dealings of this questionable nature; others admit that at one time before the passing of the Act they dealt in seeds at prices which they knew—and the consumer might have known had he exercised a little common sense—could not be remunerative if pure or "nett seed" were sold. There was no particular secret in the matter. Dealers supplied nett seed to those that required it, and inferior seed at corresponding prices to those who sent orders for it. They were compelled by stress of competition to do what their neighbours did. By-and-by the thing came to a head. Honest men did not like to be mixed up in such transactions. A stand was made against them, and ultimately the Bill was passed by the exertions of the members of the seed-trade itself. Comparatively lately the "improvers" began to show signs of increasing business, and means were taken, again by the seedsmen, to check their procedures. So well has the Act worked, that it became necessary, as the report showed, for the greatest caution and secrecy to be employed in carrying on the business, and of course proportionately so in detecting and exposing it. This being the case, it is a libel upon respectable firms to say, as the *Times* did on Tuesday last, "that any seed merchant may go to Mark Lane, the great market for seeds of every kind, and obtain at very moderate prices any quantity of seeds that have lost their vitality by age, by being boiled, or kiln-dried." The writer of the article in question evidently did not read a full report of the trial, or the account there given of the difficulty of transacting business of the kind alluded to.

There is soul of good in things evil, and the dilution of good seed by "dead seed" has the advantage which seed sowers, whether they be gardeners or farmers, are so slow to act on of securing "thin seeding." This is a matter of great importance in the case of Turnips, and may save much subsequent labour in hoeing. Even market-gardeners, the best cultivators, so far as their range extends, are too apt to fall into the wasteful extravagance of over thick-seeding. But admitting this possible advantage in diluting seed, JOHN BULL—poor gullible mortal that he is—does not like to be cheated, and is apt to wax wroth if he buys as coffee what is really coffee *plus* chicory, even though he may have no objection to chicory.

To revert, however, to the case before us. We have had the advantage of seeing the reports of the inspectors, some of which have already been made public, and others probably will be shortly, and they disclose an amount of killing, dyeing, and "improving" seeds of various natures that we were not prepared for. White Clover is dressed to resemble Alsike. Seed of inferior quality and low price is doctored and then sold at an advance of more than 100 per cent. Seed of one plant is made to resemble that of another of totally different kind, so different that the merest tyro in botany could tell the difference were the husk removed. Of course, this seed is killed so as to prevent its germination and the consequent detection of the fraud, and this sort of thing has been done, not by the ton, but by the hundreds of tons. Agricultural seeds naturally form the bulk of the patients that come under the hands of these "doctors," but garden seeds of various kinds are stated to undergo medical treatment of this kind. The seed is subjected to heat, exposed to the fumes of sulphur, for greater or less time, in a nearly air-tight dark chamber, the seeds being placed on fine haircloth stretched tightly a few feet above the fire, on which the pots containing the brimstone are placed. Various means are used to stain the old seed so as to give it a new and fresh appearance. Further details it would not be advisable to publish at present. We have said enough to show—what was by some people doubted—the necessity for the Act, and the desirability of protecting the honest dealer and the unwitting consumer. We cannot help, however, commenting on the way in which the latter class of the community have allowed themselves to be defrauded, because they would not take the very small modicum of trouble required to test the percentage of germinating seed in any sample that may be presented to them. If the placing a known number of seeds in a flower-pot and watching the numbers that germinate, or if the scattering a few seeds upon a piece of flannel kept moist, be too much trouble, then the consulting botanist of the Royal Agricultural Society might be applied to at an outlay of a few shillings, or arrangements might probably be made for the trial to take place at the gardens of the Royal Horticultural Society at Chiswick.

— THE customary removals and replacements on the COMMITTEES of the ROYAL HORTICULTURAL SOCIETY have, for the ensuing year, we are informed, been effected, and we cannot but regret that in a matter of such immense importance to the welfare and reputation of the Society and for the interests of horticulture in particular the filling up of these vacancies should not be effected in a more open manner. For instance, would it not add to the intrinsic value of these committees if a third of the members retired by rotation every year and were not eligible for re-election next year? Thus some eight or ten fresh men could be added to the committees each season, while a good number would be kept in constant training. With a view further to secure the very best men, irrespective of personalities or dislikes, it might be arranged that the nomination of the new members should be left in the hands of the entire committee at their last yearly meeting, and if each of these were elected by show of hands there is little doubt the best men would be selected. The *prestige* of the South Kensington committees is so great, and is of such immense value to the Society, that everything that is possible to be done should be done to maintain that *prestige* and uphold their popularity. We would further suggest that when persons of known ability in their respective branches of horticulture are present at the meetings, they should occasionally be paid the compliment of being invited to take a seat at one or other of the committee tables. This step would tend largely to promote confidence in the decisions of the committees, which are at all times looked for with great interest, although not all times with an equal amount of satisfaction. As the market value of plants may be increased or otherwise by the decisions of these committees, it is of the highest importance that they should be made by the very best men.

— The cultivation and production of COCHINEAL IN THE ISLAND OF TENERIFFE has of late years been so abundant that the market has become quite glutted, the supply, in fact, exceeding the demand to such an extent that its cultivation ceased to be remunerative. The latest report on this culture, however, shows that cochineal has again become a profitable production, the marked decrease in stock and in shipments which previously prevailed enhanced the value, and consequently increased speculation in all the European and American markets. This sudden return to prosperity may, however, be disadvantageous if the planters, who will not be convinced that it may end as suddenly as it commenced, should increase the production to the extent it reached a few years ago, when the quantity sent to market exceeded by far the power of consumption.

— The ordinary monthly meeting of the SCOTTISH HORTICULTURAL ASSOCIATION was held at 5, St. Andrew's Square, Edinburgh, on the evening of the 4th inst. There was a large attendance of members, and the President, Mr. DUNN, Dalkeith Palace Gardens, occupied the chair. Fifteen new members were admitted, and seven others were proposed and seconded for admission as members at the next meeting. The subject treated was the "Kitchen Garden," by Mr. LAWRENCE DOW, Saughton Hall Gardens. At the outset he urged upon young gardeners the necessity of devoting great attention to the proper management of the kitchen garden, so as to keep up a constant supply of first-class vegetables; some were very apt to look over this department in their anxiety to have a fine display of bedding and greenhouse plants. He then in a practical and lucid manner described the different methods of treatment by which he had been most successful in growing Potatos, Onions, Jerusalem Artichokes, Parsley, and Asparagus. Several members expressed concurrence with Mr. DOW'S views as to the importance of the subject, and also as to the modes of culture pursued. Mr. DOW received the thanks of the meeting for his paper, and at their request agreed to continue the subject at a future time. A communication from Mr. JAS. MORRISON, Preston Hall Gardens, was read, advocating the autumn planting of the Potato, and also attaching great importance to the proper ripening of the seed tubers. A vote of thanks was passed to Mr. MORRISON for his excellent contribution. It was then intimated that the subject for discussion at the next meeting was the "Phlox and Pentstemon," to be opened by Mr. JAMES GRIEVE, Pilrig Park Nursery.

— An excellent confirmation of the remarks made in these pages last week respecting the PRODUCTIVENESS OF THE HOLLY is now to be seen in the Feltham Nursery of Messrs. C. LEE & SON, where a large quantity of bush and pyramidal Hollies of

many kinds are grown. The confirmation is, however, chiefly drawn from the green-leaved kinds, of which some pyramids of various stages of height are literally covered with masses of rich scarlet berries, and present in that condition the most pleasing and seasonable subjects for entrance hall, corridor, staircase, or general decoration, that it is possible to conceive. Nearly all of these plants are of a convenient size for lifting into pots and small tubs, and so treated would keep their berries bright and foliage fresh for several months. Branches, however decorative, wither in a couple of weeks, but these trees would be beautiful all the winter. It is most noticeable that the trees which are bearing the greatest profusion of berries have produced the least young growth, in other words they have felt the check given by frequent lifting the most, and have therefore been the earliest driven into fruiting. Another curious illustration of that view of the production of Holly berries was recently noticed when riding through a portion of North Hants, near to Eversley. In an adjoining plantation a bush Holly about 8 feet in height was seen covered with berries literally, so that scarcely a portion of the wood was visible. From the main stem of this bush, and about 12 inches from the ground, a fine robust growth had started out, and this was now taller than the berried portion, but full of leafage, and with not a single berry. All through that locality the Holly is now singularly beautiful, fine trees, from 30 to 40 feet in height, being covered with fruit.

—— A grower of young GOOSEBERRY BUSHES recently stated that he had an order to supply 30,000 bushes of these to a large market-gardener in the western suburbs. This may be an exceptional order, but it is a fact that the Gooseberry is planted in immense quantity every year, and as these, if well looked after, will remain productive for twenty years, or even longer, it may be accepted as a rough but possibly not incorrect estimate, that if 100,000 young bushes be planted in the Metropolitan district every year, within that radius there is now being grown about 2,000,000 bushes—an enormous quantity, but probably far below the mark. One reason why such a large number must be planted each year is found in the continuous and advancing crowding-out of market and fruit gardens near to London. The land cannot be removed, but the occupiers can be, and these have to quit their former habitations, which with their gardens, soon disappear in the overwhelming wave of bricks and mortar which under the name of houses is fast converting all the near country into populous towns. With this obliteration of many old gardens comes the necessity for their resuscitation elsewhere, as each new obliteration brings with it a new and augmented crowd of consumers. The great conveniences to market-growers now offered by the multiplication of railways has induced many thus sent adrift to get further into the country, where both land and labour are cheaper. Manure agents have so largely the command of the manure market, that an agreement with one of these will ensure the delivery at a station any number of miles from town of hundreds of tons of manure during the season, at a price scarcely higher than a similar quantity can be carted home by those local men who have their own vehicles. The same facilities avail to send the produce of the soil to market, and therefore our vegetable and fruit market district is no longer limited to the immediate locality, but is distributed in a wide provincial area.

FIG 139.—CARLUDOVICA DRUDEI—MUCH REDUCED. (SEE P. 715)

—— Judging by the results seen in the growth of dwarf Vines and Strawberries in pots at Heckfield, the BUFFALO-HORN MANURE must possess most valuable manurial properties. The Strawberry plants, being limited in root-space, perhaps offer the most forcible illustration of its value, as these in small 24's are most exceptionally robust, the crowns large, and the foliage of a deep green hue. A moderate portion of the manure mixed with the soil proves to be a singularly valuable constituent.

—— The Veitch Memorial Trustees, at a meeting held on the 4th inst., confirmed their provisional resolution to place a VEITCH MEMORIAL MEDAL with a prize of £5 at the disposal of each of the undermentioned societies, for the several subjects specified,

it having been ascertained that the exhibitions in 1878 of the respective societies will take place at a period of the year when these subjects can be produced :—

MANCHESTER, June 7.—For the best specimen Orchid, in bloom.

YORK, June 19. — For three bunches of Black Hamburgh Grapes.

CLAY CROSS, August 13.—For a dish of Peaches, and a dish of Nectarines.

HEREFORD.—For twelve cut blooms of the best New Rose, sent out within the last five years.

EXETER, August 23.—For a collection of twelve kinds of Vegetables, distinct.

BRIGHTON, in June.—For one bridal and one ball-room Bouquet.

WOODBRIDGE, July 11.—For three stove or greenhouse plants, in bloom, distinct.

READING, May 23.—For three stove or greenhouse plants, in bloom, distinct.

DUBLIN: ROYAL HORTICULTURAL OF IRELAND, in August.—For three bunches of Muscat of Alexandria Grapes.

BELFAST.—For twelve cut blooms of the best New Rose, sent out within the last five years.

The prizes are to be open to competition amongst *bonâ fide* gentlemen's gardeners, eligible to compete at the several shows; and the subjects exhibited are in all cases required to display superior cultivation.

—— Early in the new year we hope to present our readers with an ILLUSTRATED SHEET ALMANAC of entirely new design, and beautifully coloured by chromo-lithography.

—— Mr. W. HUTCHISON, The Gardens, Llwynder Court, Abergavenny, states as a proof of the mildness of the season in that locality, that he gathered a dish of Peas on December 1. The variety was Omega. The Princess of Wales Strawberry is also in bloom, and bearing fruit. Large plants of Genista tinctoria, 5 feet through, are also now in bloom. They have been planted out four years. Salvia fulgens and patens are still flowering; and that fine shrub Arbutus Unedo is now in magnificent form. The fine foliage, with the waxy flowers and scarlet fruit, make up a combination seen in no other hardy shrubs. They grow in perfection at Llwynder.

—— It is announced that the *Florist and Pomologist* will in future be enlarged to imperial octavo size for the purpose of giving a more perfected appearance to the coloured plates.

—— Mr. G. R. DALEY, head gardener to the late Mrs. BIDE, Kingston House, Yeovil, Somerset, has been appointed head gardener to THOMAS TODD WATTON, Esq., Maperton House, Wincanton, Somerset.—Mr. JOHN BARNWELL, late gardener at Garnons, Hereford, has taken a long lease of the graperies at Worthing, where he intends to carry on the business so long held by the late Mr. BAKER.—Mr. ARCHIBALD SCOTT, late foreman under Mr. FOWLER, Castle Kennedy, has been appointed head gardener to the Right Hon. Lord ELPHINSTONE, Carberry Tower, near Edinburgh.—Mr. F. CORBOULD, late gardener to the Earl of LISBURNE at Crosswood Park, Aberystwith, has been appointed gardener to the Earl of COTTENHAM, Tandridge Court, Godstone.—Mr. JOHN CLARK, late gardener to U. S. MITCHELL-INNES, Esq., Parson's Green, Edinburgh, has been appointed head gardener to the Earl of Rosslyn, Dysart House, Fife.—Mr. THOMAS KEETLEY, gardener for many years to the late ROBERT RUSSELL, Esq, Newton House, has been appointed gardener and manager to W. EVANS, Esq., Darley Abbey, Derby.

—— Mr. CHARLES SHARPE, of Sleaford, requests us to publish the following extract from a letter of his which appeared in the *Times* of Thursday last :—

"In justice to the seed trade at large, will you permit me to say, as chairman of the Committee for the Promotion of the Seed Adulteration Bill, that it proceeded from the seedsmen; and, although we had a hard fight to get it passed, yet we received the warmest support generally from those engaged in the business, and there was scarcely a respectable house that did not contribute to the fund raised for the purpose of passing the Bill through Parliament, and recently in the course of the inquiries and investigations into the reports of adulteration which have been instituted by a committee of the seed trade appointed for that purpose we found that although adulterated seeds were prepared, yet the preparation was confined to but a few of the most unprincipled and less scrupulous members of the trade, and the business generally was free from the suspicion of any breach of the law? There is sufficient courage and determination in the trade to continue the course indicated by the proceedings at the Mansion-house last week, and in the end to eradicate the firms engaged in these nefarious practices. But I am bound to speak from my large experience of the seed trade in this country of the intense anxiety displayed by seedsmen generally that the manufacture and sale of worthless seeds should be prohibited, and I have witnessed with pleasure the decided tone in which they express their wish to assist in rooting out anything of a dishonest character in connection with their business."

—— The fine specimen of EUONYMUS RADICANS VARIEGATUS LATIFOLIUS, growing against Mr. PARKER'S house at Tooting, is bearing fruit this season for the first time. One or two other instances of the fruiting of this plant have been brought under our notice this season, but the occurrence is sufficiently rare to warrant it being recorded.

—— The following statement with reference to the SEED ADULTERATION BILL, and the proceedings recently taken in connection with it, has been handed us for publication :—

"When the Bill was promoted a pledge was given that it should not remain inoperative, and as soon as the Bill was passed an organisation was attempted for the purpose of carrying out the provisions of the Act; but from want of sympathy, arising partly from the belief that the passing of the Act would be cordially accepted, and nothing further would be wanted to prevent adulteration, it fell through at that time. For two or three years the agitation caused by the passing of the Act was sufficient to prevent any breach of it; then there were complaints that one establishment in London was doing a large business in dyeing and colouring Clover seeds. A detective officer was engaged, and solicitors were employed; but the officer reported, that although he could see the seed going into these premises and going out again, and though he had been in company with the men employed, yet they were so well paid and so well drilled in their duties, that it was impossible to obtain sufficient information upon which to ground a prosecution.

"After considerable time and money had been spent, it was resolved that a communication should be addressed to the agricultural and horticultural papers, warning the public that adulterated seed was being prepared, and for the time it was thought this was sufficient.

"It may be observed that no further complaints were made until last season, when it was reported that a considerable quantity of seed was doctored, and again it began to be looked upon as a matter of course.

"From past experience, which showed how difficult it was to bring the facts of the case home to the offenders, it was thought necessary to obtain powers to search premises where *primâ facie* evidence could be given that they were employed in the manufacture of adulterated seeds, and assistance was sought from the proper quarter; but from the lateness of the session, and the obstructions existing at that time, it was impossible to obtain it.

"In the beginning of July stronger representations were made, and it was considered desirable to make an investigation to discover the extent to which adulteration really was practised. This resulted in showing that several large establishments had been erected, new capital and several additional firms were engaged in this nefarious trade.

"The Inspectors in their second report thought that the strictest privacy was desirable; and when they had finished their investigation, and had completed their case against the offenders, their reports were laid before the Chemical and Botanical Committee of the Royal Agricultural Society with a view to their conducting the prosecutions—it being thought that a great public Society, representing such important interests, could better undertake the task than a few individuals whose efforts might be misunderstood, but whose object was only to maintain the benefits which the Act conferred upon honest trading, and to redeem the pledge given. Unfortunately, the Royal Agricultural Society was not able to move in the matter, although at the same time sympathising with its object. They could not accept so great a responsibility until the meeting of the Council in December. This left the course that was taken the only one open, as action must be commenced in a limited time from the date of offence being committed; and under these circumstances it was determined to proceed at once, and not lose the opportunity which months of labour had secured. It was not desirable to temporise further, as nothing but prosecution would be effectual.

"The benefits conferred by the Act, provided it be strictly enforced, cannot be overlooked; and in connection with this it may be mentioned that it is reported in one instance that 50 tons of Alsike were created last season by the aid of manipulation. When this transaction is borne in mind, and its importance estimated, the late disasters and surprises in the seed trade are not so unaccountable as they have seemed to be.

"What becomes of experience in inspection and calculation upon crops when the artist can step in and call into existence any quantity of seed for which he is offered payment, to say nothing of the degradation that such proceedings produce upon the standing and morality of the members of the trade?

"There are those behind who are more culpable than the actual manufacturers of these killed and dyed seeds, for if there were no purchasers there would be no temptation to break the law, and these ought to have accepted the Bill as carrying out the intentions of the Legislature. They may give trouble and annoyance, but in the end their defeat is certain to be complete; and they may rely upon it, there is enough courage and determination to continue the fight until adulteration is rooted out of the trade."

—— The annual general meeting of the NATIONAL ROSE SOCIETY took place at the HORTICULTURAL CLUB, 3, Adelphi Terrace, on Thursday last, when there was a good attendance of members. J. JOWETT, Esq., Hereford, was in the chair, and among those present were Dr. HOGG, the Rev. C. H. BULMER, the Rev. H. H. DOMBRAIN, and Messrs. MORLEY, TURNER, CUTBUSH, W. PAUL, G. PAUL, MCINTOSH, CORP, MAYO, &c. A statement of accounts was laid before the meeting, but owing to the auditor not having certified to their accuracy through the absence of some vouchers, the formal passing of the balance-sheet was adjourned. The receipts were returned at £417 12*s.* 4*d.*, among which the sum of £302 15*s.* 10*d.* figured as donations and subscriptions, and £67 16*s.* 6*d.* as the amount taken at the doors of St. James' Hall. On the credit side, the prize money paid amounted to £147 10*s.*, advertising and bill-posting, £71 7*s.* 6*d.*; printing and stationery, £67 17*s.*, while other items brought the expenditure to £417 8*s.* 2*d.* The Rev. J. B. M. CAMM sent in his resignation as one of the secretaries, which was accepted. The Rev. H. H. DOMBRAIN reported that the Crystal Palace Company had offered the committee the sum of £100, together with the services of their staff and exhibition appliances, if the show were taken to Sydenham—Saturday, June 29 in next year being the day named for the exhibition. Some objection was urged to the show taking place on a Saturday, on the ground of the inconvenience it would cause to the clergy and others coming from a distance; eventually the secretaries were instructed to write to the Crystal Palace Company to endeavour to get the date of the show fixed for Thursday, June 27, if possible. The subject of holding a show in the North of England was also considered, and at a recent meeting of the committee the Rev. Mr. DOMBRAIN was requested to write to the Secretary of the Royal Horticultural Society to inquire if the National Rose Society could hold an exhibition of Roses at Preston on the occasion of the great Provincial Show, the Royal Horticultural Society providing space, &c. To this application a reply was received to the effect that the Council informed the committee of the Rose Society that Roses are included in the schedule of the Provincial Show, and the Council trusted they would have the co-operation of the National Rose Society on the occasion of their show at Preston. It was then resolved that negotiations should be opened with the Council of the Manchester Botanical Society, with a view of holding a northern exhibition of Roses about the first week in July. In the event of this arrangement not being carried out, measures will be taken with a view to holding a show at Cheltenham about the same time. The Hon. and Rev. J. T. BOSCAWEN was elected Vice-President of the Society; and the names of Messrs. JOWETT, ATKINS, KEYNES, PRINCE, and CORP were added to the General Committee; the Rev. H. H. DOMBRAIN and Mr. MORLEY were elected Hon. Secretaries; and an Executive Committee was appointed to carry out the details of the exhibitions.

The Villa Garden.

MAKING A FRUIT GARDEN.—Last week we touched on "The Arrangement of the Fruit Garden," the "Soil for Fruit Trees," and "What to Plant;" and the article closed with a selection of the best sorts of Apples for pyramid and bush trees.

APPLES FOR STANDARDS.—In continuing the subject, "What to Plant," it may be remarked that there are some gardens where it might be desirable to plant standard trees as well as pyramid trees, or to plant standard trees wholly. The size of the garden and the general convenience has something to do with this, also the taste of the planter.

Here is a selection of eight dessert Apples well adapted for standard trees:—Yellow Ingestre, Kerry Pippin, Cox's Orange Pippin, Fearn's Pippin, King of the Pippins, Braddick's Nonpareil, Court of Wick, and Court Pendu-plat. This is an all-the-year-round selection, comprising early and late varieties, and thus, when there is sufficient quantity of the fruit, enabling the grower to have Apples till long after Christmas. A further selection of eight culinary Apples will be found in the following:—Blenheim Pippin, an Apple that is also esteemed by many as a dessert fruit; Wellington or Dumelow's Seedling, Lord Suffield, Stirling Castle, Cellini, and Mère de Ménage.

The standard fruit tree has scarcely been fairly dealt with by writers. Gardeners have been subjected to a kind of hectoring in the matter, and page after page has been written to demonstrate the superiority possessed by pyramid trees over standard trees as fruit producers. There has been a great deal of begging the question in favour of the pyramid tree, and on the principle that "time tries all" we may here advert to the fact, that persons carried away by this new wind of horticultural doctrine a few years ago, and who planted their gardens with pyramid trees, are now sighing for a standard tree or two to relieve the monotony of the appearance, and perchance give them a little fruit. The tendency of much of this teaching has been to make the culture of fruit subordinate to the formation of a "toy" garden, where the natural outcome of vegetable growth should be subjected to pinching and pruning, and checking in various ways, to maintain a uniformity of shape and symmetry of appearance. The best answer to this is found in the fact that good standard Apple and Pear trees are always scarce, so great is the demand for them.

And we are a shade-loving people too, and that provided by a good standard tree, while it is most acceptable to man, is beneficial to the growth of vegetation below it. A garden without something to impart shade is bereft of one of the prime features of an English landscape, and this necessary protection against the sun can in the case of a small garden be had by means of fruit trees as well as by any other tree. We simply plead for that liberty to plant according to the scope of the garden and the taste of the planter.

SELECTION OF PEARS FOR THE VILLA GARDEN.—The pyramid is certainly a favourite form of tree for the Villa fruit garden. Any one desirous of getting some good sorts of Pears on pyramids will find them in the following list:—Doyenné du Comice, Marie Louise, Maréchal de la Cour, Josephine de Malines, Winter Nelis, Glou Morceau, and Beurré Diel. This must be taken as a choice selection for a small garden, for a larger garden the list can be extended, for it does not include all the sorts best adapted for the purpose, but a few yielding what a Villa gardener will be certain to appreciate—a succession for eating.

If he wishes for a few good sorts for standards, he will find them in Doyenné d'Ete, Williams' Bon Chrétien, Louise Bonne of Jersey, Beurré d'Aremberg, Beurré Bosc, and Beurré Superfin; and further, if he should desire to add to the selection of pyramids just given, he will get what he requires in the sorts just recommended as standards, as they are suitable for the pyramid as well as for the standard form.

And there is no reason why the Villa gardener should not combine the useful with the ornamental. There is no necessary sacrifice of use to ornament by the introduction of illustrations of the modes of training trees found in some gardens. There may be the spreading standard, the graceful pyramid, and the dwarf bush—and these of themselves admit of pleasant variation in form—but there are also other modes

FIG. 140.—PENDULENT CORDON PEAR TREE.

FIG. 141.—VERTICAL CORDON PEAR TREE.

FIG. 142.—VERTICAL CORDON PEAR TREE.

of training in practice, which it would probably afford the Villa gardener much pleasure to imitate. We give two illustrations of how bush trees may be turned into upright or vertical cordons (figs. 141, 142): and a further illustration of how a low standard may be made to assume the form of a pendent cordon (fig. 140). It may be said this is reverting to the idea of a "toy garden" which in the earlier part of this paper we have appeared to condemn. What has been protested against is that principle of uniformity in fruit tree training which would have trees of one pattern filling a garden, and the doctrine which frequently accompanies the enforcement of this principle, that the pyramid tree with the continuous pinching process is the only one fit for planting in small gardens. There are many places in a garden where a tree trained similarly to those now represented can be placed, that would scarcely admit of a pyramid or bush being planted, and this is a matter worthy the consideration of the Villa gardener.

We have termed these trees "cordons" though they are not actually so, for a true cordon is said to consist of a tree having "a single branch, bearing fruit on spurs only, and never allowed to ramify." But it is not worth creating discussion over a term: the illustrations of training to which we have called attention will be readily comprehended by our readers.

Home Correspondence.

Wild Rice.—In consequence of several notices in your paper about wild Rice I got some over from a friend in Canada. He sent the seeds in a letter, but I am sorry to say not one seed germinated that I was able to discover. Some I sowed in an Orchid-house in a pan of water, and some I rolled up in some mud and threw into a pond, the rolling up in mud being to sink the seed and not let it get carried off at the outlet. I have asked my friend to try if he can get me some put into a bottle, then filled up with water and corked down, in which way I hope I may be able to get some to grow; also, if possible, to get me some of the roots, but if it be an annual that will be of no use. I also asked him to get me some Osage Orange seed, commonly called Bois d'Arc, and pronounced Budork or Burdock. Can any one say whether it will grow in this country? If so it would make a most excellent hedge, far before Thorn. I brought some over once and raised it in heat, but it did not succeed out-of-doors, at least all I had died. *J. R. Haig.* [Many unsuccessful attempts have been made to get the imported seeds of the Canada Rice to germinate. It has been in cultivation, but is difficult to keep. EDS.]

Planting Potatos in November.—About this time last year a number of letters appeared in the *Gardeners' Chronicle*, advising the planting of Potatos in November as a preventive of disease. I thought I would try this, and told the gardener to plant a few rows. He put in some Early Ashleaf and Walker's Early where we were to have Potatos planted in the spring. When the young Potatos showed I noticed that the spring-planted ones beat the others hollow in size and appearance of the shaws, but I said, Wait till digging time, whenever the gardener made any injurious comparisons as to the winter-planted ones. Growing time passed, and digging time came, and I asked the gardener how the special lot had turned out, and the report was, that bad as the spring-planted Potatos turned out the winter ones were still worse; the Walker's Early were both "small Potatos and few in a hill," and badly diseased and the Early Ashleaf were still worse, being very badly diseased indeed, few in number, small in size, and what little ones you did get almost useless.—*J. R. Haig, Blairhill, Stirling.*

The New Very Early American Peaches.—After a considerable experience in American Peaches, having grown nearly all known in Europe of these, the result has been to prove that their habit is unsuited to our English climate with but few exceptions. Like the American Potatos they degenerate after some seasons here, even under glass, and when grown with skill. There are, of course, some good kinds pretty well known now, and of these I hear the best reports of "Hale's Early," a favourite in its native climate, and I am thinking of trying it on the open wall. But by far the most remarkable at present are the new Peaches, the "Alexander" and the "Amsden June." Of these much is hoped, and I have them potted under glass, and hope to make a good report on them. I had them from Sawbridgeworth, and they look very promising healthy wood, plump buds, not too strong growers, just what orchard-houses require. My good old departed friend, whose loss I feel much, used to jest at my fondness for the "Yankee Peaches," especially the yellow ones, but always predicted that his seedlings would surpass them, and so they have.

Therefore we look with curiosity to see what the newcomers will perform. If they succeed they will give me Peaches in May without artificial heat, and may themselves become valuable for cross-fertilisation with Early Louise say, for that I consider the best early Peach as yet. But for the cracking at the stone Early Rivers is, however, earlier and sweeter—a grand Peach every way but this. *Thomas Bréhaut.*

Sericographis Ghiesbreghtiana.—This good old plant is not so much grown as it deserves to be. In the rage of late years for fine-foliage plants some of the good old blooming plants seem to have been lost sight of in many places, and this plant is one of them, as it is in only just a place here and there that one sees it, and then often in such a miserable condition that one cannot judge of its value. When grown well every one must admit it to be a useful and attractive plant at this season of the year, and all those who have to keep up a supply of plants and cut flowers for conservatory embellishment will find this a useful plant, as its smooth shining leaves and trusses of scarlet bloom make it very telling mixed with other plants. It is a subject of easy growth, as good plants may be grown from cuttings struck and grown on through the summer; by treating it liberally as to soil, &c., giving it a comfortable place in a stove or warm pit, and keeping it clean, as scale is its worst enemy, the grower will be repaid through November and December by some nice useful plants. *J. C. F. H.*

Thompson's "Gardener's Assistant."—In his otherwise very flattering notice of the new edition of the *Gardener's Assistant* in your issue of December 1 your critic objects to the price of the book as being too high for the pockets of many of those for whom it is mainly intended. Perhaps you will allow us to mention that the book is published in parts, as well as in the volume form, and will be completed in thirteen monthly parts at 2*s.* 6*d.* each. This brings the work within the reach of all, as the price may be spread over a considerable period instead of being paid at once. We may say that the work is very largely taken advantage of in this form by working gardeners, who, indeed, are our chief customers for the book. *Blackie & Son.*

Pinus insignis at Powerscourt.—A plant of Pinus insignis planted here in 1860, being then about 3 to 4 feet high, was blown down last month after having made the following remarkable growths in seventeen years from the time it was planted. It had attained the height of 41 feet, and measured 3 feet 2 inches in circumference of stem at 1 foot from the ground. Some of the annual growths were 3 feet 5 inches, and 3 feet 6 inches in length, and one was 3 feet 7 inches. Out of the great quantity of Conifers planted here Pinus insignis stands out pre-eminent, with its bright rich green foliage, which renders it easily distinguishable at a distance. Though it has proved to be not quite hardy in some parts of England, it is more hardy than many people are aware of. I have seen it withstand the frost when the thermometer had been within a few degrees of zero. This tree is remarkable for the great weight of foliage which it carries, hence the necessity of planting it in a good deep soil to bring out its massive foliage in perfection. If planted in dry gravelly soil the tree assumes a rusty appearance, and it will soon be perceived that it requires more nourishment. In most cases Pinus insignis withstands the wind admirably and makes free growths, and is well adapted for planting in proximity with the Cedrus Deodara. *C. Penford, Powerscourt Gardens, Co. Wicklow.*

Coloured Leaves.—May I be allowed to add to Miss Hope's charming list of coloured leaves the Pulmonaria sibirica (now so effective), and Arum italicum pictum for massive forms in her bouquet of foliage? The Rhus glabra laciniata can well afford to stand alone (though now it is leafless), and the happy possessor of a Grevillea Hillii tree can never be at a loss for exquisite foliage, lined with silver, to stand out against the deep crimson drapery of a winter evening. *H. M. E.*

The Eclipse Cauliflower.—It is not often I praise a new flower or vegetable, having been so often disappointed when I have grown and proved them to be far from what was expected, but I should like to say a word in favour of Dickson Brown & Tait's Eclipse Cauliflower. I bought a packet of seed last spring, and having grown it, do not hesitate to recommend it to every gardener in the kingdom as being in every way first-rate, and coming in at a time when other things are getting scarce, viz., in November and December. I have had a large square planted of the above, and a finer lot of Cauliflowers I would not desire to see, and they have been the admiration of all that have seen them. This is a vegetable second to none in my estimation (and my experience dates back for above thirty years), and it ought to be as well known as the All the Year Round Lettuce sent out by the same firm some years ago. *J. Eastwood, Didsbury.*

Rivina humilis.—Allow me to draw attention to one of the most charming of old plants, viz., Rivina humilis, which at this dull and dreary season of the year when flowers are scarce enlivens our stoves with its coral-looking racemes of ripe and ripening fruit. A dozen or two plants well grown will repay any one for the trouble bestowed upon them. Their culture is most simple and easy, for they grow readily either from seeds or cuttings, requiring a rich light soil, good drainage, and a moderate amount of water, with a temperature of from 50° to 60° in winter. In the West Indies, from whence it was introduced in 1699, it is called the Rouge plant, its berries being used as a cosmetic. *G. J. Warren, Balcombe Place.*

Christmas Roses.—A very good way of dealing with Christmas Roses is to have two batches of plants when they are for pot work, lifting each lot alternately. By doing them in this way the plants are always in good condition and can be depended upon. I know a place where this practice is followed successfully. It is only natural that after plants have been lifted one year and potted they should be allowed a season's rest for growth, preparing them for being flowered in pots for indoor decoration again. Where flowers for church decoration are in demand these plants at Christmas are especially valuable, and it is one of the hardy plants that will never go out of fashion altogether. Still for high class and beauty of form it cannot be compared to the Camellia; but the associations connected with the Christmas Rose no doubt have a good deal to do with the interest in its cultivation. The plants referred to are planted in beds at the base of a wall having a western aspect. The beds will have two or three rows each in them with alleys between, the soil being of a good prepared loam, and in summer a layer of short Mushroom dung is spread over the surface of the soil amongst the plants. *R. M.*

Veitch's Autumn Giant Cauliflower.—I am glad to see in the different gardening periodicals such good reports of this truly excellent autumn vegetable. For the last two or three seasons previous to this I had began slightly to despair of it, thinking that it might have degenerated or that we might have got some spurious variety introduced in its stead, but this season it has more than redeemed its character here and has been simply grand. We have been using it regularly since about the middle of September, and as a proof of the enormous size it may be grown to we have frequently during the last few weeks cut them from 30 to 36 inches in circumference, and about a fortnight back we cut one quite 45 inches in circumference, not coarse and open, but close, compact, and in every way a perfect Cauliflower. This followed by such varieties of Broccolis as Autumn Self Protecting, the true variety of Snow's Winter White, and others, with one or two such varieties as Lauder's Goshen, Carter's Eclipse, &c., will bring us on into the month of June, and with over winter plants and early sowings of the old Walchern Cauliflower for early summer months will enable any one if required to furnish good Cauliflowers or Broccoli nearly, if not quite, all the year round. *W. Nichol, Drinkstone Park, Bury St. Edmunds.*

Aponogeton distachyon.—Your excellent drawing and description (p. 649) of this very fragrant and charming old aquatic plant seems to have drawn forth remarks from several correspondents, which it well merits. In addition to the places named where it may be found growing it may be interesting to some of your readers to know that it grows tolerably well planted out in shallow rivulets here in East Anglia, where I fancy we at times get such cutting cold east winds as are not known in such genial counties as Somerset or Cornwall, but in our case it is very difficult to protect it from the ravages of ducks, wild fowl, snails, &c., all of which seem to be particularly fond of it. A running stream may be its favourite home, but I cannot help thinking on parterres ornamented with fountains, the basins of which frequently have to be furnished with aquatic plants, the Aponogeton would form a delightful object. I would not immerse the roots of the plants so deep under water as one of your correspondents suggests, but place the pots say 6 or 8 inches under the surface of the water, during the summer months at any rate. *W. Nichol, Drinkstone Park, Bury St. Edmunds.*

—— The description and figure of this very interesting water plant, given in the *Gardeners' Chronicle*, p. 649, is a very faithful one. It is well worthy of being brought into more general cultivation, both for its beauty and fragrance. Its hardy habit and free-flowering qualities, lasting from midsummer to late in autumn, are a high recommendation in its favour. Two places are mentioned in the article above alluded to where it succeeds in the open air. It may be some inducement to others to extend its cultivation to know that it is still in flower in the open air here. We have upwards of a dozen large stools of it growing in three separate fountains, which have lived for upwards of twenty years. The only difference that is made in winter is to lower the plants deeper into the water, or below where frost would reach. I have on several occasions seen the ice on the surface 6 or 8 inches thick, but the plants were always safe in spring. It seeds freely, and I have frequently seen dense tufts of young plants round the old ones. On two different occasions I took out a number of plants and threw them into a running stream with grassy banks on its margin, where I thought it would establish itself on the sides, but the place was grazed with sheep, and they disappeared after the first year. *J. Webster, Gordon Castle.*

The Leamington Broccoli.—Those who have not grown the Leamington Broccoli I would recommend to do so next season, for it really is a good hardy variety, the heads being large, white, and of delicate flavour; while the last and not least of its good qualities are that it is the connecting link between late Broccolis and early Cauliflowers. *G. J. Warren, Balcombe Place.*

Centropogon Lucyanus.—This being one of the most beautiful free blooming winter plants, and of such easy culture, should be grown by all having any demand for cut flowers through the winter season. Cuttings struck in spring and potted on into 6-inch pots make a very useful size, and do well in any cool house through the summer. They should be brought into the stove or intermediate-house early in October when in a few weeks they produce an excellent supply of flowers. A few sprays enclosed will prove its free blooming qualities. *C. H., Chalfont Park.*

Duke of Buccleuch and Golden Champion Grapes.—It is discouraging to young gardeners to see, time after time, men who are looked up to and considered good gardeners recording in the pages of the *Gardeners' Chronicle* their inability to grow satisfactorily the above Grapes. One great light coolly tells us "he has converted them into dust and ashes," and another shining light sincerely informs your readers that he only finds them worth growing in "his Curiosity Shop;" and lastly, we have Mr. McC. asking for enlightenment from those who have been more fortunate than himself. I happen to be one of those lucky individuals, and gladly comply with Mr. McC.'s desire. In the first place I never found either the Duke or Golden Champion do well in a hot, close, moist vinery; in such houses Golden Champion is usually spoiled with spot before it is coloured, and in this failing the Duke is but little better than his relative. But when grown and treated as Hamburghs require to be when it is imperative to have them at their greatest perfection, and this can only be attained (as all Grape growers know) when the Vines are allowed to start in spring of their own accord, then brought gently on in a cool brisk growing atmosphere and allowed to have a long season of growth. Treated in this way I believe the Duke can not only be grown well but can be kept in good condition till December, and the Golden Champion until January. In proof of what I state I send samples of both. You will see the Golden Champion is as fresh both in foot-stalk and berries as they were when first ripened three months ago. I find both sorts do better when budded or grafted on the Hamburgh, but not at the bottom of the rod. We are all agreed as to the magnificence of both Grapes, but in the little matter of cultivating them I think we still want education. While writing about Grapes I would like to know if any one has found Waltham Cross to turn out what it was professed to be, namely, a desirable white companion to Lady Downe's Seedling. As such it was awarded a First-class Certificate at a September meeting of the Royal Horticultural Society, an award that I have not seen anything in it to justify. I send samples of it for comparison with three of not the best but coarsest and worst flavoured sorts we have, viz., Calabrian Raisin, Syrian, and White Tokay. To intending planters of late Grapes I think your opinion on this will be valuable. *J. McIndoe, Hutton Hall Gardens, Guisborough.* [The Duke and the Champion were both excellent in texture and flavour, the former just going of, the latter quite fresh and plump. The other sorts are, in their present stage, decidedly inferior to the above, the Tokay and Calabrian Raisin being in the freshest and best condition. Syrian and Waltham Cross were both going off. EDS.]

—— I am not in the habit of replying to anonymous correspondents, but as this is a matter of considerable importance both from a horticultural and personal point of view, I should like to say a few words, in explanation, if not in vindication of my conduct in connection therewith. I saw the Grape in question for the first time at the International Fruit Show at Glasgow; the bunches shown were of moderate size, but compact and well formed; the berries were extremely large and well

finished; the flavour was good. The Duke there and then certainly arrested my attention, and induced me immediately afterwards to go to Clovenford and see it growing in quantity, and judge for myself. On my arrival at Clovenford, Mr. Thomson kindly showed me a large number of bearing rods of the Duke in fine health, in every respect as vigorous and healthy as the other Vines in the same house were. The fruit had been cut and sent to market off a number of the Vines, but a full crop was still hanging on a few others; both the bunches and berries were equal in size—indeed, nearly all fit for an exhibition table. I soon after forwarded a short communication to the Editors of the *Gardeners' Chronicle*, describing my impressions of these Grapes, the Vines, and their fruit as I saw them, which in due course was published. I thought I was doing the horticultural world a service by assisting to bring under their notice a new and promising fruit; but, forsooth, at the end of "five or six years" I am to be admonished for so doing by "J. McC.," and cautioned to be more careful in future. I decline both the admonition and the caution, as uncalled for and impertinent. When a new fruit first makes its appearance surely we are justified in describing it as it appears to us, its character we cannot be held responsible for, because it is to make; when we find it in perfect health and fruiting abundantly, as I did in the case of the Duke of Buccleuch at Clovenford, I was surely justified in saying so. Every one who has had much to do with fruit culture must have observed how much varieties are influenced by soil, subsoil, and climate, and how much all depends on judicious treatment; the Vine is certainly no exception, and it may be that the Duke is more susceptible in this respect than most other varieties of the Vine. We have not yet had sufficient experience to speak with certainty on the subject. It is well known that considerable difference of opinion exists amongst Grape growers as to the possibility of generally growing this Grape successfully; almost none as to its merits when well grown. To all I would say persevere, give it a fair trial. I cannot forget the history of other Grapes, particularly the Muscat Hamburgh, when it was sent out as a new Grape, now nearly twenty years ago; there was then a great run on it, almost every one who had a vinery planted it, in most cases amongst old-established Vines. The borders being either partially or wholly exhausted, often imperfectly drained, as might be expected under such treatment a cry was soon raised against it, "it would not set," "it shanked," &c., and in not a few places it was rooted out and discarded as unworthy of cultivation, all admitting that when well grown it was a superb Grape. Here and there it was found to do well, particularly where it had been planted in a new well-drained border, formed of turfy loam and rough bones, and so long as the border keeps porous and does not get sodden we hear little of its tendency to shank, even when grown on its own roots, which after large experience I prefer to do. May similar causes not have something to do with the numerous failures in cultivating his Grace, which "J. McC." and others complain of. Some time after the Duke was sent out I had two plants of it planted in an old vinery with the intention of inarching, but before they were in a fruit-bearing state I had to root out the old Vines, renew the border, and replant. I then planted a number of young Vines of the Duke, which this season produced a few small bunches, which set and finished well. I shall be glad in due course to report as to their future success or failure. *Archibald Fowler, Castle Kennedy, Stranraer.*

Odontoglossum Andersonianum.—Mr. Serjeant Cox's sample of the above species is certainly a most remarkable one. It must be a very fine branched raceme that produces forty-six flowers. The original plant which produced the first flowers seen in this country was a short-racemed species bearing eight flowers, and these flowers beautiful, though they have been eclipsed by at least two examples I have known—the one at the Messrs. Veitch's, Chelsea; the other at Mr. Wilson's, Westbrook, Sheffield. The latter is much the richest-flowered variety probably yet flowered in this country, having much broader segments with richer spotting in a comparatively clean white ground colour. Now both these varieties by no means throw large racemose spikes, and it is just possible that Mr. Cox's plant may be gloriosum! When I submitted the flowers to Professor Reichenbach at the time, he did me the honour to dedicate so rare and beautiful a plant. I and he were both clearly of opinion that there was a fusion of both habit and efflorescence of O. Alexandræ, or rather crispum and gloriosum, in the then novelty; and although the species have been generally found widely apart, still, anomalous as it may seem, the appearance of O. Andersonianum both in and out of flower is such as to justify us setting it down to being a "wild" hybrid. It is one of the few species even to the best practised eye that cannot be declared until its efflorescence is expanded (and no collector seems to know any special locality for it), but undoubtedly a first-rate form of it is worthy of the front rank among the many beautiful gems now cultivated in the cool Orchid-house. *James Anderson, Meadowbank Nurseries, Uddingston, N.B.*

Strawberries Vicomtesse Héricart de Thury and Garibaldi.—In these days the rage for novelties is so great, and there has been such a lot of so-called new plants and fruits sent out of late years that it has become quite difficult to make a selection from any list, and more so seeing when one has got many of the so-called new things and grown them they prove to be so much like the old sorts, or no improvement, that they are not wanted or not worth growing. I think this applies to Strawberries to some extent. Having grown the first-named kind, I can speak of it as a good useful heavy cropping early sort, and as I was at the Fruit and Floral Committee meeting at South Kensington on October 2, when a dish of both sorts was exhibited, this gave me an opportunity of seeing them both together, and both myself and two or three other practical men could see no perceptible difference in them. I thought of trying them both together, but before doing so I should be glad to hear the opinion of some cultivators who have grown them both. *H. G. C. J.* [Garibaldi is now regarded as being synonymous with the first-named. Eds.]

Pronunciation of Plant Names.—It is hardly necessary to add anything to Mr. Harpur-Crewe's remarks as to the pronunciation of Gladiolus, but I may be perhaps permitted a word on some other propositions in Mr. Grindon's second paper. Surely it is as easy and as correct to sound the *p* in psamma, psidium, and psoralea, as in psychology—a word that presents no difficulties to persons of ordinary education. The initial *x* of xanthorrhœa is a greater stumbling-block to English tongues, but it is not desirable to make any special effort to reduce it to the totally distinct *z*. Vishia, Blazhia, and Spurshium, are sufficiently offensive in themselves, and I have no doubt are distinctly vulgarisms, and how would Mr. Grindon have us pronounce "petiole"? Finally, to pass to the kindred subject of orthography, what is the authority for "dipthong?" *R. A. Pryor, Baldock, Herts.* [Dipthong is certainly a printer's error, and should read diphthong. Eds.]

Wood Copings to Walls.—Your correspondent, "J. S.," p. 627, has stated so fully and accurately the action of radiated heat in connection with copings that little more need be said on that point. But with reference to our wood copings in use here it may with truth be said of them that it would be quite impossible to bring either Peaches, Apricots, Cherries, or Pears to any purpose without such overhead coverings, for under the copings the wood on the trees against the walls ripens earlier, and the fruit is also protected from the heavy rains which fall here occasionally. It appears to me that glass copings will prove equally fitted to serve the same purpose as wooden ones, with this additional advantage, that the glass will admit the light directly to the tops of the trees under the coping, whereas in the case of our wooden ones the light is excluded, leaving at the top of the wall a bare unsightly appearance. But copings of themselves, whether consisting of wood or glass, would not be sufficient to ward off such intense frost as we had last spring. Something thicker than netting is required; in fact, I found sail-cloth suspended from the coping not too much to protect our trees from the frost, cold winds, and sudden bursts of sunshine after frosty nights. Our Peach walls covered in with glass required the same kind of protection as that just noticed. So that if "orchard-houses are to continue familiar things" it is to be hoped that we will be familiarised with more genial springs than we have had of late. *John Caie, Inverary Gardens.*

Orchids at Rawcliffe Gardens, Glasgow.—These are looking very well just now, and a large number are in flower. Calanthes are grown in quantity, and flower from early in October until February. They are grown in 6-inch pots, with from five to eight spikes to the pot. One thing that is specially kept in view is the preservation of their foliage as long as possible, and this adds very much to their appearance. This is obtained by growing them steadily on without a check until their last flower is expanded, and their last leaf shed. By this method the number of flowers to the spike is far in excess of what is usually seen, such as from thirty to fifty on vestita varieties, and Veitchii is equally well flowered. Arranged as these are together with the other plants in flower at the cool end of the large Mexican house, the whole makes such a grand sight as would lead any one to think that winter is the season for Orchid flowers above all others, and in fact such is the case at Rawcliffe, where every effort is made, every art employed to produce as much flower as possible while the family are there to enjoy it. Here we find Sophronites grandiflora, a great favourite, several in flower, three of them with seven, nine, and eleven flowers, each sufficient in themselves to light up a whole stage. Cattleya exoniensis proves itself to be one of the most useful autumn and winter flowers, being a good grower, flowers freely, and lasts long in beauty. A fine plant with three spikes and nine flowers has lasted in flower two months, and still looks as if it would last another month. What a pity it is that the true old Cattleya labiata is so scarce; it costs its weight in gold, and even then the propagator's hand most likely will have denuded it of most of its life's blood. One small piece is in bloom and excites a desire for more, but there is a limit to the importation of it. In Oncidium varicosum Rogersii the late importations have supplied a real want; O. aurosum we thought a lot of for winter bloom, until the former (a superior thing) unfolded and captivated us by its great beauty and usefulness. Amongst a number of plants in bloom there is one noteworthy spike which began to flower at the base in the end of June, and which afterwards rested for a while as if preparatory to making another great effort. It did start growing again, throwing out lateral branches as it grew, until now it is over 6 feet long, with eleven lateral branches nearly 2 feet long carrying two dozen flowers each. Amongst the Cypripediums in flower there is a large pan of bifolium with forty flowers, the greater number expanded, the others well advanced. This plant contrasts well with insignis, and is found to last much longer in bloom. Of Odontoglossums, of which there are a number in flower, the most noteworthy is Rossii giganteum, a perfect beauty, with six of its large flowers to the spike. Angræcum sesquipedale attracts great attention just now. It has two spikes and seven flowers, with a spur 16 inches long. Several Vandas are in flower and coming on, amongst them being V. Cathcartii. Aerides Veitchii, true, is flowering for the second time this season. Several plants of Saccolabium giganteum are in bloom, and amongst them one which is distinct from the ordinary type, having a much longer spike, and better in colour, besides flowering to the very point of the spike. Such are a few of the interesting subjects amongst Orchids that are in flower. The collection of plants at this place is well worth a visit, especially during winter and spring, while at all times there is much to see and interest one in such a large and varied collection. Just now the Ouvirandra is blooming freely, and in exceptionally good order, with the largest and best-grown leaves I have yet seen. *R. L.*

Cinerarias and the Frost.—I have had Cinerarias under my care most completely frozen, without any harm having been done to them, though of course every possible care was taken to thaw them slowly, and in the dark. Provided the plants were growing in a damp pit with means of heating if necessary at hand, I should not be afraid of trusting them to the tender mercies of a little frost, in fact our present stock passed through a few frosty days and nights last week with no more protection than that afforded by mats, however there were hot-water pipes to fall back on in case of emergency. Though I go very near the dangerous extreme myself with regard to keeping these plants cool, I would not advise others to do so under any circumstances where positive loss might accrue. *R. P. Brotherston.*

Viola Blue Bell.—It is quite certain that Verbena venosa deserves much more extended cultivation than it has hitherto had. It has other merits to recommend it beyond what "F. S." says, one in particular being that it can be raised in any quantities from seed, which requires to be sown early in a brisk heat, as the seed often takes a month to germinate. After this they only require the ordinary treatment of Perilla nankinensis, but although plants may be raised and planted out, and they flower very beautifully, it could not for a moment be compared with Viola Blue Bell either for colour, dwarfness, or for any merit that has been advocated for Verbena venosa. In October, 1876, we had a large breadth planted out on a light soil; the plants began flowering at Christmas, and continued in bloom until April, when it became one sheet of blue, in which state it remained all through the season. To test it thoroughly we had 500 or 600 plants taken up, divided, and planted out with the other ordinary bedding plants on a dry sloping bank, and although the weather continued moderately dry, the plants soon became one mass of flower, as was noted at p. 405 of the *Gardeners' Chronicle*; and hundreds that saw these two beds, and hearing of its treatment, could not be otherwise than unanimous in their opinion that no other plant could bear the slightest comparison with this as a blue bedding plant. *H. Cannell, Jun., Swanley.*

Do Roots Digest?—Your intelligent correspondent, "F.," is of opinion "that the roots of plants may elaborate, digest, or change the character of some of the food absorbed by them." It is impossible to contradict this theory, for there is undoubtedly

sympathetic nervous action going on in plants, but may we not look to the sun—the source of all light, heat, and force—as the prime mover and promoter of all action? My idea is this—I may be wrong, I merely suggest it as a natural inference—*i e*, that the sun has the power to elaborate such a sap in the leaves of plants as may, on descending and exuding from the bark of the roots, have the property of acting on those ingredients in the soil which are only suited for the organisation of itself. This seems a more rational theory than that the bark of the roots should have instinct to select food only suited for the development of the plant to which they belonged; and may I also add more natural than that a root should have the power of digesting the food presented to it. In all probability digestion goes on in the earth, the exuded sap appears to dissolve the ingredients in the soil, and the roots appear to absorb them as soon as they are dissolved, thus connecting the circulation. As soon as the sap is out of the root it is reabsorbed, slightly charged with the material it had digested during the short period the sap remained in the outer world. *Observer.*

A New Mouse-Trap.—We set traps for the black beetle, Blatta orientalis, baited with bread crumbs. Very frequently lately these traps, when inspected in a morning, have been found quite empty. On Monday last there was an explanation of this. When one of the traps was shaken out as usual over scalding water a mouse fell out of it. It is strange that always before both the ingress and egress of a mouse had been practicable through the glass cone of the trap. On Monday night two mouse-traps were set near this beetle-trap, which was baited as usual. On the following morning the beetle-trap was quite empty, one mouse-trap had been robbed, and a mouse had been caught in the other. *S. M. O., Exeter.*

Desfontainea spinosa as a Hedge Plant.—Is your correspondent "G. Dodd" (p. 695) in earnest when he says, why not have hedges and banks of it instead of Privet? As it appears to be so hardy with him, let him set the example of planting a hedge at once, and report through your columns the annual growth of it, for say five years. I fancy the annual report would be looked for with great interest by your numerous readers. I have seen but one instance of its perfect hardiness, and that was in the County Cork, the annual growth being from 1 to 2 inches, which caused it to bear a stunted look. In England I have never seen a plant 2 feet high. *W. A., Ford Manor, Lingfield, Surrey.*

—— I have noticed at p. 694 "A. R.'s" inquiry respecting the hardiness of Desfontainea spinosa: I beg to inform him that there is a good specimen of this plant at Coed-Coch, Denbighshire, North Wales. The locality is a cold one, although the immediate position of the plant is well sheltered, being on the side of a walk well surrounded by Rhododendrons, and about 3½ miles from the sea shore, between Rhyl and Llandudno. *Observer.*

—— This shrub is quite hardy here, and flowers to perfection. The garden is io nearly the centre of the Vale of Clwyd, 3 miles from Denbigh, 100 feet above the sea. *Arthur Mesham, Pontrvffydd, Trefnant, Rhyl.*

Aralia Sieboldii.—Having observed a notice of this ornamental shrub flowering in a cool greenhouse, I send you a specimen from the open ground at this place, which is literally covered with blossoms. In the lawn of my villa at Torquay I have a large specimen which gives me much satisfaction, but it is annoying to hear unlearned horticulturists exclaim, as several have done, "I see you have planted a new sort of Fig tree in your lawn!" *J. L., Combe Royal, Kingsbridge, South Devon.*

The Conservatory at Bestwood. — In the beautiful conservatory at Bestwood, Nottingham, the seat of his Grace the Duke of St. Alban's, are a couple of plants of Musa Ensete, which are fruiting and have a most noble appearance. They are grouped to produce a very fine effect, being surrounded with Palms, Dracænas, Yuccas, and Tree Ferns (these are all planted out). Celosias, Primulas, Chrysanthemums, Coleus, Cyclamens, Salvias, &c, are plunged in the bed, the whole producing as grand a spectacle as it is possible to wish for. There is also a splendid specimen of Papyrus antiquorum, with over sixty of its beautiful plumes, most of which are 12 feet high and 3 feet through the plume. As seen here this plant is an object of very great beauty for conservatory decoration. The roof is also adorned with Passifloras, Tacsonias, &c., and trained on the back wall is a splendid specimen of Lasiandra macrantha, answering admirably to the description given of a fine example at another place. I may also mention that one of the most durable and elegant floors for conservatory work has been laid here; it is Roman mosaic work, and for neatness and beauty I have seen nothing to equal it. Considering that this conservatory has only been built a little over two years, the grand effect produced reflects great credit on the skill and ability of Mr. Edmonds, the energetic gardener. *A. Outram.*

Veitch's Self-Protecting Broccoli and Autumn Giant Cauliflower.—Having grown the new Broccoli for the last two years with other sorts, I find that it is not so hardy, neither will it stand the wet so well as the Giant Autumn Cauliflower. I have now some of both in use, and the Cauliflower is looking as hardy and green as any of the late kinds of Broccoli, while the Broccoli itself is looking very sickly, many of the leaves having rotted off and left the young heads standing exposed to the weather. This may be owing to our ground being strong and wet (although other kinds do well), as it was the same last year. By making two or three plantings of the Cauliflowers I have had a supply up till Christmas. With the late planting being planted about 15 inches apart we get nice small heads, so that we use about three for a dish, such as I send you. The Cauliflower with us has been spoken of as being far the best when cooked, eating much softer and more tender altogether. *J. Lane, Pyrgo Park.*

Covering Early Vine Borders.—As "S. W. the Second" has asked what are the daily readings of the temperature of the outside borders where fermenting material is not used or the weekly means, allow me to reply that I have never taken the trouble to ascertain, but I have on two occasions tested the temperature of the border where fermenting material was used, and found that at 18 inches from the surface, and even at a much less depth, there was no perceptible difference as compared with a border simply covered with leaves. I do not think the question is of much importance. This experiment I made during the winters of 1861 and 1862, and I feel thoroughly convinced that, whatever amount of heating material be placed upon the border, it is impossible to drive the heat far down into it, and unless it can be driven down more than a foot or 18 inches, I cannot see that we are gaining anything by placing it there. Your correspondent's second question, as to what I consider "fermenting material to mean," is very easily disposed of. I consider the best heating material for such purposes as that under discussion to be leaves mixed with rather more than one-third stable manure. Most gardeners I think will admit that leaves used by themselves alone in anything like the quantity that would be amply sufficient for this purpose would not heat at all, or, if at all, only to such a limited extent as not to convey any heat to the Vine border. If "S. W. the Second" thinks that it is "something new" to grow early Grapes without the aid of fermenting material on the border, he must surely be very much mistaken, as early Grapes were grown in this way many years before ever the system of placing heating material on the borders come into use. My father, who for many years had the management of a nobleman's garden not many miles from here, was in the habit of sending to his employer's table Grapes in every month in the year, and he never in the whole course of his experience placed a single barrowful of heating material upon his borders; and I could mention many gardeners at the present time who have forced early Grapes for many years, and whose Vines are in excellent health without ever using it. More than that, I know many also who used to use it for years, but have discontinued to do so, stating as their reason that they do not believe it does any good and is simply a waste of material of a kind that they have none too much of. Unless your correspondents can prove that they can grow better Grapes, or as good Grapes, in a much less space of time with the hot-manure system than we can without it, I consider we have the best of the argument. A covering of a foot of leaves, with just a thin scattering of straw on the top, will exclude all frost from the border, and that is very nearly as much as can be said of fermenting material. *G.*

Reports of Societies.

Royal Horticultural: *Dec.* 5.—G. J. Clark, Esq., V.P., in the chair. The business transacted at the afternoon meeting was of the usual routine character, the awards of the Floral Committee being announced by its chairman of the day, and those of the Fruit Committee by Dr. Hogg, who made a few comments on the more interesting subjects exhibited.

SCIENTIFIC COMMITTEE.—Sir Joseph D. Hooker, Pres. R.S. in the chair.

Effects of Sandstorms on Wood.—The President exhibited samples obtained by himself in his recent tour in the Rocky Mountains of wood scored and furrowed by the action of the sandstorms, which produce a precisely similar effect to the sand-blast, now turned to practical use in the engraving of glass, &c. We shall allude more fully to this subject on a future occasion, when, with Sir Joseph's permission, we shall be enabled to give an illustration of these curious effects.

Urocystis Violæ.—Mr. Hemsley exhibited leaves of Violet swollen and deformed from the presence of a Fungus, Urocystis Violæ.

Lapland Plants.—Rev. George Henslow exhibited a full-grown plant of Betula nana some 12 or 14 inches in height, with other specimens, from Lapland, brought over by the natives of that country at present at the Westminster Aquarium.

Double Flowers from Australia.—Dr. Masters exhibited double flowers of Ranunculus lappaceus and of Eriostemon obovalis, which he had received from Baron Ferd. von Mueller. Both were remarkable as illustrating the occurrence of double flowers in Australia, a circumstance at one time doubted by the late Dr. Seemann; but the occurrence of the double Epacris originally noted by Mr. Hemsley, and of other instances, show that the supposed infrequency of such flowers in a wild state in the southern hemisphere is due rather to imperfect observation than to any absolute deficiency. The Eristemon above-named would from its beauty make a most desirable plant for introduction into our greenhouses.

Bulimus Goodallii.—Dr. Masters showed specimens of this pretty little snail received from a correspondent. It was originally introduced in some way from the West Indies to the nurseries of Messrs. Maule, of Bristol, and has subsequently been met with at various places, generally in Cucumber-pits.

Coccus flocciferus, &c.—Mr. Murray exhibited on the part of a correspondent a Camellia leaf affected with this insect, of which we subjoin a cut (fig. 143).

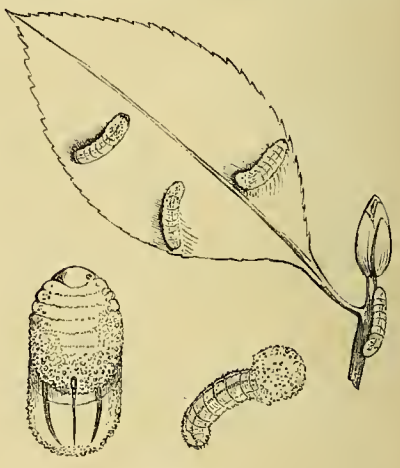

FIG. 143.—THE CAMELLIA COCCUS.

Peach Roots.—Specimens of the roots alluded to in our last issue, p. 688, were submitted to the meeting.

Agaricus geotropus or gilvus.—A beautiful specimen of this fungus was exhibited from Mr. Miles, gr. to Lord Carington, at Wycombe Abbey, in the grounds around which mansion it had been found. It is a handsome fungus of symmetrical form, whitish colour, and slight aromatic fragrance. It is reported to be edible.

Culture of Lilies.—Mr. G. F. Wilson related the results of his experience of the culture of Lilies in long deep pots, as explained at p. 659.

FLORAL COMMITTEE.—G. F. Wilson, F.R.S., in the chair. The concluding meeting of the year was by no means the least interesting of the series held since January last, the Council-room being well filled, and presenting a very cheerful appearance for a dull December day. First-class Certificates were awarded to Mr. William Bull for a distinct and handsome Tree Fern from the Sandwich Islands, Cibotium pruinatum; for the curious yet very elegant and highly coloured Croton picturatus, and for a distinct and bold habited South American Palm, Geonoma princeps. To Mr. Turner, Slough, for Tree Carnation A. Alegatière, the very fine novelty previously alluded to at p. 658. To Mr. Cannell, Swanley, Kent, for Pelargonium White Vesuvius, a veritable counterpart of the well koown scarlet-flowered variety, from which indeed it is a sport. To Messrs. E. G. Henderson & Son, Pine-apple Place Nursery, Maida Vale, for Chrysanthemum Golden Empress of India, a fine golden sport from the well-known incurved white. To Messrs. Jackson & Son, Kingston, and Mr. J. W. Moorman, gr. to the Misses Christy, Combe Bank, Kingston, for Chrysanthemum Fulton, one of the Japanese section—of exquisite form and a beautiful yellow colour, an advance in this latter respect even on such a fine yellow as Jardin des Plantes. And to Mr. R. Dean, Ealing, for Tropæolum Perfection, a very useful, free winter

flowering variety of a rich scarlet-crimson colour. The award of a certificate to this flower was well-deserved, but it might have been given sooner. The plant has been many times shown during the last five or six years in much better condition than on this occasion, but always passed over on the ground that it was not sufficiently distinct from Mrs. Tredwell. However, it furnishes another admirable instance of patience and perseverance meeting with their due reward. Messrs. James Veitch & Sons again contributed an attractive group of Orchids, mainly consisting of Calanthes, Lælias, Cattleyas, Cypripediums, Lycastes, Masdevallias, and Odontoglossums, but including a very fine specimen of Cattleya exoniensis, with seven spikes and twenty-two richly-coloured flowers. The award of a medal to this specimen was recommended by the committee. In addition to the plants above-named, Mr. Bull exhibited a few handsome Cycads, a magnificent cordon of flowers of Lapageria rosea superba, with eighteen flowers on a growth about 18 inches long sent to him by J. P. Kitchen, Esq., Manor House, Hampton; examples of the striking Dracæna Goldieana, and several young plants of Anthurium Veitchii—the large bold-leaved species described and illustrated at p. 773, vol. vi. From Mr. Parker, Tooting, came cut flowers of the fine Tritoma grandis, the large tinted white flowered Helleborus niger maximus, the sweet-scented Lonicera fragrantissima; the white and rose-coloured plumed varieties of Gynerium argenteum, the white small bell-flowered Arbutus Andrachne, Rosa rubiginosa, with a profusion of its showy coral-red "haws;" Saxifraga (Megarsa) rubra, Aponogeton distachyon, Erica codonodes, Gentiana acaulis, Tussilago fragrans, &c. A vote of thanks was accorded. Messrs. Jackson & Son also sent a stand of Japanese chrysanthemums which included two very good flowers in Nuit d'Hiver, a brooze-coloured flower of fine form, and La Nymphe, a fine pink flower, with a white centre and toothed petal. New Pompon Chrysanthemums in Purpurea odorata, rosy-purple, and Prince of Orange, a bronze-yellow, came from Messrs. E. G. Henderson & Son. Mr. J. Chambers, Westlake Nursery, Isleworth, exhibited several plants of the beautifully cut-leaved Asplenium viviparum. From Mr. Mill, gr. to Lord Rendlesham, Rendlesham Hall, Suffolk, came a grand cut spike of Oncidium æmulum, about 10 feet long, with a dozen branchlets of flowers. A Cultural Commendation was awarded. The useful old Centropogon Lucyanus was well shown by Mr. Ollerhead, gr. to Sir H. W. Peek, M.P.; and the old double white Primula, in fine form, was sent up by Mr. Barron from Chiswick. From Waltham Cross Messrs. Wm. Paul & Son sent up examples of the yellow and orange berried Hollies, and also specimens of a very glaucous form of Picea nobilis.

Fruit Committee.—Henry Webb, Esq., in the chair. For the number and variety of the subjects exhibited, there has been no more interesting meeting this year than the one which brought the labours of the committee to a close for 1877 on Tuesday last. Included amongst the more noteworthy subjects staged were a group of Pines brought up from Combe Abbey by Mr. Miller, gr. to the Earl of Craven. Five of these were capital examples of Smooth Cayennes, of the aggregate weight of 25 lb.; a very good Enville, and an equally good specimen of a Pine received from Pernambuco, and which some of the members of the committee believed to be identical with the variety grown under the name of Prince Albert. Mr. Miller was accorded a vote of thanks. Mr. J. Muir, gr. to C. R. M. Talbot, Esq., M.P., Margam Park, South Wales, sent an interesting assortment of Citrons, including Shaddocks, Lemons, and several varieties of Oranges, gathered from trees which have been grown at Margam Park for more than 300 years, and some of which are now bearing from 400 to 500 fruits. Mr. Muir stated in a communication accompanying the fruit, that the trees are annually grown out-of-doors from the middle of May until the middle of October, and wintered in houses without any artificial heat. A vote of thanks was passed. Mr. Atkins, gr. to Colonel Lloyd Lindsay, M.P., Lockinge Park, Wantage, showed exceedingly well grown and well preserved samples of Muscat of Alexandria, Black Alicante, and Black Hamburgh Grapes, and was awarded a Silver Medal. A well-finished and exceedingly good flavoured dish of Barbarossa Grapes was contributed by Mr. Wildsmith, gr. to Lord Eversley, Heckfield Place, and a Cultural Commendation was awarded. We have never tasted a better flavoured sample of this Grape, and the Commendation of the committee was well deserved. Mr. Sidney Ford, gr. to W. E. Hubbard, Esq., Leonardslee, Horsham, brought up an admirable collection of three dozen varieties of Apples, all of fine size and high quality. Mr. Skinner, of Boughton Moochelsea, near Maidstone, also showed a well selected collection of Apples, consisting of varieties usually grown under orchard culture in that district. A fine sample of Blenheim Pippins were shown by Mr. Chambers, Westlake Nursery, Isleworth, and a Cultural Commendation was the award made to them. Mr. Fenn, the Cottage Farm, Sulhamstead, near Reading, also sent a collection of Apples, mostly for identification. Messrs. Veitch's new self-protecting Broccoli was admirably shown by the firm who sent it out, and also by Mr. Wildsmith, and the committee awarded a First-class Certificate—an honour which, according to all accounts that have reached us, the variety in question well deserved. Veitch's Autumn Giant Cauliflower, one of the very best novelties of late years, was also well shown by Mr. Jones, gr., Bently Priory, and by Mr. Gilbert, of Burghley. Mr. Gilbert also sent a couple of brace of Col. Clarke's selection of Telegraph Cucumber, which were of nice size as to circumference, and about 16 inches in length; evidently a grand type. Mr. Roberts, gr. to Baron Rothschild, Gunnersbury, also sent a similar quantity of Telegraph Cucumbers, about 12 inches in length—a very good sample. A fine brace of Tender and True, about 2 feet long, came from J. McIntosh, Esq. (Mr. Taylor, gr.), Duneevan, Weybridge. Mr. Miles, gr. to Lord Carington, received a Cultural Commendation for a fine dish of freshly ripened Tomatos; and Mr. R. Dean, Ealing, was accorded a vote of thanks for a capital sample of the American dwarf purple-topped Turnip.

Messrs. Stuart & Mein, Kelso, again exhibited good examples of their handsome triple-curled Borecole, which was Culturally Commended. Well-grown examples of several fine varieties of Cabbage were brought up from Chiswick by Mr. Barron, and proved a source of considerable interest to the growers present. A cordial vote of thanks to the Chairman was unanimously passed at the conclusion of the usual business.

The Bingley Hall Show, Birmingham.—The twenty-ninth annual exhibition of agricultural stock, roots, corn, implements, poultry and pigeons, has just been held, and the constituent atoms more recently dispersed in all directions. The show opened on Monday and closed on Thursday last. It is no part of our duty to report on such displays in detail, but many of our readers may like to know something about the show, and especially of that portion of it which in part, at all events, may certainly be claimed as horticultural. We need scarcely say we refer to Potatos. There were in this department seventy-six entries, and these, with an exhibit not for competition were represented by three hundred and fifty dishes. The exhibitors came from the counties of Dumfries, Durham, Fife, Nottingham, Leicester, Salop, Kent, Oxford, Stafford, and Middlesex. There were Potatos of two very distinct styles shown: those grown by the painstaking gardener, and those grown by ordinary field cultivation. The contrast was instructive. Of course the gardener had the best of it; though comparing past exhibitions with the present, it is plain that the agricultural mind has been "moved," for there were very few dishes of the ordinary big, coarse ugly tubers usually shown by farmers, such as have almost always predominated heretofore. On the other hand the gardeners have been able to produce quality and weight. It is therefore fairly deducible that these contests are for the public good.

Many sorts of Potatos which of late years have been most frequently exhibited have apparently ceased to occupy the position which they once held with so much firmness. At one time Paterson's Victoria would have been shown in every eligible class; this year it was shown most sparingly, and nowhere in first-rate form. On the other hand, Sutton & Sons' new variety Magnum Bonum has been shown profusely, and in most cases in admirable condition. This is clearly one of the most valuable of new Potatos. We have seen altogether a large number of samples all true to the typical form, and all looking as though they would be acceptable on the dining-table.—Class 17 was for twelve varieties, distinct, twelve tubers of each. First prize, and Messrs. Sutton & Sons' extra prize, a cup, value 5 guineas, was awarded to Mr. Peter McKinlay, Beckenham, Kent, for a wonderfully level, uniformly excellent exhibit, every tuber of good size and with a general appearance suggestive of having been modelled to order; skin clear and smooth, and no deep eyes; in short, in every respect perfect. The varieties were McKinlay's Pride, a fine new sort; Emperor, Salmon Kidney, Snowflake, Porter's Excelsior, Grampian, Blanchard, Ashtop Fluke, Model, Early Rose, Purple Ashleaf, and King of Potatos. The 2d prize went to Mr. Henry W. Woods, Clipstone Park, Mansfield, for twelve good dishes, consisting of King of Potatos, Blanchard, Porter's Excelsior, Salmon Kidney, Red Regent, Snowflake, Bresee's Peerless, Extra Early Vermont, Flourball, Climax, International Kidney, and Marchioness of Lorne—a very good collection, but lacking the refinement of the premier one. The 3d prize went to Mr. W. Finlay, the Gardens, Wroxton Abbey, Banbury. There were nine exhibitors of twelve dishes.—Class 18 was for eight varieties, of each twelve tubers, four varieties English, and the remaining four American, to include Carter's Breadfruit. The 1st prize, a silver cup, value 5 guineas, given by Messrs. James Carter & Co., London, was won by Mr. McKinlay, with eight capital dishes of Snowflake, Late Rose, Salmon Kidney, Breadfruit, Taylor's Seedling No. 1, Brownell's Superior, International Kidney (very large), and Schoolmaster. The 2d prize went to Mr. James Payne, Stoke Golding, near Hinckley; and the 3d to Mr. W. Finlay. — Class 19, set apart for six varieties, distinct, of each twelve tubers, all the prizes being given by Messrs. J. C. Wheeler & Son, Gloucester. There were ten competitors. Mr. McKinlay was again 1st with tubers equal in quality to those shown by him in the former classes, though rather smaller, the kinds being Blanchard, King of Potatos, Porter's Excelsior, Purple Ashleaf, Grampian, and McKinlay's Pride. Mr. Pickworth was 2d and Mr. Payne 3d. Mr. Thomas B. Thomson, of 20, High Street, Birmingham, provided all the prizes in class 20, for four varieties, distinct, of each twelve tubers. Mr. P. McKinlay was once more 1st, showing Common Walnutleaf, McKinlay's Pride, Garibaldi, and Model; Mr. Woods 2d, Mr. Payne 3d. There were eight competitors. The other classes do not need particularising.

On behalf of Messrs. B. K. Bliss & Sons, of New York, Messrs. Hooper & Co., of London, exhibited about sixty kinds of American-grown tubers. These Potatos were a source of much attraction. They were very prettily staged, and included a number of new varieties, of which no doubt more will be heard by-and-by.

Of other roots but little need be said. The Swedes were uniformly good, the Mangels rather inferior, the season having been too sunless for them. For six specimen long Mangels, Mr. Thomas Penn, Worming Hall, Thame, was 1st, with roots weighing 149 lb. He was also 1st for Globes, with six weighing 121 lb. For Swedes of any variety Mr. C. Tudor, Burntwood, Lichfield, was 1st, with six weighing 81½ lb. The prizes for Ox Cabbages went to Mr. Samuel Robinson, Melbourne, Derby, for his own variety, Champion, for specimens weighing 63½, 56, 52½, 50, 49½, and 48½ lb. There were good exhibits of Carrots, three of the prizes going to the Duke of Portland, and a small show of Wheat, Barley, Oats, Peas, and Beans. The entries of live stock were—cattle, 113, sheep, 69, pigs, 64, poultry, 2077 pens, and pigeons, 629. The display of implements was large, varied, interesting, and instructive. The seedsmen were by far the most important trade exhibitors. Messrs. Jas. Carter & Co.'s large and imposing stand was as attractive as ever. It displayed selected roots culled from their recent show in London, the Potatos being numerous and very interesting, arresting the attention of every one who saw them, many of the tubers looking as though they represented carefully selected and improved strains. Messrs. Sutton & Sons made, as they always do, a most varied and striking exhibition. They showed a quantity of their Magnum Bonum Potato, which fully bore out what we have said above of its excellence. Messrs. Webb & Sons had also a well-filled and attractive stand, and so also had Messrs. Harrison & Sons. Speaking of the exhibition as a whole, it was most satisfactory. There was nothing super-excellent, there was nothing very mediocre; the general average in all departments was thoroughly good.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Dec. 5, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°				In.
Nov. 29	28.77	−0.95	45.1	39.0	6.1	42.4	+ 0.7	38.4	86	S.W.	0.25
30	28.89	−0.83	47.8	36.9	10.9	42.2	+ 0.5	38.0	86	WSW: W.	0.07
Dec. 1	29.22	−0.52	43.7	38.1	5.6	41.5	− 0.2	40.5	96	S: N.	0.36
2	29.83	+0.09	47.0	37.1	9.9	42.5	+ 0.7	39.2	88	NNE: N.E.	0.03
3	29.95	+0.21	47.7	39.5	8.2	44.0	+ 2.2	42.9	95	NNE: N.E.	0.10
4	29.80	+0.04	46.0	40.6	5.4	43.1	+ 1.3	40.7	91	N.: N.N.E.	0.02
5	29.74	−0.02	45.3	39.4	5.9	42.3	+ 0.6	39.9	91	NNE: NNW	0.02
Mean	29.46	−0.28	46.1	38.7	7.4	42.6	+ 0.8	39.9	91	N.	sum 0.85

Nov. *29.—Dull and wet till afternoon; then fine and bright. Slight rain at times in evening.

* Barometer reading, at 9.25 A.M., 28.670 in.; 10 A.M.,

Nov. 30.—A fine day, partially cloudy. Cold. Little rain in morning.
Dec. 1.—Overcast, dull day. Wet till 1 P.M. Very dark, gas required from 11 to 11 45 A.M., during which time the wind changed from S. to N.
— 2.—A fine day. Cold and cloudy. Little rain in early morning.
— 3.—Overcast, dull, miserable day. Thin rain fell. Cold.
— 4.—Overcast and dull throughout. Little thin rain in morning and evening.
— 5.—Overcast, dull day. Slight rain in early morning. Cool.

LONDON: *Barometer.*—During the week ending Saturday, December 1, in the vicinity of London, the reading of the barometer at the level of the sea increased from 29.21 inches at the beginning of the week to 30 03 inches by the night of November 25, decreased to 29.05 inches by the evening of the 27th, increased to 29.30 inches by mid-day on the 28th, decreased to 28.85 inches by 9 25 A.M. on the 29th, and continued at this reading till about noon, and then increased to 29.64 inches by the end of the week. The mean reading for the week at sea level was 29.38 inches, being 0.24 inch below that of the preceding week, and 0.53 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 53½° on the 27th to 42¾° on November 25; the mean value for the week was 47°. The lowest temperatures of the air observed by night varied from 32° on the 26th to 41¼° on the 27th; the mean for the week was 37¼°. The mean daily range of temperature in the week was 9¾°, the greatest range in the day being 16½° on November 26th, and the least 5½° on December 1.

The mean daily temperatures of the air and the departures from their respective averages were as follows: — November 25, 39°.2, — 2°.4; 26th, 39°.8, — 1°.8; 27th, 47°.2, + 5°.6; 28th, 42°.5, + 0°.9; 29th, 42°.4, + 0°.7; 30th, 42°.2, + 0°.5; December 1, 41°.5, — 0°.2. The mean temperature of the air for the week was 42°.1, being 0°.5 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 92° on November 28, 91° on the 26th, and 79° on the 30th; but on December 1 the reading did not rise above 58°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 27° on November 26, and 28° on the 25th; the mean value for the week was 32½°.

Wind.—The direction of the wind was S.W., and its strength moderate. The weather during the week was generally dull, cool, and showery. Great gloom prevailed on Saturday, December 1; from 11 A.M. till 11.45 A.M. gas required.

Rain fell on six days during the week, the amount collected was 1.10 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 55° at Truro, 54° at Portsmouth and Plymouth, and 53½° at Blackheath; the highest temperature at Sunderland was 47°, and at Wolverhampton was 47⅓°; the mean value from all stations was 50½°. The lowest temperatures of the air observed by night were 26¾° at Eccles, 28° at Nottingham, and 29° at Hull; the lowest temperature of the air at Sunderland was 35°, and at Truro, Plymouth, and Portsmouth all 34°; the general mean from all stations was 32°. The range of temperature in the week was the greatest at Eccles, 22¼°, and the least at Liverpool and Sunderland, both 12°; the mean range of temperature from all stations was 18½°.

The mean of the seven high day temperatures was the highest at Truro, 51¾°, and Plymouth, 50¼°, and the lowest at Bradford, 52¾, and Hull, 43¾°; the mean value from all stations was 46½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 31½°, and at Nottingham, 32¾°, and the highest at both Portsmouth and Truro, 40°; the mean from all stations was 36½°. The mean daily range of temperature in the week was the least at Bradford, 6¾°, and the greatest at Wolverhampton, 13°; the mean daily range of temperature in the week from all stations was 10°.

The mean temperature of the air for the week from all stations was 41°, being 3° lower than the value for the corresponding week in 1876. The highest were 45½° at Truro, and 44½° at both Portsmouth and Plymouth; and the lowest were 37¾° at Wolverhampton, 38¾ at Nottingham, and 39° at Hull.

Rain fell on every day in the week at places in the south and south-west of England, and on five or six days at stations in the Midland counties. At Plymouth 2.62 inches fell, at Truro 2.27 inches, and at Brighton 2 inches. At Sunderland 0.40 inch only was measured; and in Yorkshire generally about ¾ inch was recorded. The average fall over the country was 1¼ inch nearly.

The weather during the week was generally dull and showery, and the sky cloudy.

Snow fell at Bradford on Wednesday, November 28

SCOTLAND: *Temperature.*—The highest temperatures of the air observed by day varied from 48° at Leith to 44° at Dundee; the mean value from all stations was 46½°. The lowest temperatures of the air observed by night varied from 29° at Aberdeen to 34° at Greenock; the mean value from all stations was 31¼°. The mean range of temperature from all stations was 15¼°.

The mean temperature of the air for the week from all stations was 38½°, being 2½° higher than the value for the corresponding week in 1876. The highest was 39½°, at Glasgow, and the lowest 37½°, at Dundee.

Rain.—The falls of rain varied from 2½ inches at Aberdeen to a quarter of an inch at Leith. The average fall over the country was 1 inch.

DUBLIN.—The highest temperature was 53°, the lowest was 33¼°, the range 19¾°, the mean 41°, and the fall of rain 0.10 inch.

JAMES GLAISHER.

28.678 in.; 10.30 A.M., 28.680 in.; 11 A.M., 28.680 in.; 11.30 A.M., 28.690 in.; 1.30 P.M., 28.736 in.; 3 P.M., 28.789 in.; midnight, 28.994 in.

Enquiries.

He that questioneth much shall learn much.—BACON.

217. UNFRUITFUL PEAR TREES.—Can any of your correspondents inform me of the best mode of treatment to produce fructification in some pyramid Pears, which grow and bloom freely year after year, but bear no fruit? They were removed five years ago, and root-pruned two years back, and are about ten years old. They have been well and scientifically pruned. *G. P. D., Watford.* [What about the situation? EDS.]

218. GLASS OR CHROMATIC BEDS.—Can any of your correspondents inform me where materials can be obtained for the glass or chromatic beds invented by Mr. Nesfield many years ago? Is there any published description of them? *W. R.*

219. WALNUT TREE BLEEDING.—A few years ago I had to cut a Walnut tree which hung too much over the drive. It was done in winter, but still it bled so much that I feared injury to the tree. This year I must cut it again. Is there anything I can apply to the branch to stop the bleeding? *D. K. M.* [Try painter's knotting, or Thomson's Styptic. EDS.]

Answers to Correspondents.

ADDRESS: *W. P. K.* Mr. Jones, The Royal Gardens, Frogmore, Windsor.

AGARICUS CAMPESTRIS: *Young Gardener.* Certainly it is, and the best of all. Your informant is a dunce.

BOILER: *H. R. H* We cannot answer your question without knowing more of the circumstances under which you are placed, but we should think it most likely an ordinary saddle boiler will suit you best.

BOOKS: *Young Gardener.* The best Gardener's Dictionary, by which we suppose you mean a plant catalogue, is Paxton's *Botanical Dictionary* (25*s.*), published by Messrs. Bradbury & Co.

DENDROBIUM ALBUM: *J. M. Rockhouse.* The true D. album is an East Indian species.

CAMELLIAS: *H. B.* The cause of the buds dropping cannot certainly be determined without fuller knowledge of all the conditions. If they have not been too dry at the root, they have probably been subjected to too dry an atmosphere, and perhaps too much heat.

CHAMÆCLADON OBLONGIFOLIUM: *J. T. R.* We do not know the plant, nor can we find any reference to it.

CYPRIPEDIUM INSIGNE: *J. L. P.* Yes. Very good.

DACTYLIS GLOMERATA: *E. O.* Not uncommon in wet autumns.

ELEMENTARY BOTANY: *H. R. H. Botany for Beginners* (Bradbury & Co.), *Oliver's Lessons in Elementary Botany* (Macmillan).

ELRUGE AND VIOLETTE HÂTIVE NECTARINES: *H. M. E.* The difference between these two varieties is to be found in the colour of the flesh round the stone; that of Elruge being white, and of Violette Hâtive red. They are distinct, but those who grow one do not want the other.

EUONYMUS AS GAME COVER: *J. H.* We have no experience, but should not think it a very desirable subject. But you do not state which Euonymus you refer to—the evergreen or deciduous.

EUONYMUS JAPONICUS: *Z. Z.* The variegated varieties of this plant all strike equally well from cuttings under a hand-glass. Of those you mention that named ovata aurea would be the freest grower.

EUPATORIUM WEINMANNIANUM: *A. H. H.* Yes.

FRUIT TO NAME: *A. F.* Your Apple is unknown to us.

FUNGUS IN TURF: *E. P. F.* It is impossible to say to what fungus the Mycelium belongs. As it is taken from rings, it may possibly be the spawn of the Fairy-ring Champignon, or of Agaricus geotropus.

GARDENERS' ROYAL BENEVOLENT INSTITUTION: *R. Craig.* Write to Mr. Cutler, the Secretary, 14, Tavistock Street, Covent Garden, W.C.

HEATING GREENHOUSE: *T. E.* Mr. Shrewsbury's or Mr. Trotman's apparatus, frequently advertised in our columns, would probably suit your purpose, as gas is not available.

HYACINTHS: *J. F.* The roots of your Hyacinths appear to be rotting from too much wet. The soil is unnecessarily heavy, and we understand you to say that the pots have been set out-of-doors under a covering of ashes, and probably on a hard bottom, which has prevented the heavy rains while passing downwards to get clear of the bottoms of the pits. We are the more inclined to adopt this explanation from the fact that you mention having been similarly unfortunate last year—both autumns having been notable for their exceptional rainfall.

NAMES OF PLANTS: *C. E. F.* Cupressus macrocarpa. — *M. P.* 1, Thuja occidentalis Vervaineana; 2, Cryptomeria elegans; 3, Retinospora pisifera plumosa; 4, Juniperus macrocarpa.—*G. Ward.* 1, Pedicularis palustris; 2, Campanula rotundifolia.

PINE-PIT: *J. H.* The four rows of 4-inch piping would supply sufficient atmospheric heat, but they would not also supply bottom-heat, as the arrangement you describe seems to show you desire them to do. You will not get the bottom-heat from any number of pipes thus exposed.

POTASH: *Ignoramus.* We should prefer to use wood-ashes, or if potash salts to mix them with superphosphate or guano. Potash is an indispensable plant food, but it is better used in combination with other ingredients.

STANDARD CHRYSANTHEMUMS: *J. M. Rockhouse.* It was an error, of course. Read inches for feet.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED:—Messrs. Lévêque et Fils (26, Rue du Liégat, Ivry-sur-Seine, Paris), Catalogue of Roses, Camellias, Azaleas, Florists' Flowers, &c.—Messrs. Dicksons & Co. (1, Waterloo Place, Edinburgh), Catalogue of Forest and Ornamental Trees and Shrubs, Coniferæ, Rhododendrons, &c.—Messrs. Rodger, M'Clelland & Co. (Newry), Catalogue of Evergreen and Deciduous Trees and Shrubs.—Messrs. Putz & Roes (50, Great Russell Street, London, W.C.), Catalogue of Seeds, Plants, Florists' Flowers, &c.

COMMUNICATIONS RECEIVED.—D. S.—E. C.—F. N.—J. H.—G. L.—H. C., jun.—J. McI.—J. B.—G. N. T.—T. S. J.—J. C.—J. McC.—Observer.—R. G.-G. B.—W. B.—J. R. J.—A. H. H.—L. B.—T. D. M.—T. W.—One in a Fog (we cannot interfere. It is a question for the committee to deal with).—A. F.

Markets.

COVENT GARDEN, December 6.

Our market still remains quiet. Supplies of all classes of goods coming short, but prices remain much the same. The stock of French Pears is now nearly exhausted, and good samples of English fruit would realise better prices. No alteration in Kent Cobs. *James Webber, Wholesale Apple Market.*

CUT FLOWERS.

	s. d.	s. d.		s. d.	s. d.
Abutilon, 12 blooms	0 6-	1 6	Jasmine, per bunch	1 0-	2 0
Azalea, 12 sprays ..	1 0-	3 0	Mignonette, 12 bun.	6 0-	9 0
Bouvardias, per bun.	1 0-	4 0	Narcissus, (Paper White), per doz...	2 0-	4 0
Camellia blms., doz.	2 0-	10 0	Pelargoniums, 12 spr.	1 0-	3 0
Carnations, 12 blooms	1 6-	4 0	— zonal, 12 sprays	0 6-	1 6
Chrysanth., 12 bun.	6 0-	18 0	Primula, double, per bunch	1 0-	2 0
Cornflower, 12 bun.	6 0-	9 0	Roses (indoor), doz.	1 6-	12 0
Epiphyllum, 12 blms.	1 0-	3 0	Stephanotis, 12 spr.	9 0-	18 0
Eucharis, per doz. ..	4 0-	12 0	Tropæolum, 12 bun.	1 0-	4 0
Gardenia, per doz. ..	5 0-	12 0	Tuberoses, 12 blms.	2 0-	4 0
Heartsease, 12 bun.	4 0-	6 0	Violets, 12 bunches	1 0-	3 0
Heliotropes, 12 spr.	0 6-	1 0			
Hyacinths, Rom. doz.	2 0-	4 0			

PLANTS IN POTS.

	s. d.	s. d.		s. d.	s. d.
Azalea, per dozen ..	30 0-	60 0	Ficus elastica, each	2 6-	15 0
Begonias, per doz. ..	6 0-	12 0	Foliage Plants, various, each	2 0-	10 6
Bouvardias, do. ..	12 0-	24 0	Fuchsias, per dozen..	6 0-	12 0
Camellia, var., doz.	30 0-	60 0	Liliums in var., each	1 6-	6 0
Chrysanth., per doz.	5 0-	12 0	Mignonette, per doz.	6 0-	9 0
Clematis	12 0-	24 0	Myrtles, do... ..	6 0-	12 0
Coleus, per dozen ..	6 0-	9 0	Palms in variety, each	3 6-	21 0
Cyclamen, per doz...	12 0-	24 0	Pelargon., scarlet, p. dozen	6 0-	9 0
Cyperus, do... ..	4 0-	12 0	Solanums	9 0-	24 0
Dracæna terminalis	30 0-	60 0	Scilla, per dozen ..	6 0-	12 0
— viridis, per doz.	18 0-	24 0	Tulips, per dozen ..	10 0-	18 0
Erica Hyemalis, doz.	12 0-	42 0	Valotta purpur., doz.	9 0-	18 0
— gracilis, per doz.	6 0-	18 0			
Euonymus, var., doz.	6 0-	24 0			
Ferns, in var., p. doz.	4 0-	18 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, English Globe, doz. ..	2 0-	4 0	Herbs, per bunch ..	0 2-	0 4
Asparagus, Sprue, per bundle.. ..	1 6-	..	Horse Radish, p. bun.	4 0-	..
Beans, French, per packet	1 0-	..	Leeks, per bunch ..	0 2-	0½
Beet, per doz. ..	1 0-	2 0	Lettuces, per score..	2 0-	..
Brussels Sprouts, p. bush.	6 0-	..	Mint, green, bunch	0 6-	..
Cabbages, per doz...	1 0-	2 0	Mushrooms, per pott.	1 0-	3
Carrots, per bunch..	0 4-	0 6	Onions, per bushel..	3 6-	..
— new, Fr., bunch	1 6-	..	— young, per bun.	0 6-	..
Cauliflowers, per doz.	1 6-	4 0	Parsley, per bunch..	0 4-	..
Celery, per bundle..	1 6-	2 0	Radishes, per bunch.	0 1-	0 3
Chilis, per 100 ..	3 0-	..	— Spanish, doz. ..	1 0-	..
Cucumbers, each ..	1 0-	1 6	— New Jersey, doz.	2 0-	..
Endive, per doz. ..	1 0-	2 0	Salsafy, per bundle	1 0-	..
— Batavian, p. doz.	1 6-	..	Seakale, per punnet	2 0-	..
Garlic, per lb. ..	0 6-	..	Shallots, per lb. ..	0 6-	..
			Spinach, per bushel	2 6-	..
			Tomatos, per doz. ..	1 0-	6 0
			Turnips, per bundle	0 4-	0 6

Potatos:—Essex Regents, 90*s.* to 110*s.*; Kent Regents, 100*s.* to 140*s.*; Kent Kidneys, 140*s.* to 160*s.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6– 5 0	Oranges, per 100	.. 2 6–12 0
Grapes, per lb.	.. 0 9– 6 0	Pears, per doz.	.. 2 0– 6 0
Lemons, per 100	.. 8 0–12 0	Pine-apples, per lb.	.. 1 6– 6 0
Nuts, Cobs, per lb.	.. 0 4– 0 6	Walnuts, per bushel	5 0– 8 0

SEEDS.

LONDON, *Dec.* 5.—A quiet tone has this week marked the trade for farm seeds. As regards Red Clover the position is unchanged; in English seed nothing of importance yet offers, whilst the supply of French is fully adequate to present requirements. The Americans do not yet exhibit any great anxiety to make sales; rightly or wrongly they seem convinced that the shipments from France must sooner or later come to an end, and that then England will have to rely for her wants upon the United States. The Western farmers are, from all accounts, tenacious holders, and with their pleasant memories of last year's high and remunerative rates, they are loth as yet to let go their produce at figures consonant with the sober views obtaining in this country. Some letters just received from Chicago speak of the Illinois crop as having been greatly over-estimated. In about ten days' time samples may be expected here of the new Canadian Clover. Of home-grown red the yield is said to prove unsatisfactory, the average quantity per acre being only from 1 to 2 cwt. White Clovers and Alsikes are steady at the late advance. Hardly any offers come to hand of foreign Trefoil, and stocks of English are extremely small; quotations, in consequence, show great firmness. For fine samples of Rape and Mustard buyers are found at full prices. Canary seed moves off slowly on unaltered terms. In Linseed there is no movement in value, and very little in demand; other articles in the lack of transactions afford no subject for remark. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was dull, and the tendency of prices downwards. English and foreign Wheat, excepting, however, American, was cheaper to sell; in some instances a reduction of 1*s.* per quarter was submitted to. Barley was fairly well held, although in the absence of business it was no easy matter to support the quotations of last week. Malt was quiet on former terms. Oats and Maize were reported unaltered from Monday se'nnight, but the tone as regards both was weaker. Beans and Peas were as before. In flour quotations favoured purchasers.—Trade showed no improvement on Wednesday, indeed the tone of business was even worse. Wheat and flour, where pressed for sale, were decidedly cheaper, and prices were not very well supported for other classes of produce. The supplies of foreign grain were liberal, except, perhaps, as regards Maize.—Average prices of corn for the week ending December 1:—Wheat, 51*s.* 7*d.*; Barley, 44*s.* 2*d.*; Oats, 24*s.* 11*d.* For the corresponding period last year:—Wheat, 48*s.* 4*d.*; Barley, 39*s.*; Oats, 24*s.* 11*d.*

CATTLE.

At the metropolitan market on Monday there were a larger number of beasts than for a long time past. A considerable proportion were of inferior quality, consequently choicest kinds were in demand at fully late rates. There was a good show of American oxen, which made a great price. Trade was dull for second-rate qualities. There were enough sheep sent forward for the demand, which was very limited, and our top quotation is quite the extreme. Trade was dull for calves, and prices on the average lower. Quotations:—Beasts, 4*s.* 8*d.* to 5*s.* 4*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.* 2*d.*; sheep, 5*s.* 4*d.* to 5*s.* 8*s.*, and 6*s.* 4*d.* to 7*s.*; pigs, 3*s.* 8*d.* to 4*s.* 8*d.*—On Thursday trade was dull. Both beasts and sheep sold slowly, and prices tended in buyers' favour. Calves were a quiet sale.

HAY.

At Whitechapel on Tuesday there was a fair supply of fodder, the demand for which showed improvement on last week. Prices were unaltered. Prime Clover, 100*s.* to 135*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 100*s.*; inferior, 70*s.* to 85*s.*; and straw, 44*s.* to 54*s.* per load.—At Thursday's market a rather short supply of fodder was on sale. There was a dull trade at Tuesday's prices.—Cumberland Market quotations:—Superior meadow hay, 100*s.* to 108*s.*; inferior, 80*s.* to 90*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 100*s.* to 112*s.*; and straw, 54*s.* to 58*s.* per load.

POTATOS.

The Borough and Spitalfields markets reports state that the supplies are in excess of the demand, and quotations consequently droop. Kent Regents, 150*s.* to 160*s.*; Essex ditto, 140*s.* to 155*s.*; rocks, 100*s.* to 120*s.*; kidneys, 120*s.* to 140*s.*; flukes, 160*s.* to 180*s.*; Victorias, 150*s.* to 180*s.* per ton.—The imports into London continue to be upon a large scale. During last week 144,920 bags were received from Hamburg, 14,416 Antwerp, 13,956 Bremen, 6539 Ghent, 4695 Harlingen, 2191 bags 114 tons Brussels, 2581 bags Louvain, 2160 bags 45 tons Dunkirk, 920 bags Boulogne, 885 bags 42 packages Rotterdam, and 535 bags Rouen.

COALS.

There was a large supply of house coals at market on Monday, and sales being pressed, prices gave way 1*s.* per ton. There was no recovery on Wednesday. Quotation:—Hastings Hartley, 15*s.* 9*d.*; Walls End—Haswell, 18*s.*; Hetton, 18*s.*; Hetton Lyons, 15*s.* 9*d.*; Hawthorns, 15*s.* 9*d.*; Lambton, 17*s.* 6*d.*; South Hetton, 18*s.*; Tunstall, 15*s.* 9*d.*; Vanes, 15*s.* 9*d.*; South Hartlepool, 16*s.*; Tees, 17*s.* 6*d.*

NOTICE to the SEED TRADE.

EXTRACT FROM

CARTER'S LIST of NOVELTIES

For 1878.

VICK'S CRITERION TOMATO.

First-class Certificate Royal Horticultural Society.

REPORT OF TRIALS OF TOMATOS AT CHISWICK (Royal Horticultural Society's Gardens).—"Vick's Criterion (New Improved) is a large smooth ovate variety, of a distinct rosy crimson-colour; free fruiting."

Electros, price 15*s.*

CARTER'S CHALLENGER PEA.

From Mr. WHALLEY, *Head Gardener to His Grace the Archbishop of Canterbury.*

"Carter's Challenger is the best Pea we have yet grown; it will become a very great favourite, particularly with market gardeners, as it requires no stakes, and grows well; also a very beautiful Pea, fine for exhibition."

Electros, price 7*s.*

NEW SWEET PEA—VIOLET QUEEN.

It is dwarfer in habit than the other varieties, and the seed is also quite distinct in appearance, the flowers ranging in colour from deep mauve to light violet, suggestive of the beautiful Bougainvillea.

Electros, price 6*s.*

TWO NEW MELONS.

CARTER'S PINE CREAM MELON.

First-class Certificate Royal Horticultural Society.

Distinct in seed, appearance, and flesh.

Electros, price 3*s.* 6*d.*

KHIVA MELON.

We think this Melon will be found to be identical with the variety referred to by Captain Burnaby in his *Ride to Khiva*, p. 278, who speaks of the Khiva Melon as follows:—

"The Melons here have a fame which is celebrated all over the East. . . . The taste is so delicious that any one only accustomed to this fruit in Europe would scarcely recognise its relationship with the delicate, highly perfumed Melon of Khiva."

Mr. A. MCARTHUR, *Head Gardener to H.R.H. Prince Dhulcep Singh.*

"Your Khiva Melon is a very good one; it is medium sized thin skinned, melting and juicy; the flesh is green, very prolific, and quite distinct.

CARTER'S LITTLE WONDER PEA.

A wrinkled Marrow, as early as Advancer, and quite equal in length and breadth of pods, productiveness, and flavour to G. F. Wilson, or the finest type of Veitch's Perfection."

From the *Gardeners' Chronicle*, July 21, 1877.

"Messrs. James Carter & Co. showed a new Pea, named Little Wonder, very dwarf, a great bearer, with the pods large and straight, and Peas of capital flavour."

Electros, price 10*s.*

CULVERWELL'S TELEGRAPH PEA.

This is an extraordinary acquisition, the Peas often being so close together as to appear to be forming a double row in the pod. It is likely to be the forerunner of a new type of this indispensable summer vegetable.

From Mr. J. GOODACRE, *Head Gardener to the Right Honourable the Earl of Harrington.*

"Culverwell's Telegraph Pea is the longest and handsomest Pea grown, very productive, and excellent quality; a vigorous constitution; quite free from mildew; just the Pea for exhibition."

Electros, price 7*s.*

For further particulars and other Novelties see above List, just published.

*** Several Prizes of considerable money value will be offered for some of these Novelties at the Preston and London Shows of the Royal Horticultural Society; for particulars see "Novelty List."

Carter's

THE QUEEN'S SEEDSMEN,

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Estd. 1844.

THE

Royal Norfolk Seed Establishment.

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"This is the most tasteful and best executed thing of the kind we ever remember having seen." *The Country.*

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THE QUEEN'S SEEDSMEN,

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WANTED.

Stout ASH, 4 to 5 feet, well rooted.

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All who wish to have a succession of Roses from the open ground, from June to November (without forcing), should plant

QUEEN of BEDDERS (Noble).

See *Gardeners' Chronicle*, May 5. A beautiful bouquet was cut from open ground Nov. 20, 1876. Price is within reach of everybody.

CHARLES NOBLE, BAGSHOT.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

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KNAP HILL, WOKING, SURREY.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Extra Large Trees and Shrubs for Immediate Effect.

WILLIAM IRELAND begs to offer the following:—

ABIES DOUGLASII, 7 to 9 feet, 24*s.* per dozen.
,, NIGRA, 4 to 6 feet, 12*s.* per dozen.
,, EXCELSA, 4 to 6 feet, 12*s.* per dozen.
CUPRESSUS LAWSONI, 3 to 4 feet, 12*s.* per dozen; 6 to 8 feet, 24*s.* per dozen.
CEDRUS DEODARA, 3 to 4 feet, 24*s.* per dozen.
PINUS EXCELSA, 3 to 4 feet, 12*s.* per dozen; 4 to 6 feet, 24*s.* per dozen.
HOLLY, variegated Screw, 2 to 3 feet, 12*s.* per dozen.
,, variegated Hedgehog, 2 to 3 feet, 12*s.* per dozen.
ARBUTUS UNEDO, very fine and bushy, 3 to 4 feet, 20*s.* per dozen.
ELMS, of sorts, 10 to 12 feet, 18*s.* per dozen.
NORWAY MAPLE, 10 to 15 feet, 12*s.* per dozen.
LABURNUMS, stems, 8 to 9 feet, 12*s.* per dozen.

All the above have recently been transplanted, and will rise with fine roots.

CATALOGUES free on application.

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gigantea pendula nova.

LITTLE & BALLANTYNE,

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Were awarded the first prize for "a new Conifer of real merit," at the International Horticultural Exhibition at Carlisle last September, and they are now sending out

Plants from £2 2s. to £5 5s. each.

This Wellingtonia has a perfectly distinct habit from all others, and has been noticed and described in the leading horticultural journals, and advertised by us for some time back. Since we were awarded a prize for our plant others are advertising Weeping Wellingtonias, which are perfectly distinct in habit from ours, the original plant of which may be seen at any time in our Nurseries at Knowefield, and is now 6 feet 6 inches in height, having never altered its character.

LITTLE & BALLANTYNE,

KNOWEFIELD NURSERIES,

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L. PAILLET, NURSERYMAN, Chatenay les Sceaux, pres Paris, has the pleasure to offer the fine and splendid double white VIOLA, BELLE DE CHATENAY, sent out by him last season. Prices for the present season will be as follows:—12*s.* per dozen, £4 per 100; for good strong plants, full of bud flowers, £1 per dozen, £7 per 100.

L. PAILLET has also to offer:—

The fine VIOLA CZAR, with large pure white flower, at 8*s.* per dozen, £2 per 100; strong plants, full of flower, 12*s.* per dozen, £4 per 100.

VIOLA MARIE LOUISE, splendid large double flower, of deep blue colour, centre of flower white with a red spot; 10*s.* per dozen, £3 per 100; strong plants, full of flower, 12*s.* per dozen, £4 per 100.

N.B.—For other varieties, new and recommendable, see Catalogue and Descriptive List.

CLEMATIS MADAME EMILE SORBET, immense flower, perfect form, round petals, flowers of deep blue sky colour; young plants, 12*s.*; strong plants, 18*s.*

CLEMATIS DUCHESSE DE CAMBACÉRÈS, very large flower, good form, white stamens, flower light blue colour; price, young plants, 10*s.*; strong plants, 15*s.* These two varieties are sent out for the first time this season.

WISTARIA SINENSIS FLORE-PLENO.—This variety, introduced from America, is quite like the old, well-known variety, but the flower is double; very fine novelty. Price, 15*s.* each, £3 per six plants, £5 per dozen.

WELLINGTONIA GIGANTEA PENDULA and AUREA VARIEGATA.

For description and price see Catalogue and List of Prices, sent on application. This Catalogue, published in the English language, contains the List of Prices of STOCKS, TREES, and PLANTS cultivated by the establishment, such as Fruit Tree Stocks of every description, Fruit Trees, young Seedling Forest Trees, young Seedling Ornamental Trees and Shrubs, Paeonies, Rhododendrons, Magnolia Lenné and others, Roses, Rose Stocks, Conifers, Evergreens, Laurus latifolia, Bulbous Plants, &c.

Orders may be sent direct, or to my Agents, Messrs. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E., where Catalogue and List may be obtained on application.

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EXTRA STRONG—BEAUTIFULLY TRAINED.

2-yr. Cordons and Palmettes.

	Per 100.
APPLES, on Crab and on Doucin	42*s.*
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A List of the Names of the Fruit Trees gratis on application.

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	Per 1000.
PYRUS MALUS, Crab-Apples	20*s.*
ROSE, Manetti	25*s.*
,, multiflora de la Grifferaie	25*s.*

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 15*s.* per 1000.

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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per sack.

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COCOA-NUT FIBRE REFUSE, Reduced price:—In 4 bushel bags, at 1*s.* 3*d.* (not less than 5 bags), or truck load for 30*s.* (truck load delivered free to rail in London). A remittance to accompany all orders.

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SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, coodensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

ARCHANGEL, PACKING **MATS** PETERSBURG ETC.
RAFFIA for TYING,
TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.
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RUSSIA MATS for Covering from Frost, from 30s. to 70s. per 100; good for packing, from 20s. GUNNY BAGS, from 3½d. each. Delivered free to any station io London.
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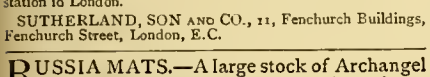

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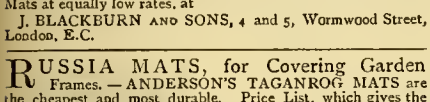

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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.
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ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

"The **'Boiler of the Future.'** I have no doubt about this."—WM. THOMSON, *Clovenfords.*

By Her Majesty's *Royal Letters Patent*

NEW PRICE LIST.

Boiler Number.	Length.	Width.	Height.	No. of Top Sections.	Surface Exposed to the Flame.	Calculated Heating Power. 4-in. pipe.	Recommended for 4-in. pipe.	Price.
	ft. in.	ft. in.	ft. in.		ft.	ft.	ft.	£ s. d.
1 A	2 0	1 6	1 10	2	13	520	400	10 0 0
2 A	2 0	1 6	2 2	3	17½	700	500	11 10 0
3 A	2 0	1 6	2 6	4	22	880	600	13 0 0
4 A	2 0	1 6	2 10	5	26½	1,060	700	14 10 0
5 A	2 0	1 6	3 2	6	31	1,240	..	16 0 0
6 A	2 0	1 6	3 6	7	35½	1,420	..	17 10 0
1 B	2 6	2 0	2 4	2	20	800	650	14 10 0
2 B	2 6	2 0	2 9	3	27½	1,100	750	17 0 0
3 B	2 6	2 0	3 2	4	35	1,400	850	19 10 0
4 B	2 6	2 0	3 7	5	42½	1,700	950	22 0 0
5 B	2 6	2 0	4 0	6	50	2,000	..	24 10 0
6 B	2 6	2 0	4 5	7	57½	2,300	..	27 0 0
0 C	3 0	2 0	1 11	1	18	720	700	16 10 0
1 C	3 0	2 0	2 4	2	27	1,080	1,000	20 0 0
2 C	3 0	2 0	2 9	3	36	1,440	1,300	23 10 0
3 C	3 0	2 0	3 2	4	45	1,800	1,600	27 0 0
4 C	3 0	2 0	3 7	5	54	2,160	1,900	30 10 0
5 C	3 0	2 0	4 0	6	63	2,620	..	34 0 0
6 C	3 0	2 0	4 5	7	72	2,880	..	37 10 0
0 D	3 6	2 6	1 11	1	24½	980	850	20 0 0
1 D	3 6	2 6	2 4	2	37½	1,500	1,500	25 0 0
2 D	3 6	2 6	2 9	3	50½	2,200	2,200	30 0 0
3 D	3 6	2 6	3 2	4	63½	2,540	2,540	35 0 0
4 D	3 6	2 6	3 7	5	76½	3,000	3,000	40 0 0
5 D	3 6	2 6	4 0	6	89½	3,580	..	45 0 0
6 D	3 6	2 6	4 5	7	102½	4,100	..	50 0 0
0 E	4 0	3 0	1 11	1	30	1,200	1,100	27 10 0
1 E	4 0	3 0	2 4	2	48	1,920	1,900	35 0 0
2 E	4 0	3 0	2 9	3	66	2,640	2,600	42 10 0
3 E	4 0	3 0	3 2	4	83½	3,340	3,300	50 0 0
4 E	4 0	3 0	3 7	5	101½	4,060	4,000	57 10 0
5 E	4 0	3 0	4 0	6	119½	4,780	..	65 0 0
6 E	4 0	3 0	4 5	7	137	5,480	..	72 10 0

We can supply Foundation Plates—which form Ash-pit—and Smokestacks, if wanted, thereby doing away with the necessity for even a single brick in their erection.

	A	B	C	D	E
	s. d.	s. d.	s. d.	s. d.	s. d.
Foundation Plate	35 0	45 0	60 0	75 0	90 0
Smokestack, Damper, and Soot-Door	30 0	30 0	40 0	40 0	40 0
Furnace and Ash-Pit, Frame and Doors; also Furnace Bars, Bearers, Dumb-Plate, &c. ..	30 0	40 0	50 0	60 0	70 0

Foundation Plates are arranged to heat the air before it is sent into the ash-pit at back, and furnace-doors to heat the air before its admission into the furnace, furnishing in fact two "hot-air" blasts to the furnace; the admission of large volumes of cold air being most injurious to the economical working of the furnace.

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MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens, sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Bentball Works, Broseley.

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The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
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PARCHMENT or CLOTH LABELS, TREE or PLANT LABELS, punched parchment, 4 inches long, 3s. 6d. per 1000, or 30s. per 10,000; if eyeleted, 4s. per 1000. Vellum cartridge, 4 inches long, 3s. per 1000 for 10,000. Sample Labels sent on receipt of postage stamp. Orders delivered free in London.
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MR. MECHI'S ADDRESS to his OLD FRIENDS and CUSTOMERS and to the PUBLIC:—

"As it has been erroneously supposed by some that I am no longer interested in my London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-strop trade was immense; now moustache and beard are the order of the day, and the razor and strop trade is comparatively defunct. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody travels by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor geese supplied our pens, and many a now rich merchant in the City will remember the quality of Mechi's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and, I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press? and how much less time is occupied in sipping port wine, as we used to do fifty years ago, when we could not travel? Steam will make our 4 lb loaves cheaper some day, just as it has converted calico from 2s. 6d. to 6d. or less per yard. Then, again, a letter which used to cost 6s. 6d. to Cork is now carried for 1d. Sir Rowland Hill richly deserves a monument. But to return to business: fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the strop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'Exchanged if not approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and convenience of arrangements in the dressing bag and dressing case department, and to the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our sportsmen remain, and 'sporting knives' form one of our special deoartments. I feel firmly convinced that there is oo fear of the departure of knives and forks, or dinners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their own conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

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HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15-oz., 12s. 6d.; 21-oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up—15-oz. 4ths, 36s.; 3ds, 46s. per 300 feet;—21-oz. 4ths, 36s.; 3ds., 46s. per 200 feet.—ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

FOR SALE, cheap, a First-class GREENHOUSE, 80 feet in length, by 10 feet, divided into three sections, one centre 20 feet, two ends 30 feet.
KEEN AND SON, Church Street, Croydon.

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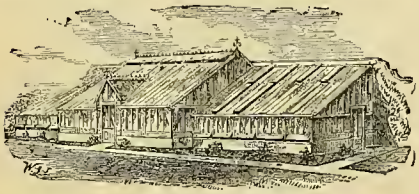

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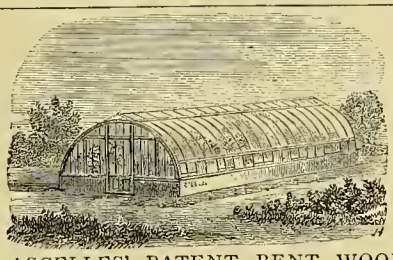
DARLINGTON.



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The curved house is more durable, stronger, lighter in construction, and no bent glass is required.

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H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantial made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. Estimates given in wood or iron.

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GREENHOUSES—every description, } From £10
VINERIES—all the latest improvements, } to £1000.
GLASSHOUSES—perfect ventilation, }
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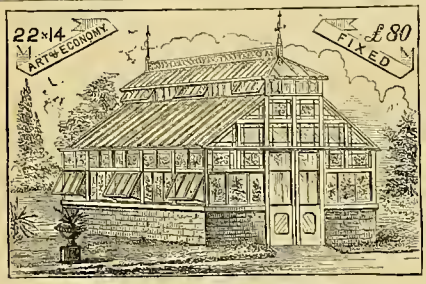
HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER,
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5s. each.
☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed in this Establishment.



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HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS.
Patentees & Manufacturers of the Self-adjusting Throttle Valve, now so much in use for Horticultural purposes.
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PATENT PORTABLE SMOKELESS STOVES and PATENT FUEL,
For Heating Conservatories, Greenhouses, Halls, Shops, and Places without Chimneys. The Stoves burn with one supply of Fuel 12 to 24 hours, requiring no attention or re-filling.
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J. B. strongly recommends the ALLERTON PRIORY BOILER as one of the most powerful for extensive work. He has fixed one capable of heating 10,000 feet of 4-inch piping. See *Gardeners' Chronicle*, p. 647. Also his WELDED WROUGHT IRON WATERWAY BACK for ordinary Saddle Boilers. These Backs can be fixed to any Boiler now in use, and are a great saving in fuel and labour. He is also prepared to fix any kind of Boiler made.
Manufacturer of the Registered LIVER FRONT for large Boilers, IRON and WIRE WORK in all branches. References from Noblemen and Gentlemen for work done.
Plans and Estimates given.

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Specially adapted for Pumping to Gentlemens' Houses and Grounds.
No Labor Required.

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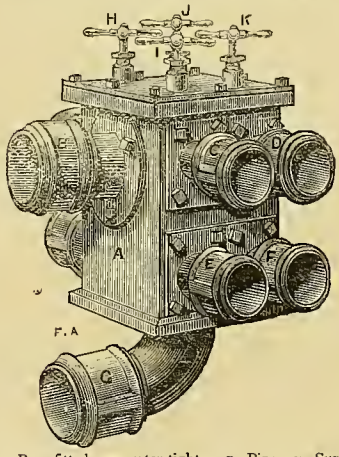
CRITCHLEY'S PATENT HEAT REGULATOR,
AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

The following Testimonial has been received :—

"Berkeley Castle, April 13, 1875.

"Gentlemen,—I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve; in fact, I think it the greatest improvement that has come out for horticultural purposes.

"I am, Gentlemen, yours truly, "R. H. CRONK,
"Gardener to the Right Hon. Lord Fitzhardinge."

Estimates and Plans furnished for Warming Gentlemen's Mansions and Public Buildings. Orders attended to in any part of the kingdom, and guaranteed to answer their intended purposes. Prospectus and Price Lists post-free.

Messrs. CRITCHLEY & CO.,
Horticultural Engineers and Builders,
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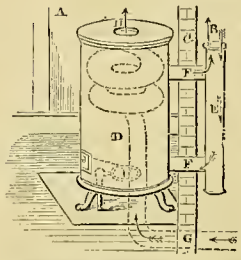
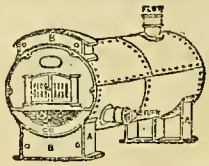
GEORGE'S PATENT CALORIGEN,
FOR
Warming and Ventilating Small Conservatories.



The only Gas Stove in which the product of combustion is entirely excluded from the Conservatory.
Made in Wrought Iron, £3 3s.
Made in Copper, £5.
Height, 28 inches; diameter, 14 inches.
It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Conservatories, Offices, &c. Exhibited at the Exhibition of 1871 (Department of Scientific Inventions).

Illustrated Prospectuses and Testimonials on application.
J. F. FARWIG AND CO., 36, Queen Street, Cheapside, E.C.
This Stove introduces a strong current of warmed (not burnt) fresh air.

STEVENS'
TRENTHAM GREENHOUSE BOILER,
After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Copy of a Testimonial.

"Royal Exotic Nursery, King's Road,
"Messrs. SILVESTER. Chelsea, S.W.—Aug. 8, 1877.

"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

"For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hothouses during the cold winter months as we do now.

"We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.

"We are, Gentlemen, yours faithfully,
"JAMES VEITCH AND SONS."

For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

WAGSTAFF'S
Patent Saddle and Cylindrical
BOILERS.
Efficient and Economical.
Awarded 6 Silver Medals.

Messrs. E. G. HENDERSON & SONS' Spacious Nurseries, Pine-apple Place, Maida Vale, are most satisfactorily Heated with two of these Boilers.

Plans and Estimates of Work in any part of the Kingdom gratis, and efficiency guaranteed. Price Lists, Prospectus, and Testimonials free on application.

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Terra-Cotta! Portable! For Coal!
ROBERTS'S PATENT.
Healthy Heat twenty-four hours or longer for about 1d., without attention. For Bedrooms, Greenhouses, or almost any purpose. Prospectus and authenticated Testimonials sent. In use daily at Patentee's, THOMAS ROBERTS,
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BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities, of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C
B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

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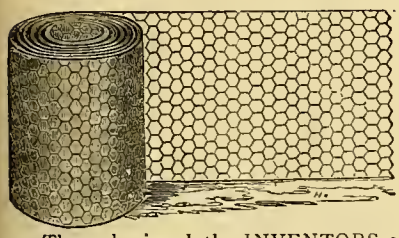

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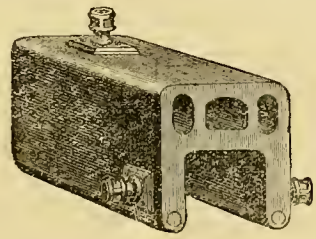

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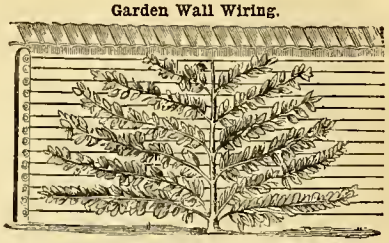

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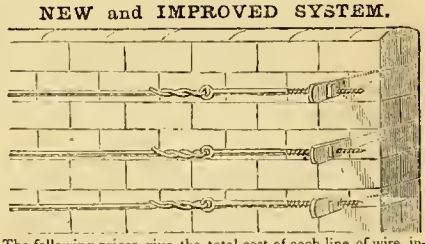

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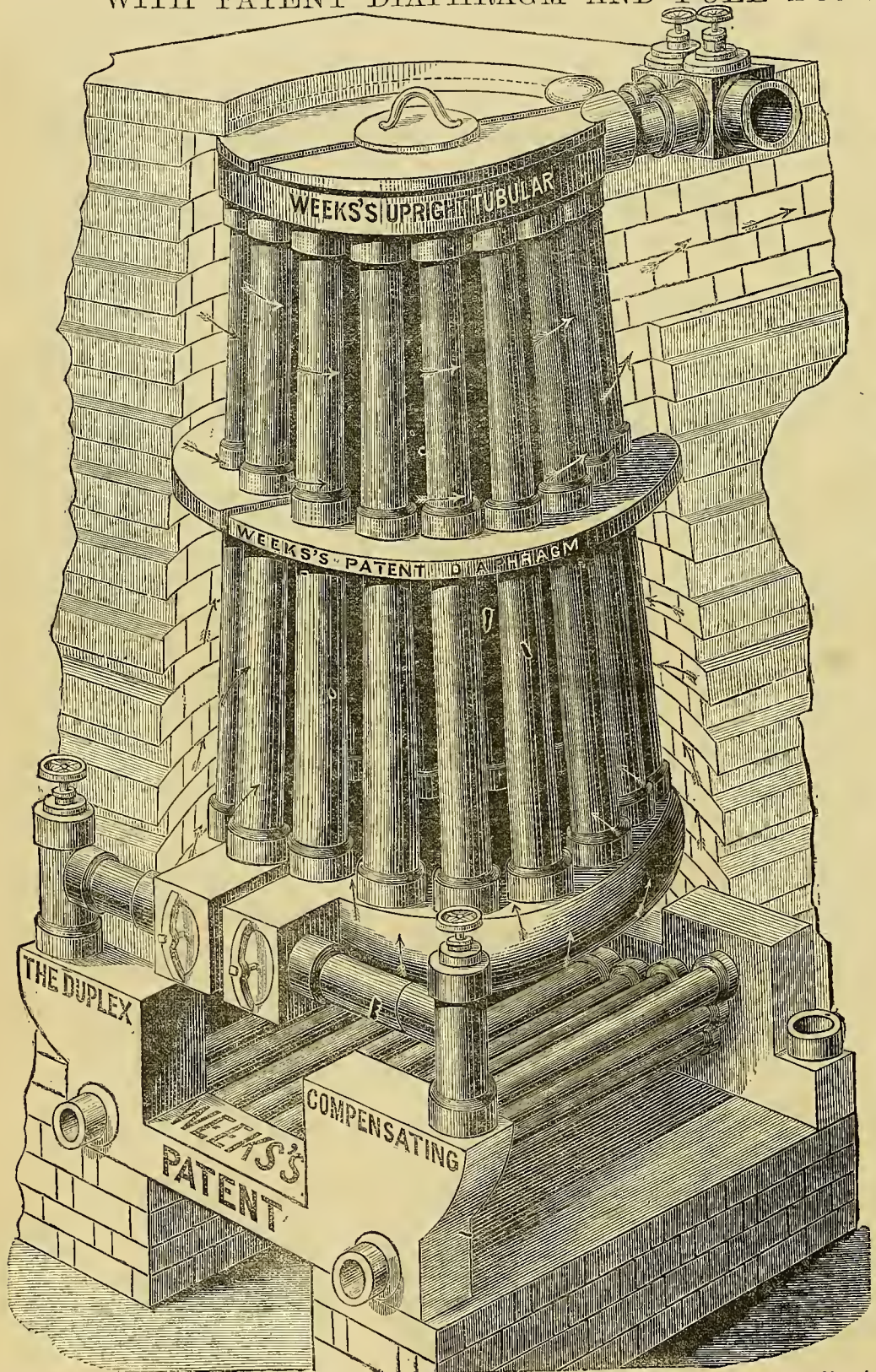

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 207.—Vol. VIII. { New Series. } SATURDAY, DECEMBER 15, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, 5½d.

With this Number is presented a beautifully Coloured Plate of "NEW HARDY BEGONIAS."

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NOTICE.—All Numbers of the "Gardeners' Chronicle" prior to 1874 are 1s. each.

THE PELARGONIUM SOCIETY.—The Exhibition of this Society for 1878 will be held, by arrangement with the Council, in the Royal Horticultural Gardens, South Kensington, on JUNE 18, in connection with the Rose Show of the Royal Horticultural Society. Members only can compete, the qualification of Membership being an Annual Subscription of One Guinea.

The Schedule, which includes 34 Classes, and offers PRIZES to the value of upwards of ONE HUNDRED and ELEVEN POUNDS, is now ready, and may be had on application to
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Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

SUPERB NEW BEGONIAS.—Hybrids of the finest new named sorts. Some of these Seedlings have this year been valued by the best English authority at Ten Guineas each. Will prove most magnificent Bedding as well as House Plants. Per packet, 2s. 6d. and 5s.

AUSTIN AND McASLAN, 16, Buchanan Street, Glasgow.

OSBORN AND SONS call attention to their extensive collection of HARDY, ORNAMENTAL, DECIDUOUS, and EVERGREEN TREES and SHRUBS, CONIFERÆ, &c., a Descriptive Catalogue of which will be forwarded, post-free, on application.

Fulham Nurseries, London, S.W.

W. POTTEN can supply strong Standard ROSES, good sorts, W. P.'s selection, 12s. per dozen; RED CURRANTS, 3-yr., strong, 12s. per 100; 1-yr. AUCUBAS, strong, 40s. per 1000; QUICKS, 2 to 3 feet, strong, price per 100 or 1000 on application.

Camden Nursery, Sissinghurst, Staplehurst, Kent.

Planting Season.

E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS. English OAK, ELMS, and LIMES, up to 10 feet; Spruce FIRS.

Prices on application.

The Nurseries, London Road, Cheltenham.

Special Offer of large Standard Fruit-bearing PLUM TREES.

R. AND G. NEAL have the above to offer in extra large plants, well-rooted, and in fine condition for removal. Price, with List of Sorts, on application. Also, extra fine RHUBARB for Forcing, viz.: Early Albert, Victoria, Sovereign, and Myatt's Linnæus.

The Nurseries, Wandsworth Common, S.W.

TO PLANTERS of GOOSEBERRY TREES, BLACK and RED CURRANT TREES, RASPBERRY CANES, &c.—The best that money can buy at the same price as is usually charged for rubbish.

ALFRED COCKERILL, Wholesale Fruiterer and Market Gardener, 20, Drapery, Northampton.

A SPECIALLY CHEAP OFFER.

ASH, 2 to 3½ feet; BIRCH, 1½ to 2, and 2 to 3 feet; ALDER, 2½ to 3½, and 3½ to 5 feet; LARCH, 1½ to 2, and 2½ to 4½ feet; SPRUCE, 1½ to 2 feet; SCOTCH, 1½ to 2 feet; BIRCH, 8 to 10, and 10 to 12 feet; CHESTNUTS, Horse, 8 to 10, and 10 to 12 feet; LAUREL, Colchic, 4 to 5 feet; SYCAMORE, 4 to 5, and 5 to 6 feet; LABURNUM, English and Scotch, 2-yr.; ACER NEGUNDO, 2-yr.; AILANTUS GLANDULOSA, 2-yr.; BROOM, Common, 2-yr. seedlings; DECIDUOUS FLOWERING SHRUBS in variety, 30s. per 100.

Preston Nursery Company, Preston.
WILLIAM TROUGHTON, Manager.

Cover Planting, &c.

SAMUEL AND JAMES SMITH (late J. Smith, Sen.), Tansley Nurseries, near Matlock, Derbyshire, have the following in large quantities, viz.:—RHODODENDRON PONTICUM, 1½ to 2 feet, 20s. per 100, 180s. per 1000; 2 to 3 feet, 20s. per 100, 180s. per 1000; 3 to 4 feet, 30s. per 100, 200s. per 1000; 5-yr. seedling, 12s. per 1000, £50 per 100,000.

BROOM, 1-yr. seedling, 2s. 6d. per 1000, 20s. per 10,000; 2-yr. do., 4s. per 1000, 30s. per 10,000.

GORSE, 1-yr., 2s. per 1000, 25s. per 20,000.

Nursery LIST on application.

HYDRANGEA PANICULATA GRANDIFLORA.—We can offer extra strong, bushy plants of this really fine, hardy shrub, 2 to 3 feet high, at 18s. and 24s. per dozen. It should be known that this is quite deciduous, and (unlike the commonly known Hydrangeas, which only bloom on the tops of the ripened shoots of the preceeding year), flowers on the young shoots of the current one, and so is sure to flower where the others do not.

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To the Trade Only, for Cash on Delivery.

DIELYTRA SPECTABILIS, strong, 20s. per 100.

VESUVIUS GERANIUM, bloom splendid trusses, 10s. per gross.

THOMAS KITLEY, Oldfield Nursery, Bath.

GIANT LILY OF THE VALLEY. —Strong blooming Roots, 2s. per dozen, 12s. 6d. per 100, package free.

ROSES, Dwarf, the "Mile Ash dozen," twelve best varieties, extra strong plants, for 10s. 6d., package free.

EDWIN COOLING, Mile Ash Nurseries, Derby.

Tree Ferns—Tree Ferns—Tree Ferns.

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TUBEROSES (American grown).—Guaranteed the finest Bulbs ever offered; per 1000, £10; in lots of 5000 or more, £8 per 1000; second quality roots, also very fine, £6 per 1000 Delivered on steamer without extra charge. WORTHINGTON G. SMITH, Esq., 15, Mildmay Grove, London, N., will have a sample of the roots.—Address with draft or post-office order for amounts, HENRY E. CHITTY, Florist, Paterson, New Jersey, U.S. America.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many Novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.

CATALOGUES post-free on application,
Lion Walk, Colchester.

DWARF ROSES, on the cultivated Seedling Brier, of the leading Exhibition varieties, 9s. per dozen, package free. Cash to accompany order.

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Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.

THOMAS RIVERS AND SON, Sawbridgworth, Herts.

TO EFFECT A CLEARANCE the following little LOTS are offered:—

5000 ASH, 1½ to 5½ feet, for 150s.
5000 RHODODENDRONS, 3 to 4 ft., fine, 75s. per 100.

Free into railway truck.

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J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.

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LADY HENNIKER APPLE.—

FINE STANDARDS, 2s. 6d. each, 24s. per dozen.
PYRAMIDS, 2s. 6d. to 3s. 6d. each.
ESPALIERS, 5s. to 7s. 6d. each.
MAIDENS, 2s. each.

Price to the Trade on application to

EWING AND CO., The Royal Norfolk Nurseries, Eaton, near Norwich.

LARGE EVERGREEN and DECIDUOUS TREES, for immediate effect:—

ACACIA, White Flowered, 9 to 10 feet high, 24s. per dozen.
ASH, Mountain, Scarlet Berried, 8 to 9 feet, 12s. per dozen; 10 to 12 feet, 18s. per dozen.
BIRCH, Silver Barked, 8 to 10 feet, 18s. per dozen.
SYCAMORES, Common, 10 to 12 feet, 18s. per dozen.
CHESTNUT, Spanish, 8 to 10 feet, 18s. per dozen; 10 to 12 feet, 24s. per dozen.
,, Horse, 8 to 10 feet, 12s. per dozen; 10 to 12 feet, 24s. per dozen.
ELMS, Common, 8 to 10 feet, 12s. per dozen.
LABURNUMS, English, 8 to 10 feet, 30s. per dozen.
LIMES, Red-twigged, 9 to 10 feet, 42s. per dozen.
POPLARS, Aspen, 12 to 14 feet, 24s. per dozen; 16 to 20 feet, 36s. per dozen.
,, Black Italian, 10 to 12 feet, 18s. per dozen; 16 to 20 feet, 36s. per dozen.
,, Lombardy, large leaf, 12 to 14 feet, 24s. per dozen; 16 to 20 feet, 36s. per dozen.
THORNS, Paul's Double Crimson, 8 to 10 feet, 30s. per dozen.

The above are all well grown, straight as rods, and have been frequently transplanted.

Evergreen Trees.

ARBOR-VITÆ, Siberian, 7 to 8 feet, 30s. per dozen.
ABIES DOUGLASII, 7 to 8 feet, 42s. per dozen.
CUPRESSUS LAWSONIANA, 5 to 6 feet, 24s. per dozen; 6 to 7 feet, 42s. per dozen.
LAURELS, Common, 6 to 7 feet, 10s. per dozen, 75s. per 100.
,, caucasicum, 3 to 4 feet, 12s. per dozen, 75s. per 100.
,, Portugal, 8 to 9 feet, pyramids, 60s. per dozen.
PINUS AUSTRIACA, 8 to 10 feet, 60s. per dozen.
YEWS, English, 5 to 6 feet, pyramids, 24s. per dozen, £7 10s. per 100.

FREDERICK PERKINS can with confidence recommend the above Evergreens to remove any distance, being all transplanted spring, 1877.

Regent Street, Leamington.

CHARLES SHARPE & CO.,

SEED MERCHANTS AND GROWERS, SLEAFORD,

Beg to call attention to the following NOVELTIES :—

THE RAUCEBY HALL MELON.

This splendid new Green-fleshed Melon has been raised by Mr. Brown, the gardener at Rauceby Hall, and has during the past two seasons been exhibited seventeen times—in every case gaining a First Prize. It is hardy, a fine setter, and a very heavy cropper. The fruit is very beautifully netted, the flesh juicy, sweet, and melting, and of a very rich flavour. Altogether it is a variety of unquestionable superiority, and worthy a place in every garden.

Price, 2s. 6d. per Packet.

TESTIMONIALS.

From W. INGRAM, Esq., *Belvoir Castle Gardens.*

"Dear Sir,—The Green-fleshed Melon exhibited by Mr. Brown at the Sleaford Show this year, and to which the First Prize was awarded, was of exceptional excellence, having a rich flavour, and being sweet, melting, and very juicy. "I am, yours truly,

"November 21, 1877. "W. INGRAM."

From Mr. JAMES BROWN, *Rauceby Hall Gardens.*

"Dear Sir,—My Seedling Green-fleshed Melon has a very hardy constitution, it is a very free setter and immense cropper, beautifully netted, and unquestionably the handsomest and finest flavoured Melon grown, averaging from 3 to 4½ lb. in weight. I have exhibited myself several times, and it has never been beaten. You can safely recommend it to be the very best Melon ever sent out, and the entire stock is in your hands. "I am, dear Sir, yours truly,

"November 12, 1877. "JAMES BROWN."

From Mr. C. BILLESON, *Syston Park, Grantham.*

"Dear Sir,—I have tasted, and also seen growing, the Melon called Rauceby Hall Seedling, and I believe it to be a really first-class Melon, most delicious in flavour, free setter, and a very robust constitution. It is medium in size, thin rind, and very juicy. A most handsome fruit for the table. "I am, Sir, yours truly,

"November 16, 1877. "C. BILLESON."

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"Dear Sir,—I have grown your Seedling Melon, with several other varieties, the last two seasons, and find it to be of good constitution, a very free setter, fruit of medium size, beautifully netted, handsome in appearance, and of excellent flavour. It ripens its crop off much quicker than many other varieties now in cultivation, which will make it valuable for early and late crops. "I am, yours truly,

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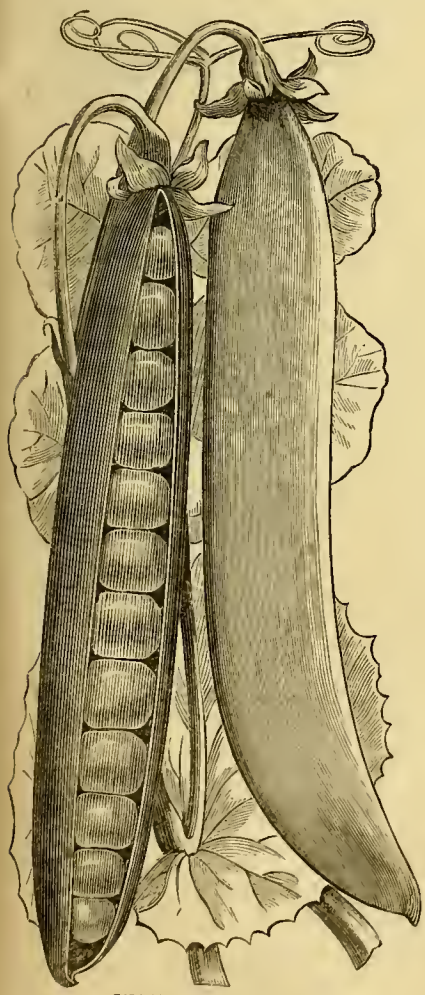

SHARPE'S INVINCIBLE.

SHARPE'S INVINCIBLE.

NEW LONG-PODDED BLUE MARROW PEA.

CHARLES SHARPE & CO.

Have much pleasure in sending out for the first time this invaluable new main-crop Pea, which has been raised by Mr. William Culverwell, of Thorpe Perrow, who has devoted a considerable amount of skill and attention to the improvement of this vegetable.

The Invincible is a cross between Veitch's Perfection and Essex Rival, and has the advantage of being but little liable to the attack of mildew.

The plant is about 3 feet in height, of a robust branching habit. The pods are produced in pairs, and occasionally three together, from near the ground to the top of the stem—the rows having the appearance of being clothed with pods from top to bottom. The pods are closely packed with from ten to twelve large Peas, which, when cooked, are of exquisite flavour, and of a beautiful deep green colour.

As a main-crop Pea, either for the Gentleman's Garden or the Market Gardener, CHARLES SHARPE & CO. have no hesitation in saying that the Invincible Pea will be found superior to anything yet sent out.

Price, per Quart, 5s.

Half-pint Packets, free by post, 1s. 6d.

PRICE TO THE TRADE ON APPLICATION.

Odontoglossum crispum.

MR. WILLIAM BULL has received a large importation of the above from one of his collectors, and can offer them by the dozen or 100, and will be happy to show them to any one favouring him with a visit.
Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Vines—Vines—Vines

J. COWAN, The Vineyard, Garston, near Liverpool, has still on hand several thousands of strong, well ripened VINES. Fruiting Canes, 10s. 6d. to 12s. 6d. each; Planting Canes, 5s. to 7s. 6d. each. Catalogues free. Trade supplied. Terms on application.

FRUIT TREES, extra large, to bear directly.—Walnuts, Prune Damsons, large Black; Victoria and other Plums, Mayduke Cherries, new Yorkshire Cockpit Apples, Williams' Bon Chrétien, Beurré de Capiaumont and Ashton Town Pears; Scarlet and other Filberts. To be Sold cheap. Free on rails. Splendid SPRUCE, Scotch FIR, and LARCH.
W. JACKSON AND CO., Nurseries, Bedale.

Variegated Hollies, full of Berries.

WILLIAM CUTBUSH AND SON beg to draw special attention to the above, being very fine and fit for Christmas Decorations; fine stuff, from 3 to 5 feet, 5s. to 7s. 6d. each. Trade price on application.
Highgate Nurseries, N.

American Grown Tuberose Roots.

TUBEROSE ROOTS, of my own growing, finest quality Roots, £5 per 1000.
EULALIE JAPONICA VARIEGATA, £2 per 100.
FRANKLENIA PUBESCENS, 2 to 4 feet, 15s. per dozen.
All packed free; freight by steamer, Baltimore to Liverpool, low. JOHN SAUL, Washington, D.C., U. S. America.

TO THE TRADE.—Christmas Roses, well set with flower-buds; Spiræa japonica, Dielytra spectabilis, Lily of the Valley, in fine clumps for Forcing; Gladiolus brenchleyensis and French Hybrids, tuberous-rooted Begonias, Hyacinths, Tulips, Crocus, Narcissus, and other Dutch Bulbs, at low prices.
F. SANDER AND CO., Seed Growers, St. Albans.

ROSES, Dwarf Hybrid Perpetuals, very strong, of leading sorts, on Manetti Stock; these, being budded so low as to leave scarcely any of the stock, are admirably adapted for pots or beds; 9s. to 12s. per dozen, 70s. per 100.
YUCCA RECURVA, fine specimens, about 2 feet, 3s. 6d. each
PYRACANTHA, Red-berried, hardy plants, 1-yr., in 4-inch pots, 4 to 6 inches, 3s. per dozen, 21s. per 100.
" 2-yr., in 5-inch pots, 9s. per dozen.
H. McMILLAN, St. James' Road Nursery, Kingston-on-Thames.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to
EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

KENTISH FRUIT TREES.—One of the largest and cheapest stocks in the county, consisting of tall Standard CHERRIES, Standard, Pyramid, and Espalier APPLES, PEARS, and PLUMS, from 70s. per 100; GOOSEBERRIES, CURRANTS, &c.
CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers.
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To the Trade, &c.

LIMES, large Red-twigged; Giant and other ELMS; HORSE CHESTNUTS, &c.; extra fine, clean, well grown, and well rooted trees, suitable for Street or Avenue Planting, or for Immediate Effect in Parks, &c. Particulars and prices on application to
EWING AND CO., The Royal Norfolk Nurseries, Newmarket Road, Eaton, near Norwich.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
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To the Trade.

AGRICULTURAL and GARDEN SEED.
H. AND F. SHARPE'S WHOLESALE SPECIAL CATALOGUE of HOME-GROWN SEEDS is now ready, and will be forwarded on application. Every variety named in it is of the very finest quality in every respect. The prices are very low.
Seed Growing Establishment, Wisbech.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.
The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to
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The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

Queen of Lilies, Lilium auratum.

As this year's shipments will be shortly arriving from Japan,
WILLIAM GORDON begs to call attention to the following low prices:—sizes: No. 1, 6d.; No. 2, 1s.; No. 3, 2s. 6d.; No. 4, 2s. each. Sampling orders are supplied only in the following quantities, and are carefully packed in tin boxes to contain only the following number of bulbs, the prices quoted including carriage to any part of the United Kingdom:—2 bulbs, 6d. extra; 4 bulbs, 1s. 6d.; 8 bulbs, 2s; 12 bulbs, 2s. 6d., added to the foregoing prices. Quantities of 18 bulbs and over package and carriage free, less 10 per cent. discount. LILY LIST on application.
WILLIAM GORDON, Lily, Bulb, and Plant Importer, 10, Cullum Street, London, E.C.
Post-office Orders payable at Fenchurch Street, E.C.

Estd. 1844.

THE

Royal Norfolk Seed Establishment.

READY JANUARY 1,

THE

ILLUSTRATED GUIDE

FOR

AMATEUR GARDENERS,

Spring, 1878.

Containing 116 pages of beautifully illustrated Letterpress, complete Directions for the successful Management of the Kitchen Garden and Flower Garden throughout the year, with Original Articles on the Cultivation of various Flowers and Vegetables, a Select List of Choice Kitchen Garden and Flower Seeds, Lilies, Gladioli, Seed Potatos, &c. Also a superbly finished Coloured Plate, the whole enclosed in a charmingly beautiful Cover of a new and elegant design.

This will be found by far the most splendid and useful Seed Catalogue ever published, and should be read by every one having a Garden.

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THE QUEEN'S SEEDSMEN,

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H. B. SMITH has for Sale a good stock of Short and Half-Standard GLOIRE DE DIJON, Standard and Half-Standard HYBRID PERPETUALS, leading sorts.
Ealing Dean Nursery, Ealing, W.

Special Offer.

JOHN LUFF, St. Helen's Nursery, Hastings, offers as under, at very low prices for Cash:—
LAURUSTINUS, bushy, 1 to 2 feet, 4s. per dozen; 2 to 3 feet, 6s. per dozen.
" splendid specimens, well rooted, 3 to 4 feet, 18s. per doz.
LAURELS, extra bushy, 3 to 4 feet, 6s. per dozen.
" single specimens, 4 to 5 feet, 12s. per dozen; 5 to 6 feet, 18s. per dozen.
PRIVET, Evergreen, stout and well rooted, 3 to 4 feet, 20s. per 1000.
ASPARAGUS, 2-yr., 3-yr., and 4-yr., 10s., 17s. 6d., and 25s. per 1000.
IVIES, of sorts, strong, in pots, 3 to 5 feet, 6s. per dozen.

CHARLES B. SAUNDERS, Cæsarean Nurseries, St. Saviour's, Jersey, respectfully solicits Orders for the following NURSERY STOCK:—
ELMS, 5000 Guernsey, fine upright trees, 7 to 12 feet, 30s. to 100s. per 100.
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EUONYMUS, 10,000 Golden, Green, and Silver, 8 inches to 2 feet, 12s. 6d. to 50s. per 100.
BULBS, CAMELLIA STOCKS, CARNATIONS and PICOTEES, FRUIT and FOREST TREES, SHRUBS, &c.
CATALOGUES of which may be obtained on application.

SPECIAL OFFER TO THE TRADE.

FRUIT TREES.

EXTRA STRONG—BEAUTIFULLY TRAINED.

2-yr. Cordons and Palmettes.	Per 100.
APPLES, on Crab and on Doucin	42s.
PEARS, on Crab and on Quince	50s.
PLUMS, on Prunus St. Julien	50s.

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	Per 1000.
PYRUS MALUS, Crab-Apples	20s.
ROSE, Manetti	25s.
" multiflora de la Grifferaie	25s.

HOTEIA (SPIRÆA) JAPONICA, strong, home-grown, £6 15s. per 1000.
A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

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ANEMONE FULGENS, strong plants, established in pots, 1s. each, 10s. per dozen, 75s. per 100. This is the most dazzling scarlet, and commences to open its flowers in January and continues until May. Most invaluable for the spring garden, and also for cutting, as it opens its flowers just as well under artificial as real light.
CARDAMINE PRATENSIS, fl. pl., Double Lilac, flowers most profuse, first-rate spring flower, 25s. per 100.
PRIMROSE, Double Crimson (true), 18s. per dozen, 140s. per 100.
" Double Crimson-Purple, fine variety, often throwing up its flowers in scapes, and continuing long in bloom, 6s. per dozen, 45s. per 100.
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" Double Lilac, 3s. per dozen, 16s. per 100.
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" Single Yellow, flowering in scapes, most continuous, 6s. per dozen, 40s. per 100.
POLYANTHUS, strong fine strain, 3s. per dozen, 12s. 6d. per 100.
PHLOX, verna, 4s. per dozen, 20s. per 100.
" setacea, 4s. per dozen, 20s. per 100.
WALLFLOWERS, Single, Harbinger, Tom Thumb, yellow and early dark brown, 1s. 6d. per dozen, 8s. per 100.
" Double Germans, eight distinct colours, separate, very strong, 1s. 6d. per dozen, 8s. per dozen.
" Double, Golden Drop (pots), 3s. 6d. per doz., 25s. per 100.
" Double, black and striped (pots), 4s. per dozen.
DAISY, Double Crown, very large, 3s. 6d. per 100.
" Snowball, fine, 3s. 6d. per 100.
" Crimson, 5s. per 100.
" Aucubæfolia, 10s. per 100.
" Small White French and Carmine French, two very pretty sorts, 7s. 6d. per 100.
" Cœrulea (Blue Daisy), 4s. per dozen.
IRIS, pumila, 3s. per dozen.
MYOSOTIS, rupicola (pots), grows 3 inches high, a gem, 6s. per dozen.
RODGER, McCLELLAND AND CO., Nurserymen, &c., Newry.

SPECIAL OFFER

ABIES DOUGLASII, 5 to 6 feet, 2s. to 3s. 6d. each.
ARBOR-VITÆ GIGANTEA, 6 feet, 5s. each.
" LOBBII, 5, 6, and 7 feet, 18s. to 24s. per dozen.
" WAREANA, 5 to 6 feet, 12s. per dozen.
CEDRUS ATLANTICA, 5, 6, and 7 feet, 3s. 6d. to 5s. each.
" DEODARA, 4, 5, and 6 feet, 3s. 6d., 5s., and 7s. 6d. each.
CHESTNUTS, Horse, 9 to 11 feet, 9s. per dozen.
CRYPTOMERIA ELEGANS, 5 to 6 feet, 5s. to 7s. 6d. each.
CUPRESSUS LAWSONIANA, 5, 6, and 7 feet, 24s., 30s., and 36s. per dozen.
" " 7 to 9 feet, 42s. to 48s. per dozen.
LAUREL, Portugal, 2, 3, and 3½ feet, 9s., 12s., and 18s. per dozen.
LIMES, 8 to 10 feet, 9s. per dozen.
PICEA NOBILIS, 2½, 3, 3½, and 4 feet, 3s. 6d., 5s., to 7s. 6d. each.
" NORDMANNIANA, 3, 4, 5, and 6 feet, 3s. 6d., 5s., to 7s. 6d. each.
" PINSAPO, 2½, 3, 3½, and 4 feet, 2s. 6d., 3s. 6s., to 5s. each.
" " extra specimens, 4½ to 5½ feet, 7s. 6d. each.
PINUS AUSTRIACA, 4 to 5 feet, 6s. to 9s. per dozen.
YEW, English, 2½, 3, 3½, 4, and 4½ feet, 6s., 9s., 12s., and 18s. per dozen.
" Irish, 4, 5, and 6 feet, 2s., 3s., and 4s. each.
" ELEGANTISSIMA (Golden), 3, 4, and 5 feet, 3s. 6d., 5s. and 7s. 6d. each.
" " extra specimens, 10s. 6d. each.
The above have all been recently transplanted and carefully prepared for removal. Small crates packed to travel safely any distance.
WILLIAM BRYANT, The Nursery, Rugby.

NEW AND CHOICE POTATO

OFFERED BY

W. SMITH & SON, ABERDEEN.

GRAMPIAN (Robertson).

A very handsome and singularly distinct early round variety, raised by Mr. Robertson, Sunnyside, Blairs, Aberdeenshire. The tubers are large and flattish, having very shallow eyes, skin pinkish white, flaked, with rich rosy pink round the eyes; flesh pure white, very dry, and floury when boiled, and of excellent quality. It is very early and a most abundant cropper, remarkable for its hardy constitution and vigorous growth, growing well in any soil.

Grampian was to be seen in every prize collection of any importance at the leading competitions of the last two seasons. **Price upon application.**

SOLE WHOLESALE AGENTS,

NUTTING & SONS,

Seed Merchants,

60, BARBICAN, LONDON, E.C.

SPECIAL NOTICE.

THE

GARDENERS' CHRONICLE

For JANUARY 5, 1878, will contain a

BEAUTIFULLY COLOURED ALMANAC (19 in. by 13 in.),

From an original design by WORTHINGTON G. SMITH.

"We believe this will be by far the best coloured almanac that has ever been given away with any newspaper."

☞ *Applications for Advertisement space in this number are requested to be sent in as early as possible.*

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

ESTABLISHED SPECIMEN ORCHIDS.

MR. J. C. STEVENS has received instructions from Messrs. JAMES VEITCH & SONS, of Chelsea, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on THURSDAY, December 20, at half-past 12 o'Clock precisely, a selection of choice Specimen and other ORCHIDS, which are being sold only in consequence of their houses being so crowded. Amongst the plants will be found strong CATTLEYAS, of sorts; AERIDES FIELDINGI, very strong; A. RUBRUM, rare; CYMBIDIUM EBURNEUM; DENDROBIUMS in variety, including the very fine D. BRYMERIANUM, offered for the first time; the fine new hybrid D. AINSWORTHII; LYCASTE SKINNERI ALBA; established plants of ODONTOGLOSSUM ALEXANDRÆ and VEXILLARIUM; VANDA CŒRULEA, MASDEVALLIAS in variety, AERIDES SCHRŒDERI and CRASSIFOLIUM; VANDA CATHCARTII, the finest specimen in the country, and many other fine kinds.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

PHALÆNOPSIS SUMATRANA, VANDA LOWI, CYPRIPEDIUM BOXALLI.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 20, at half-past 12 o'Clock precisely, good plants of the rare and lovely PHALÆNOPSIS SUMATRANA, P. VIOLACEA, VANDA LOWI, upwards of fifty plants in flower or bud of CYPRIPEDIUM BOXALLI, upwards of fifty plants in flower or bud of ODONTOGLOSSUM CIRRHOSUM, PHALÆNOPSIS SCHILLERIANA and P. AMABILIS, fine strong plants, all with flower-spikes; DENDROBIUM WARDIANUM, with flower-buds, and other choice Orchids.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

SURPLUS NURSERY STOCK,

AT GREATLY REDUCED PRICES.

WOOD & INGRAM

Have just issued an abridged LIST of SURPLUS NURSERY STOCK, which will be forwarded free on application.

The Nurseries, Huntingdon, Brampton, AND ST. NEOTS.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,

KNAP HILL, WOKING, SURREY.

WELLINGTONIA

gigantea pendula nova.

LITTLE & BALLANTYNE,

CARLISLE,

Were awarded the first prize for "a new Conifer of real merit," at the International Horticultural Exhibition at Carlisle last September, and they are now sending out

Plants from £2 2s. to £5 5s. each.

This Wellingtonia has a perfectly distinct habit from all others, and has been noticed and described in the leading horticultural journals, and advertised by us for some time back. Since we were awarded a prize for our plant others are advertising Weeping Wellingtonias, which are perfectly distinct in habit from ours, the original plant of which may be seen at any time in our Nurseries at Knowefield, and is now 6 feet 6 inches in height, having never altered its character.

LITTLE & BALLANTYNE,

KNOWEFIELD NURSERIES,

CARLISLE.

ROSE BUDS.

All who wish to have a succession of Roses from the open ground, from June to November (without forcing), should plant

QUEEN of BEDDERS (Noble).

See *Gardeners' Chronicle*, May 5. A beautiful bouquet was cut from open ground Nov. 20, 1876. Price is within reach of everybody.

CHARLES NOBLE, BAGSHOT

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SPECIALITIES:

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Catalogues free.

NOTICE TO THE SEED TRADE.

EXTRACT FROM

CARTER'S LIST OF NOVELTIES

For 1878.

ESCHSCHOLTZIA MANDARIN.

First-class Certificate Royal Horticultural Society.

"ESCHSCHOLTZIA CROCEA MANDARIN.—A distinct variety: the outer side of the petals brilliant scarlet, the inner side rich orange; very brilliant in colour, and most desirable."—*Gardeners' Magazine*, July 7, 1877.

Electros, price 7s.

NEW JAPANESE DIANTHUS, Eastern Queen and Crimson Belle.

"Messrs. James Carter & Co. exhibited cut blooms of two varieties of Dianthus Heddewigii, named Crimson Belle and Eastern Queen. The size, substance, and richness of the flowers were remarkable. These varieties will be valuable for garden decoration, especially as they have been proved after some years of trial to come quite true from seed."—*Journal of Horticulture.*

Electros, price 7s.

LOBELIA PUMILA MAGNIFICA.

This is by far the finest form of Lobelia in cultivation. The habit of the plant resembles the fine-foliaged pumila variety, whilst the flowers are of immense size, and of the richest ultramarine blue colour.

We have carefully selected our stock, and it may be depended upon to come perfectly true from seed.

CARTER'S NEW CARMINE CANDYTUFT.

This splendid novelty is of dwarf compact habit, and the plant presents one mass of vivid carmine bloom. It is most distinct and beautiful—must not be confounded with a flesh-coloured variety lately exhibited by a Continental house.

"CARMINE-FLOWERED CANDYTUFT.—Messrs. Carter & Co. have sent us cut blooms of this Candytuft, which will doubtless be largely grown when better known, its colour being somewhat unusual amongst Candytufts. It is of good habit, and flowers freely in spring and early summer." — *The Gardener* August 18, 1877.

Electros, price 5s.

NEW SWEET PEA—VIOLET QUEEN.

It is dwarfer in habit than the other varieties, and the seed is also quite distinct in appearance, the flowers ranging in colour from deep mauve to light violet, suggestive of the beautiful Bougainvillea.

Electros, price 6s.

For further particulars and other Novelties see above List, just published.

*** Several Prizes of considerable money value will be offered for some of these Novelties at the Preston and London Shows of the Royal Horticultural Society; for particulars see "Novelty List."

Carter's

THE QUEEN'S SEEDSMEN,

HIGH HOLBORN, LONDON, W.C.

NEW PLANTS.

MR. WILLIAM BULL

IS NOW SENDING OUT:—

HÆMANTHUS RUPESTRIS.

A new species received from my collector in the West Coast of Africa. Its flowers are bright red, freely produced in dense umbels, the latter 3 to 4 inches in diameter, bracteated by three to four oblong-lanceolate reflexing leaves, which are about an inch long; the pedicels are from ½ inch to 1 inch in length. A very desirable introduction, seeing that only a few species of this handsome group of Hæmanthi are at present in cultivation.

Price 10s. 6d. each.

CIBOTIUM MENZIESII.

A fine dwarf-stemmed Tree Fern, inhabiting the Sandwich Islands, long since known to botanists, but only recently introduced to our collections in a living state. The trunk is comparatively stout, densely hair-scaly at the crown. The fronds are bipinnate, thick, and coriaceous in texture, glabrous, the pinnæ large oblong acuminate, pinnatifid, the segments oblong, blunt, almost entire. The base of the frond-stems is densely furnished with a very dark hair-like covering. Mr. William Bull received a First-Class Certificate for this Fern in 1875 from the Royal Horticultural and Royal Botanic Societies. It is closely allied to C. pruinatum, which differs in having the under surface glaucous. C. Menziesii is the same plant as that shown at the recent International Exhibition at Carlisle, under the provisional name of C. nigrescens. Only imported trunks can be offered.

Price on application.

CIBOTIUM PRUINATUM.

A noble-looking arborescent Fern, from the Sandwich Islands, very nearly allied to C. Menziesii, from which it differs in the silvery or glaucous under surface of its fronds. It has stoutish stems furnished at the crown with a covering of hair-like dark coloured scales; the fronds are bipinnate, as in C. Menziesii, with comparatively shallow ovate-oblong lobes, but the pinnæ and primary pinnules more acuminate; they are smooth on both surfaces; the base of the frond-stems is densely furnished with a dark-brown hair-like covering. This distinct Fern has been awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society. Only imported trunks can be offered.

Price on application.

ANTHURIUM VEITCHII.

An extremely effective and handsome decorative Aroidaceous plant, received by Mr. William Bull from his collector, Mr. Carder, from the United States of Colombia. In the striking character of the leaves principally consists its great beauty; their blades are remarkably long, leathery in texture, and of a bright green; in shape entire, ovate-oblong, and cordate at the base, the two rounded lobes being separated by a funnel-shaped sinus. The young leaves have a glossy metallic hue. The midrib is much thicker near the basal than in the other portions of the leaf; on the upper surface near the base it is rounded, while near the apex it becomes depressed. The spathe is white and oblong; the spadix is scarcely as long as the spathe. This new Aroid has been figured in the *Gardeners' Chronicle*, December, 1876, p. 773, and there fully described by Dr. M. T. Masters, F.R.S., from specimens sent to this country by Mr. Wallis. Fine plants can be offered.

Price on application.

LOMARIA DISCOLOR BIPINNATIFIDA

This beautiful Fern is certainly one of the most handsome of the Lomarias yet introduced. It is of symmetrical habit, its broad sterile fronds rise evenly from the crown, spread outwards in all directions, and arch in an exceedingly graceful manner. Their pinnæ are closely set, so that their parts overlap each other, and divided to the mid-rib, the segments being very much toothed and somewhat crisped, which gives the fronds an elegantly fringed appearance. As the plants mature they throw apparently fertile fronds; these, however, in all cases have as yet proved abortive.

This was one of the twelve new plants with which Mr. W. Bull gained the First Prize at the International Horticultural Exhibition held at Dundee in September, 1876.

The specimens offered have been imported from Victoria, and are of various sizes,

Prices on application.

TULIPA STELLATA.

A handsome species, collected and sent from the Himalayas. In colour it appears to be variable, for the collector writes some are white, others are white and pink. The specimens sent with the bulbs are white, with a broad distinct stripe of crimson down the centre of three of the petals; these are lanceolate, slightly concave, obtuse, the three outer larger than the rest, and bright yellow at the base within. It is an attractive and handsome species, and will doubtless be a favourite with those who cultivate hardy bulbous plants.

Price, 5s. each.

NEW PLANTS—(Continued).

ÆCHMEA VEITCHII.

This is a very fine new Bromeliad, discovered and sent me from the United States of Colombia by my collector, Mr. Shuttleworth, in 1874, and again found and sent by my collector Mr. Carder, in 1875. Its flowers are produced in a dense oblong head, each subtended by a squarrose bright scarlet horny-toothed bract, the rich colour of which renders the plant highly attractive. Sepals lanceolate-deltoid, bright scarlet in the lower flowers of the head, white in the upper ones. This new plant has been also sent from the United States of Colombia by Mr. Wallis, and has been described and admirably figured in the November number of the *Botanical Magazine*. Mr. Shuttleworth, however, says that in its native habitat the flower-heads are fully double the size of the one figured, and present a most effective appearance, hence doubtless three collectors being struck with it and sending it home.

Price 1½ guinea each.

PAVONIA WIOTII.

A very remarkable Malvaceous plant. Its flowers are very persistent, freely produced, and borne in subterminal corymbs; the bracteoles are of a lively red, long, narrow, and slightly ciliate; the folded corolla is dark purple, from the mouth of which protrude the stamens, crowned with bright blue anthers. Mr. William Bull has received a quantity of this interesting species from his collector in Brazil, and can ofter fine imported plants,

Price on application.

NEPHROLEPIS DUFFII.

This may be regarded as a variety of Nephrolepis analogous to the variety of Lady Fern known as Frizelliæ. The fronds are considerably narrowed, and have a gracefully pendent habit, while the apex is more or less divided in a multifid manner into separate lobes, exactly as occurs in the better forms of the Frizelliæ type of Athyrium. The plant comes from the South Sea Islands, and was collected by, and is named in compliment to, Mr. Duff, the Superintendent of the Sydney Botanic Gardens.

Price 1½ guinea each.

Establishment for New and Rare Plants,

KING'S ROAD, CHELSEA, LONDON, S.W.

MESSRS. CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, London, W., have much pleasure to offer the following very beautiful and interesting NEW FRUITS, now offered by them for the first time:—

RUSSIAN TRANSPARENT APPLE.—In the *Journal of Horticulture*, December 21, 1876, "J., Lincolnshire," describes this valuable Apple as giving a "never-failing crop," and as being "a rent-paying tree" for cottage gardens. Mr. BEULAH, an experienced Lincolnshire Orchardist, confirmed this evidence of the usefulness and profitableness of this much neglected but desirable Apple. A tree that bears a never-failing crop, of excellent quality, as stated below by Dr. HOGG, must be as near perfection as possible, and a desideratum that cannot fail to be appreciated by Orchardists in general. The Russian Transparent Apple was brought from Moscow during Napoleon's campaign in Russia, by General Boucheret, who, noticing its hardiness and free growth, and believing it would be suitable for English gardens, brought a quantity of grafts to his home in North Lincolnshire, round which it became and has remained up to this time localised; and now, through the kindness of Mr. Beulah, we have been enabled to purchase all the available grafts from the original stock.

The following is from Dr. HOGG's *description*:—"Fruit large, roundish, somewhat oblate, narrowing towards the crown, where it terminates in several prominent ridges, flat at base; skin smooth and shining, grass green, strewed with large russet dots. Eye closed. Flesh very tender and juicy, with a pleasant sub-acid flavour, and a peculiar and agreeable aroma. I am convinced that this is one of the most valuable culinary Apples in cultivation, and is worthy of more than local fame."

Messrs. Charles Lee & Son have much confidence in introducing this desirable and profitable Apple to more extended cultivation. Strong Maiden Plants now ready, price 7s. 6d. each.

HENSON'S SEEDLING GOOSEBERRY.—This excellent variety was figured in the *Florist and Pomologist* for May, 1874, a First-class Certificate having been awarded to it by the Fruit Committee of the Royal Horticultural Society in 1873. It was described as "a new and distinct variety of exceedingly good quality, of the hairy red section, and a good dessert fruit of medium size."

Messrs. Charles Lee & Son having purchased the entire stock of this valuable Gooseberry, they are now prepared to distribute it to the Public. Price per Plant, 3s. 6d.

The usual discount to the Trade.

Extra Large Trees and Shrubs for Immediate Effect.

WILLIAM IRELAND begs to offer the following:—

ABIES DOUGLASII, 7 to 9 feet, 24s. per dozen.
" NIGRA, 4 to 6 feet, 12s. per dozen.
" EXCELSA, 4 to 6 feet, 12s. per dozen.
CUPRESSUS LAWSONI, 3 to 4 feet, 12s. per dozen; 6 to 8 feet, 24s. per dozen.
CEDRUS DEODARA, 3 to 4 feet, 24s. per dozen.
PINUS EXCELSA, 3 to 4 feet, 12s. per dozen; 4 to 6 feet, 24s. per dozen.
HOLLY, variegated Screw, 2 to 3 feet, 12s. per dozen.
" variegated Hedgehog, 2 to 3 feet, 12s. per dozen.
ARBUTUS UNEDO, very fine and bushy, 3 to 4 feet, 20s. per dozen.
ELMS, of sorts, 10 to 12 feet, 18s. per dozen.
NORWAY MAPLE, 10 to 15 feet, 12s. per dozen.
LABURNUMS, stems, 8 to 9 feet, 12s. per dozen.

All the above have recently been transplanted, and will rise with fine roots.

CATALOGUES free on application.

WILLIAM IRELAND, Pilton Nurseries, Barnstaple.

BY ROYAL LETTERS PATENT.

FLETCHER, LOWNDES & CO.,

13A, GREAT GEORGE STREET,
WESTMINSTER, S.W.,

HORTICULTURAL BUILDERS,

And Sole Manufacturers of

Winter Gardens, Conservatories, Vineries, &c.,

CONSTRUCTED ON THEIR

PATENT

TUBULAR RIB SYSTEM,

Which has gained so many Medals
And so much commendation at the Royal
Horticultural and various other
Shows, Exhibitions, &c.

By the adoption of this system Curvilinear
Houses can be constructed

WITHOUT THE USE OF BENT GLASS,

By which means a considerable saving is effected.

F., L. & Co., also construct

LARGE ROOFS & BRIDGES

on this System,

Which is the Lightest and Strongest Form of Rib Principal ever made.

HOT-WATER ENGINEERS.

Conservatories, Churches, Schools, &c., Heated and Ventilated.

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TAYLOR'S

Patent Ventilating and Vaporising Pipes,

By which perfect Purity of Atmosphere
is maintained.

FERNERIES and ROCKWORK

Fitted up in the most Natural Style.

FLETCHER, LOWNDES & CO.,
13A, GREAT GEORGE STREET,
WESTMINSTER, S.W.

BEAUTIFUL FLOWERS

AND LUSCIOUS FRUIT.

WILLS' ELIXIR.

THIS Manure produces the most marvellous and enduring effects on all kinds of Fruits grown under glass, such as Vines, Pines, Peaches, Strawberries, Melons, Cucumbers, and all kinds of Flowering and Foliage Plants. It is equally effective when applied to Fruits and Flowers growing in the open air. It is very light, 1 cwt. being equal to 6 cwt. of any other manure; it is also free from all objectionable smells.

—— "*Judging by the results seen in the growth of Vines and Strawberries in pots at* HECKFIELD, *the* BUFFALO-HORN MANURE *must possess most valuable manurial properties. The Strawberry Plants being limited in root-space, perhaps offer the most forcible illustration of its value, as these in small 24's are most exceptionally robust, the crowns large, and the foliage of a deep green hue. A moderate portion of the Manure mixed with the soil proves to be a singularly valuable constituent.*" —Vide GARDENERS' CHRONICLE, December 8, 1877.

"Royal Horticultural Gardens,
"Chiswick, August 14, 1877.

"DEAR SIR,—You ask my opinion of the Elixir. I give it you. Early in 1876 Messrs. Taylor & Co., of Clapham, sent a good sample of it here for trial as manure. It has been tried and tested in various ways—in comparison with ordinary stable manure, guano, other patent manures, &c., with the most satisfactory results. We have used it mixed with soil for potting plants, such as Vines, Peaches, Cucumbers, Fuchsias, Pelargoniums, and various others, and as top-dressings in the same manner; also in the formation of a new Vine-border last autumn.

"In each and all cases the deep green hue which the foliage soon assumes, and the great vigour which is imparted, is very striking and notable. Its light fibry componency makes it most suitable for mixing with the soil for potting, and when used as top-dressings the roots are soon seen to permeate the entire mass. In the case of the orchard-house trees and Vines so treated the effects are astonishing.

"No manure that we have ever used here has produced results so decided—so apparent and satisfactory.

"I therefore consider the Elixir to be the most efficient of manures, and intend to use it largely.—I am, dear Sir, yours very truly.

"MR. J. WILLS." "A. F. BARRON."

NUMEROUS OTHER TESTIMONIALS MAY BE HAD ON APPLICATION.

Sold in Bags at 1s. 6d., 2s. 6d., 5s., and 10s. 6d. each; or by the Cwt., £2 4s.

JOHN WILLS,
ROYAL EXOTIC NURSERY,
ONSLOW CRESCENT, SOUTH KENSINGTON,
LONDON, S.W.

SATURDAY, DECEMBER 15, 1877.

FLOWERS AT CHRISTMAS.

NOTWITHSTANDING the prevalence of gloomy days and misty nights, with constant rain and a marked absence of sunshine, the flower producers are hard at work providing the blossoms so much in demand at the Christmas season. Let the weather be what it will flowers will be in demand and must be had, and all that art can do is brought into requisition so that the supply shall not fall short of the requirements of the season.

The method adopted by those whose peculiar business it is to have plants in flower at mid-winter differs materially from what is known as forcing in the ordinary acceptation of the term. There is no trace of that scalding, blinding heat one has to experience in some forcing-houses, a visit to which is a penance rather than a pleasure. The market grower—giving this term a somewhat wide application — does not force so much as he may be said to put a gentle pressure on Nature, and Nature, appearing to be very docile and willing to do its share, then throws into active floral life numberless floral blossoms of varying hues and a multiplicity of forms. Two things strike an observant visitor as he walks through one of the nurseries devoted to the production of flowers—the great variety of subjects grown, and the immense quantities of certain things that appear to be in special demand.

Chrysanthemums are still in force, but that most useful of all the varieties for cutting from, Mrs. George Rundle, is almost or quite done with. Society appears to possess a love for form and outline in flowers, judging by the favour in which this most exquisitely formed of all Chrysanthemums is regarded. If some one could hit upon an expedient by which the flowers of this variety could be had up to the end of February, they would deserve the yet nonexistent order of floral merit.

Double Tuberoses are yet in bloom, but they are sadly feeling the want of solar light and heat to enable them to expand their blossoms. Bottom-heat is of but little advantage in the absence of the genial warmth generated by the sun. The batch of late potted bulbs that are now throwing up their flower-stems are spoilt by the rotting of the half-formed buds. The sun ceases to shine, and the humidity of the atmosphere works ruin.

What a magnificent sight the Poinsettias are in Mr. John Reeves' nursery, at Acton! It is when they are arranged in solid divisions, and can be counted by hundreds—the plants so even in size and appearance as to suggest the fancy that they have been grown according to rule—that one appreciates their great beauty. How dwarf, healthy, and clean the plants; how stout and broad, and how gorgeously coloured the glowing vermilion bracts are? Numbers of these plants are sent to the North of England and Scotland every autumn; and travel (when carefully packed) with but little harm. The Poinsettia is in force from the middle of November till the end of January; and then the double variety, which is later in blooming, carries on the service till March. As a decorative plant the double variety is inferior to the single form; but it possesses one great advantage, it keeps fully three weeks longer in a cut state. The white variety is a little grown,

but its more gorgeous relative completely eclipses it, and, as is only natural, the brilliant hue is most highly esteemed at mid-winter.

Of white flowers that are now in use may be mentioned Bouvardia jasminiflora alba, B. Vreelandii, Eucharis amazonica, Roman Hyacinths, paper-white Narcissus, white Van Thol Tulips, Gardenia, small white Primula, Cyclamen, Richardia æthiopica, Lily of the Valley, and Astilbe barbata.. These by no means exhaust the list, but may be taken as representing the leading flowers.

What a wealth of flowers the Bouvardias produce. They are in the peculiar long low span-roofed houses that appear so well adapted for the forcing of plants and growing market stuff; the plants are within easy reach for cleansing, watering, and such other attentions as are required—they are near the glass, and solar and artificial heat are utilised to the fullest, as the waste is minimised to the lowest extent. Visitors and assistants above the middle height appear to be sadly out of place in one of these places. Bouvardias are represented by plants cut back in summer, and are now in 48-pots, and blooming freely. On all favourable occasions air is given, and there is just enough warmth in the hot-water pipes to make the atmosphere comfortable. Eucharis are receiving a warmer and moister treatment. Roman Hyacinths are constantly being brought on in successional batches, the bulbs put thickly in boxes as soon as imported, and planted out-of-doors under a 6-inch covering of spent Hops and dung. When the shoots are 2 inches or so in height the boxes are removed, put into a little warmth, and up come the snowy spikes directly, far finer in appearance than is usually seen in the Roman Hyacinth. The Paper-white Narciss, the old double Roman, and that fine variety of the Polyanthus section, Gloriosa, is similarly treated; but four or five bulbs put into a 48-pot, instead of the bulbs being put into boxes. The Paper-white is the first to bloom, and how chaste and highly fragrant it is; then follows the double Roman, with five and six and more large double flowers on a truss; with Gloriosa bringing up the rear. What a tremendous force the bulbs appear to attain during the time they are hidden from view under the heavy coating of rich fertilising material, and their blossoms are in great demand.

The pretty early Tulips are a study, and it is curious to see the large flowers peeping through the scarcely developed sheath of leaves. The sorts are the scarlet, rose, and white Van Thols, and the yellow La Pluie d'Or or Golden Prince. The common single Van Thol has got scarce and dear, and it is not now so much used as formerly; and the yellow Van Thol comes into the same category.

Where else in England can such a sight of the old double white Primula be seen as at Mr. Reeves', at Acton? At the present moment a long span-roofed house contains about 3000 plants, about two-thirds being in 48-pots, representing plants raised from cuttings struck last spring, and the remainder in 32-pots, containing plants a year older. It is impossible any one can look upon this marvellous array of plants now coming into profuse bloom and say the double white Primula is a "miffy" subject. A genial and rather dry atmosphere and careful watering at this season of the year, added to care in getting the plants well-established in pots during the summer and keeping the foliage clean at the time of flowering, makes up the sum of successful culture. As for soil Mr. Reeves uses that at hand when a general potting is going on. Some were in loam only, others in a light soil made up of leaf-mould and sand. If a shoot decays at the junction of the stem with the trunk it is taken off and sent away to the propagating house, and by-and-bye return a vigorous plant. Cuttings are put in at all times when they can be had. Many of the two-year-old plants had eight or nine crowns each. Mr. Reeves has a few plants of the old Double Purple, now very scarce indeed; and the old Double White is preferred to any of the newer varieties.

The Cyclamen is a foremost mid-winter flower. It does not require a great degree of heat or a specially moist atmosphere at this season of the year; it requires to be comfortable, and then it produces its leaves in fine character and numerous flowers. The white blossoms are especially in demand just now. Richardias, represented by very fine two-year-old plants, are now making a strong growth, and throwing up massive flowers. Generally two-year-old plants throw the finest flowers; afterwards, these come on well for stock plants, and in the spring throw up numerous offsets, which are taken off, put into store boxes, then potted singly in small pots and put out-of-doors for the summer under a coating of manure, and kept drenched with water.

Lilies of the Valley are now in hotbeds, and flowers are coming up rapidly. There is no expenditure of force in the way of producing leaves, and all the strength of the plant is infused into the flower-spike. There is no root production, and those who force Lilies of the Valley do not trouble to keep the roots after they have done flowering, but throw them away. The earliest flowering plants of Astilbe barbata are in a strong heat, and while the plants are producing several spikes of flower they are yet of a dwarf growth. This is early for this valuable decorative plant, and the clumps must have been put into the forcing pit as soon as received from the Continent. A small pit is best; a little soil serves to nourish a root—it is more a matter of plenty of moisture.

Echeveria retusa is a fine winter-flowering plant, remarkably free of bloom. Small plants are crowded with spikes of reddish cerise and yellow flowers. It makes a capital window plant for cottagers and others, for like many succulents it is easily managed.

The decorative Pelargoniums that flower at this season of the year yet remain to be noticed. The old Crimson Gauntlet is now blooming freely from nice bushy spring-struck plants; its earliness makes it such a great favourite. For a white, Blanchefleur or Russell's Annie is the earliest; a good grower and very free. The coming white Pelargonium is Duchess of Edinburgh, with a free-branching distinct habit, and a plentiful crop of trusses of fine well-formed flowers. Pelargoniums are having much the same treatment as the Poinsettias.

Nor must the homely fragrant Mignonette be forgotten. Charmingly flowered plants have been sent to market for some time past, and the supply will go on for successional batches for months to come. The plants are in cold frames, near the glass; and when frost threatens some covering is put on to keep the flowers free from blemish. Some idea of the number of pots used in one of the market nurseries may be imagined, when it is stated that Mr. J. Reeves of Acton uses every year from 15,000 to 20,000 48-pots for the culture of Mignonette alone. The yearly account with the pot manufacturer is something prodigious. The 48-sized pot is the one mostly in request; it might be termed the regulation market size. The latest of Mr. Matthews' production is represented by an elegant, lightly made article, combining the maximum of size with the minimum of weight. The homely potter has become a true artist.

This list might be considerably lengthened, but the foregoing suffices to give the leading Christmas flowers. Some persons are apt to suppose that the application of powerful stimulants in the way of manures has much to do with these remarkable market productions. It is much more a matter of clever culture and constant attention. One of the largest market growers attests that strong manures are not necessary, and that he does not use a quarter of a hundredweight of guano in the year. Liquid cow-manure is that mostly used, and that not very strong. It is applied at the right time, it is applied properly, and with attention. Method, order, regularity, and thoroughness prevail in these market nurseries; the work is rapidly and effectively done, and at the right time. They are admirable schools of horticulture, and every man who aims at making his mark as a practical gardener would find it to be of incalculable advantage to spend a year or two at one of these plant-producing establishments. *R. D.*

New Garden Plants.

DENDROBIUM LITUIFLORUM FREEMANI, *n. var.*

The other day I wrote upon Dendrobium lituiflorum robustius. I will now direct attention to an older, very curious introduction of Mr. Bull's. It has straight stiff stems, a good deal thinner than those of robustius, whether erect or pendent I do not know, but very probably erect. The flowers are nearly those of the well-known, generally grown variety of D. lituiflorum, but the lip is covered with denser hairy bodies (small, now branched lamelloid bodies), and there is a yellowish white zone in lieu of a white one. It is, horticulturally speaking, no doubt quite a distinct thing, yet botanically I think it may be ranked as a variety. If I am right, then we have in Dendrobium lituiflorum a very astonishing series of variations in the stem, even more astonishing than in Dendrobium Wardianum. The flowers fully developed with us must prove exceedingly brilliant, since those which were formed when travelling in the dark cases had charming colours. I have to thank for the sight of masses Mr. W. Bull, at whose wish it is dedicated to its discoverer in Assam, Mr. W. B. Freeman. *H. G. Rchb. f.*

IRIS (POGONIRIS) KASHMIRIANA, *Baker, n. sp.**

For drawing my attention to this fine new species of Iris, I am once again indebted to my valued correspondent, Max Leichtlin, Esq. It is a native of Kashmir, and was received by him from the Kew collection, along with a white-flowered variety of I. ensata, from the same province. It comes nearest to I. florentina, with which it quite agrees in general habit. It differs from florentina in its sweet-scented flowers, pure white without any perceptible slaty tinge, with falls veined up to the top of the beard with a brighter yellow, by its large spathe-valves scariose at the tip only at the flowering time, and especially by its stigmas, which are milk-white in colour, two-thirds as long as the segments of the perianth, with much larger conspicuously imbricating crests, which are decurrent for some distance down the part of the blade as a winged keel. In I. florentina the stigmas are slaty-white, less than half as long as the perianth-segments, and have small deltoid crests. The present plaot flowers along with germanica and florentina at the end of May.

General habit entirely of I. florentina and germanica. Leaves ensiform, slightly glaucous, 1½ foot long, 18—21 lines broad when fully developed. Flower-stem 3 feet high, much overtopping the leaves, bearing several clusters of flowers. Spathe-valves oblong, 3 inches long, scariose through about the upper third at the flowering time, bright green in the lower two-thirds, the outer valve 15—18 lines broad. Pedicel very short inside the spathe. Ovary oblong, shallowly 6-sulcate, ¾ inch long; tube bright greeo, ¾—1 inch long; limb 3 inches long, the standards and falls of equal length and breadth (15—18 lines broad), pure white without any slaty tint, the latter cuneately narrowed from near the broadly-rounded tip to the base, falcate in the upper half with a beard 1½ inch long of white hairs with a yellow tip, closely veined up to the top of the beard with yellow lines; standards erect, with an orbicular blade 2 inches long, and short distinct claw, veined up to the top of the claw. Stamens 1½ inch long, the anther equalling in length the flattened filament. Stigmas 2 inches long, including the crests, milk-

* *Iris (Pogoniris) kashmiriana*, Baker, n. sp.—Foliis ensiformibus sesquipedalibus glaucescentibus; scapo tripedali late corymboso florum fasciculis plurimis prædito; spathæ valvis oblongis magnis tempore florendi apice solum scariosis, floribus suaveolentibus albis; pedicellis brevissimis; ovario oblongo 6-sulcato; perianthii tubo subpollicari, limbi tripollicaris segmentis æquilongis et æquilatis exterioribus obovato-cuneatis dimidio superiore falcatis ungue limbo æquilongo barbato flavido striato, interioribus erectis, limbo magno rotundato ungue brevi; stigmatibus bipollicaribus lacteo-albis cristis magnis oblongo-deltoideis late imbricatis.

white, the crests oblong-deltoid, ½ inch broad, much imbricated, and running as a wing about halfway down the keel of the face of the blade nearest the centre of the flower. The plant was sent to Kew by Dr. Aitchison, but has not yet flowered with us. *J. G. Baker.*

STONE'S APPLE.

At one of the autumn meetings of the Royal Horticultural Society, Mr. Louis Killick, of Langley, near Maidstone, exhibited a dish of Apples under the above name, which on account of their fine size and handsome form came in for a good deal of notice, and when the same gentleman showed another dish of fruits on October 2, the Fruit Committee considered it well worthy of the award of a First-class Certificate, which it accordingly received. The accompanying illustration (fig. 144) was prepared from a fruit and some foliage kindly sent to us by Mr. McLean, Lord Holmesdale's gardener at Linton Park, whose cottage is situated about 300 yards from the original tree, from which Mr. McLean believes most of the fruit farmers in East Kent have been supplied with grafts. The original tree is situated on a farm at Loddington, once occupied by a Mr. Stone, hence the name of Stone's Apple, and it has been sent out by Messrs. T. Bunyard & Sons, of Maidstone, under the name of Stone's Apple, or Mapson's Seedling, and in their catalogue before us they describe it as "very large and handsome, a sturdy grower, much grown at Linton for market, good bearer," and in use from January to March. In the *Journal of Horticulture* recently Dr. Hogg described the variety under the name of Loddington Seedling, and we quote his description :—

"Fruit large, varying from 3 to 3¾ inches in diameter; roundish, slightly flattened and narrowing abruptly towards the eye; it has obtuse ribs on the sides, which become more distinct towards the eye, where they form ridges round the crown. Skin smooth and shining, grass-green at first, with a brownish cheek; but after being gathered it becomes a fine lemon-yellow, with a pale crimson cheek, marked with broken streaks of dark crimson; the surface is strewed with minute russet points. Eye closed, with convergent leaf-like segments, set in a deep and prominently plaited or ribbed basin. Stalks ½ inch to ¾ inch long, slender for the size of the fruit, and inserted in a deep, wide, funnel-shaped cavity, which is lined with pale ashy russet extending over the base of the fruit. Flesh very tender, and with a pleasant subacid flavour. This is an early culinary Apple of great excellence, coming into use in September."

Fig. 144.—Stone's Apple.

The Apple as shown at the last meeting of the Royal Horticultural Society was larger than that here illustrated, globose at the base, very slightly tapering towards the eye, almost the shape of a large globose Onion, and quite destitute of any appearance of ribs. The foliage, as will be seen from our illustration, is very characteristic.

FRUIT EXHIBITORS AND THE SITUATION.

That the promoters of fruit exhibitions should have an interest in seeing themselves pretty safe in a financial point of view is no more than natural. The risks they run are immense. Theirs is a continual catering to supply pleasure to the pleasure-seeking public. To the Crystal Palace and other companies a horticultural *fête* must form but a very small share of the year's programme of amusement for the general sight-seeing public. And rather should I be inclined to look upon their encouragement to a horticultural show as being more of a condescension on their part to gardeners, in presenting them with an opportunity to show their prodigious productions to the world, than that they should, for all their pains, be rated by a minority of gardeners for the show being of too long duration. The finances of those companies are at stake — they must win an "honest pound" at the gates to enable them to present an honest prize to successful exhibitors. It is not at all an uncommon thing for a flower or a fruit show day to be a wet one. On these occasions the goddesses Flora and Pomona are not always smiling; we omit to do as they do in some other countries—offer them festival and even sacrifice for their good graces, so we must be content to take the weather as it comes! Compared with companies or societies the risk of the gardener individually is trivial. To begin with, the fruit he exhibits is not his own, and admitting that it is all honestly grown at home, it belongs to his master; it has been grown entirely at his expense, and if not the travelling expenses, at least the gardener's wages are paid for every day he is out, and at the end of a three days' show, if the fruit by long exposure to dust, or wet, or theft is neither fish, nor flesh, nor good red herring, the loss must still be sustained by the employer, unless he can philosophically console

himself by a belief that the fruit has been utilised as a worthy sacrifice to the goddess of fruit.

It is rather amusing to note the threat of a small knot of exhibitors, that if the present three days' system of showing is continued they will withdraw their exhibits—leaving the sun out of the question, according to their opinion. They must surely indeed fancy themselves as composing nearly the whole of the fruit-growing community in the country. Some of them have deservedly taken many good first prizes, and some of them too, be it also noted, have perhaps taken some firsts made up with a liberal sprinkling of good seconds and thirds, the whole forming together, horticulturally speaking, another famous 600! Granting them, however, all merit for their present position of riding on the top of the great horticultural wave, yet we are taught by Nature to observe how wave succeeds wave, and that those now on the crest will ere long pass on and sink into the abyss of obscurity, to be succeeded by other waves bearing with them other aspirants for similar fame. The present opportunity, however, is theirs, and we must gently blame them for whistling up their name by a united threat to withdraw. All this is human nature.

It is sincerely to be hoped, for the sake of gardening generally, and especially for those of our successors (added to that, our paternal duty, that we should leave the field better prepared for them than we found it) who may have, like ourselves, emulous desires to win their horticultural spurs, by following in our wake with their fruit on the exhibition tables of the Crystal Palace, the Royal, or the Botanic, that these companies shall not take offence at the importunate solicitations of the noisy few, and so create a dead-lock—put a stop to fruit shows being held at any of these great metropolitan horticultural centres. After all, it is a delicate question with many of our employers whether they are justified in allowing their gardeners to hawk their fruit from one show to another about the country, opening up the temptation to show fruit for no other purpose than that of making money; and hence it is often understood, on the other hand, that certain employers encourage their gardeners to do so, and look upon prize-money as being equivalent to wages. This betrays the existence amongst the ranks of both classes of a very unhealthy state of affairs, the tendency of which is to sink gardeners, gardening, and horticultural exhibitions to a very low ebb of morality. Hence the busily whispered remark about the demoralised state into which our horticultural shows have fallen. Whether these productions have been over-paraded about the country is a matter of opinion. My own opinion is that they have, and that those who do so are, to a greater extent than we are aware of, unconsciously lending themselves to bringing about a state of affairs to be found only amongst that kind of society who follow the turf and other similar questionable pursuits for a living.

We have been quite long enough accustomed to the yearly monotony of fruit and flower shows, with their degrading proclivities, and it is quite time some fresh manœuvre should be introduced for the benefit of our calling—to a profession we dare not assume—which would entirely change the position of the whole of our horticultural front. Supposing, then, that by some dexterous movement we could manage to change fronts with our employers, so that they would be put exactly in our vacated position as competitors for prizes—not for a few paltry shillings, certificates, or bronze medals, which the humility of our position allows great societies to offer us without a blush—but some substantial form of prize which it would be both honourable and creditable for them to fight for. If some philanthropic individual could not be found forthcoming to take it up, there is plenty of money in the country, and I would propose to raise sufficient and so create a fund which would yield annually several handsome prizes to induce proprietors to compete. The nature of the object to be competed for might be for the best laid out, planted and kept pleasure ground, extended perhaps to the kitchen garden, hothouses, &c. Some years the prizes might be offered for the best laid out park, containing both wood and water. Other years again the prizes might go for the best managed plantations, hedges, drives, &c. Of course proprietors and places would have to be classed, districts formed, &c., all details of which to be managed and worked out by a well appointed committee, working from a general centre of management, similar to that of the Royal Agricultural Society of England—in fact a leaf out of their book would be invaluable to float our organisation. The gauntlet being by this move thrown down to proprietors themselves, they would become directly interested, which before they have not been. After a period of long inaction, landscape gardening, arboriculture, and horticulture would receive new life, an immense and we might venture to say instantaneous impulse would be given to all horticulture energies, intellectual and industrial. Many additional acres would be enclosed, more hands kept, rare trees and shrubs planted, a demand for a better paid and more intelligent class of gardener and forester; in fact, speaking in military parlance, a general advance would be made along the whole line. Ladies too would be enlisted, and instead of spending all their spare time as they do now, either croqueting, rinking or playing lawn tennis, they would study, join and make a grand accession to "the noble army of gardeners." I am not quite sure but that a movement of this kind, well-worked out, would not go further, and so gain in favour as to put gardening in a fair way of being uplifted to the rank of a profession, established perhaps and endowed.

I place my suggestions in the hands of the public, or if advisable in the hands of the Royal Horticultural of London to work out, if they can be trusted with the working of it out and keeping it together. We all know what a muddle they have made of their own affairs, what sums of money they have so foolishly and so irrecoverably spent over a smoky town square; and instead of bestirring themselves to make amends for bygone mistakes, how they are still sitting down twirling their thumbs, and crying over spilt milk. Once I gave them an idea, which they seized with the greatest avidity and for a time they worked it out well. It was indeed the only thing the horticultural ship of these later days did, to give the shore any pretence to an offing, but by sheer mismanagement they were soon again on the lee shore, bumping and floundering on the rocks: but what other could be expected? The idea was a plagiarised one; they never thanked me for my idea, neither did they condescend to ask my leave to carry it out—I was never asked to be a censor at any of those great meetings. They were then throwing their honorary fellowships about; none ever reached me, so I have nothing to thank them for. What I am alluding to was the idea of bringing the Royal Horticultural Society's shows to the provinces. It had long been on my mind, when at last an opportunity occurred when Mr. (now Sir Henry) Cole of the South Kensington Museum was in this neighbourhood on a picture-hunting expedition. I gave it to him. I do not grieve personally because an honorary fellowship was not conferred upon me, but I take the opportunity of doing so on behalf of gardeners generally, and feel that as a class we are very much neglected. I feel that I am setting forth the case of many who, like myself, have gone to places and spent whole lives in the making and planting of them, and in the end there is no hand of recognition or fellowship held out to us, and were it not for the kindly encouragement and acknowledgment given to our exertions by the private enterprise of the horticultural press, we might die in the last ditch unnoticed, uncared for, unburied, for anything the Royal Horticultural Society of London cares to the contrary. To Thomas Edward, the Scotch naturalist, the hand of fellowship could be held out by the Linnean and other societies, but to the plodding, persevering gardener there is no reward. We have no organisation amongst ourselves—no guild; and it is often by the merest accident that even good men, after spending years about the country in search of knowledge and experience, obtain situations worthy of their pains. What really is wanted is some move towards the elevation and improvement of the gardener's position, practically and morally, so as to enable him to win the "honest pound" at home without having recourse to hawking through the country for it. *William Miller, Combe Abbey Gardens.*

DR. PATERSON'S ORCHIDS.

Having had the pleasure on the 1st inst. of inspecting the excellent and interesting collection of Orchids grown by Dr. Paterson, at Fernfield, Bridge of Allan, a few remarks upon those in flower at this dull season, and the admirable way in which the collection is grown, may be of some interest. A grand plant of Cattleya Leopoldii was in full bloom, each spike averaging about a dozen richly coloured flowers, and although a common species in most collections it is very effective at this season when so well done as this specimen is. A remarkably healthy plant of Vanda cœrulea was bearing a fine spike of eleven of its beautiful pale-blue flowers, of a larger size and greater substance than is usually met with. So healthy a plant, without the slightest symptom of "spot" or canker, is seldom seen, and Dr. Paterson attributes his success in cultivating it to hanging it up near to a roof ventilator, where it has plenty of light with an airy breeze blowing about it for at least nine months of the year, the plant only being taken down and set on the stage while it is coming into flower and flowering. When done flowering it is immediately hung up in its airy position, where it makes fine sturdy growth, perfectly free from any spot or blemish. A large plant, in luxuriant health, of a fine and distinct variety of Vanda tricolor had several closely flowered spikes, of well shaped, clear and richly marked flowers. This is the only plant of its kind said to be in the country, having been imported by Dr. Paterson from the East Indies. Miltonia Moreliana atro-rubra was nearly over, but had been finely in flower for some weeks, and the few fresh flowers left showed a size and depth of colour indicating perfect health and successful culture. A grand plant of Lælia superbiens was bearing several tall spikes of its handsome flowers; as were also smaller plants of the useful and lovely L. autumnalis superba, and L. Perrinii. Several fine plants of Lycaste Skinneri were examples of the best cultivation, with numerous immense flowers of great substance, in some instances two flowers being produced on one footstalk. A large and very fine plant of Lycaste lanipes was flowering most profusely, but it cannot be compared to Skinneri either for beauty or usefulness.

Oncidium ornithorhynchum had two beautiful spikes, and nice plants of Oncidium Rogersii were making a fine display. The pretty flowered Mesospinidium sanguineum had two well flowered and fine spikes upon a nicely grown plant in a 6-inch pot. Odontoglossum Alexandræ, Roezlii, Rossii majus, and vexillarium, small but very healthy plants, were producing freely their rich and charming flowers. Of O. nebulosum, cordatum, bictoniense, Uro-Skinneri, and grande there were splendid specimens with a profusion of flowers. A fine healthy plant of Angræcum sesquipedale, about a foot high, was producing a strong spike with four flowers. Pleiones, in pans a foot in diameter, and well raised in the centre, were a complete sheet of lovely blossom, the sorts being P. maculata, præcox, lagenaria, and Wallichii. A large panful of Neottia picta maculata was in splendid condition, and producing some very strong spikes of flowers. Epidendrum rhizophorum is a great favourite here, as it produces its scarlet Ixora-like flowers throughout the whole year. The plant is a large and well-grown one, and the sort is well worth the attention of those who grow Orchids for furnishing cut flowers. Many other species were in fine flower, such as Masdevallia Harryana, ignea, and Veitchiana, Zygopetalum Mackayi and crinitum, Calanthe vestita oculata and Veitchii, very fine, &c.; and of the many fine specimens not in flower all displayed the same fine healthy, stocky luxuriance, a sure sign that they will flower profusely at their proper seasons.

The collection is grown in four moderate-sized and very ordinary looking houses, entered by a door at one end, passing from the cool house next the door through two intermediate ones to the warmest at the farther end, where grow the Vandas, Aerides, Saccolabiums, Phalænopsids, &c.; and the famous plant of the best variety of Anthurium Scherzerianum, which is now making a splendid growth, and promises to flower finer than ever during the ensuing season. At all times, except in the severest weather, the doors of the houses are kept wide open, so as to allow a free circulation of air through them and amongst the plants; and as the roofs are certainly not particularly air-tight the breeze is sometimes considerable, but which, with judicious care in all other matters tending to the welfare of the plants, produces that healthy, firm, and well-matured growth which is so marked a feature in the collection. The Doctor, who is a most enthusiastic orchidist, puts great importance upon the roots as well as the tops of his plants being in a proper medium, and takes great interest in selecting the best materials for growing them in, mixing the whole himself, so that each may be in due proportion, and afterwards potting, &c., his plants with his own hands; the only "gardener" employed in the "houses" being an active, intelligent *woman!* who waters, airs, fires, and performs all the necessary routine work in a prompt, careful, and orderly manner, such as might be copied with advantage by many "gardeners" of the sterner sex. Everything clean, sweet, and tidy, with not an insect to be seen,

reflects most creditably on her careful and attentive management.

High temperatures are not in favour with Dr. Paterson. He believes they unduly excite and quickly exhaust the plants; and his practice is: moderate temperatures, a fresh airy atmosphere, more or less moist according to the state of the plants and the season of the year; a due season of rest, and plenty of water to a plant when it is making growth; with sound peat and sphagnum for the roots to grow in, to which he adds a dash of dry pulverised sheep-droppings while mixing it on the potting-bench, the beneficial effects of which are clearly apparent in the robust growths made in such compost. *D.*

PINKHILL, EDINBURGH.

A visit to Messrs. Downie & Laird's nurseries at Pinkhill is at all times interesting and instructive, but is doubly so when one is fortunate enough to be conducted over this establishment by the veteran florist and enthusiastic proprietor, Mr. Downie. Our first visit was in 1856, shortly after it had been formed into a nursery, and even to this day the writer has not forgotten the deep impression made upon him by the superior cultivation of Dahlias, Hollyhocks, and other florists' flowers. That there has been no retrogression, but a determination to be still in the foremost rank of floriculture, was abundantly proved when again paying it a visit in the month of March last, and again during the past autumn. Without digressing, it is worthy of remark, to show the esteem in which valuable and tried servants are held by this firm, to state that at our first visit as well as our last we found George Goodall, the indefatigable propagator, after twenty-three years' service in the firm, as enthusiastic as ever. My object in writing this article is to give to others, who have not had the opportunity of paying this place a visit, general and trustworthy statements of the characters of a few of the newest and best varieties of florists' flowers, such as Pentstemons, Phloxes, Pansies, &c., such as appeared to be specially worthy of commendation.

Pentstemons.—The effect produced by the brilliant and abundant display of blooms of this popular florist's flower was incomparably grand—not what is generally seen by a few dozen plants grown together, for they are here by thousands, while a happy thought seems to have struck the planter to arrange near together such as had markings approaching to each other, thus giving an opportunity of testing their differences. Among seedlings selected for distribution we found the following very superior, having flowers more like Gloxinias than Pentstemons:—Mrs. Fox Terrot, deep rosy purple; John F. Kinghorn, very light rosy purple; Archibald Fowler, light rosy crimson; Andrew Hunter, rosy salmon; Perfection, bright rose, pure white throat; William Kelway, dark purple-crimson throat, veined and clouded with bright crimson; Countess of Eglinton, light rosy pink; G. Mitchell, ruby-crimson. Amongst the older varieties the following are worthy of extensive cultivation:—Dr. Masters, Lennie Barron, Mrs. A. F. Barron, Octoroon, Percy Wynne, and William Fowler.

Phloxes.—The dull and damp season of 1877 was propitious in affording an opportunity of inspecting the seedling Phloxes of the early flowering section, and here a great advance has been obtained. Amongst those selected for distribution, the remarkably large size of flowers and spikes in the following were conspicuous, viz.:—Lady Musgrave, pure white, form of flower perfection, and exceedingly fragrant; Mauve Queen (a new type), slate colour, flowers larger than a crown piece, highly desirable variety; Archibald Fowler, white with pink rosy eye, very fine. Amongst the old varieties the following are very desirable:—A. McKeith, Beauty, Mrs. Hunter, The Shah, Duchess Dowager of Athole, Luna, Forward.

In the late flowering section we observed a decided advance on existing varieties. The following are very superior both in form and spike:—Earl of Mar, bright rosy scarlet, quite a gem; W. Gorrie, dark, shaded rosy lilac; Alexander Shearer, very bright rosy salmon; Vesuvius, bright crimson-scarlet; Lady H. Boswell, light rosy crimson. Amongst the older varieties I made the following selection as being well worth growing:—Countess of Minto, white, with crimson eye; John Anderson, bright crimson scarlet, with large and finely formed flowers; Miss F. J. Hope, pure white, small rosy pink eye, a most desirable variety; Thomas Peacock, rosy lilac; Lothair, light scarlet; J. K. Lord, salmon-red; Mrs. Aberdein, light rosy crimson.

Pansies.—It is well known to florists that for upwards of a quarter of a century the firm of Downie & Laird have been the pioneers in producing and bringing to perfection the whole of the varieties of the Pansy tribe: one would now almost be tempted to proffer them the advice of "Rest and be thankful," but judging from the forms they possess of the above in all ages and stages of life the end is not likely to be just yet. As a proof of the severe test this tribe undergoes in selecting for improved varieties it may be stated that Mr. Downie recently discarded thirty out of fifty named varieties of Violas which had been bedded out to prove their adaptation for decorative purposes. This firm's motto seems to be, and rightly too, "Selection before collection." Being favoured with a long digest on this tribe the following sorts may be accepted as being likely to prove serviceable for a long time to come:—Mr. H. Pease, pure white, immense bloomer, a true Viola, a perfect gem; Forerunner, purplish-crimson, fine habit, immense bloomer; Crimson Gem, nearest approach to scarlet in a Viola, very fine; Crown Jewel (Dean), pale yellow, immense bloomer; Duchess of Sutherland, blush-mauve and white, a distinct and grand variety; Goldfinder, a pure golden-yellow Viola, and most profuse bloomer; Max Kolb, dark purplish-maroon, a very free bloomer; Profusion, pure white, profuse bloomer, has a dash of the Pansy in it, blooms six weeks earlier than any other variety, will be much sought after when better known for market purposes.

Another grand feature at Pinkhill, and the last I shall attempt to describe in this paper, is the seedling Fancy Pansies, their number being legion, while year by year improvements are effected which have almost, I may say, brought them to perfection in form, rendering them more and more attractive. The varieties selected during the past summer for distribution are not very numerous, but certainly they will be found distinct and a great improvement on existing varieties. The best of them are Mrs. E. Wood, William Postlethwaite, Mrs. Jamieson, of which I give the description in Mr. Downie's own words—"Can anything be finer in a fancy yellow Pansy?" Mrs. Plummer, bronze and yellow, the size and markings being something extraordinary; Muna, pure white, grand flower; John Beveridge, bronze and lilac, shaded with blue.

Before leaving, Mr. Downie, anxious that all should be seen, drew my attention to the nucleus of a new arrangement of hardy herbaceous plants, and as nothing is done here by halves ere long a collection will be formed sufficient to meet the increasing demand for this class of long neglected favourites. I have still a few more notes untouched, which I will send you at some future time. *G. Croucher, Ochtertyre.*

LINUM TRIGYNUM.

In your very interesting notice of plants in flower at Kew I was surprised to find that Linum trigynum appears to be there treated as a stove plant, as in such a temperature it is always a prey to red-spider, and the blooms soon tumble from the plants when they are in more heat than is generally kept up in a warm greenhouse. Here we depend very much on them for conservatory decoration during the winter in combination with Salvias, Sericographis, &c., and I find they do far better in a temperature of from 50° to 55° than when it is either higher or lower. With that degree of warmth, and a moderately dry atmosphere just to keep the flowers from damping, they succeed admirably and last in full beauty for months. So valuable are they at and after this season that I would advise all who wish to make a good display to grow a batch of them, as more useful decorative subjects cannot be had, and if shown in contrast with the scarlet bracts of Poinsettias or either of the plants mentioned above, the effect is greatly heightened, although the association of the two colours may not be quite correct or in accordance with some tastes.

To do Linum trigynum really well they require a pit or frame to themselves, and when either of these can be spared their management is a very simple affair. The way we treat them here is to give them a slight rest after blooming by keeping a little dry at the roots, but during the time this is done the syringe is kept plied freely overhead, without using enough water to soak into the soil. This constant damping of the foliage is the only way to keep down red-spider, as from some cause or other they appear to have a special liking for this Linum, and once they effect a footing it is a difficult matter to eradicate them or prevent their spreading further. By the end of April or May the plants are on the move again, when the shoots are shortened back, and as soon as they break again a portion is used for propagating from, and the others shook out to be potted and grown-on for large specimens so as to have two sizes, the oldest of which are annually discarded, and the young ones kept to supply their places. The cuttings taken off with a heel root freely in any close moist atmosphere or under a bell-glass, and are soon fit for potting off, which should be done principally in thoroughly decomposed leaf-soil, or fibry peat, as they are particularly fond of vegetable matter, and like a free, loose medium for their roots to ramble in, and such as water will percolate quickly through. To aid in this the potting should be light, and effected with only a gentle pressure of the soil, which should be rather dry than otherwise, as then it never binds so closely together. For the shook-out plants, about a fourth part of good turfy loam may be added to the peat or leaf-mould, and a fair sprinkling of sand so as to keep the whole open and porous.

The potting complete, the plants should be stood where they can enjoy a temperature ranging from 50° to 60° with a humid atmosphere, such as a forcing-house affords, in which they will soon get hold of the soil and start freely into growth. In June the weather will be warm enough for them to be transferred to their summer quarters—a deep pit or frame, in the bottom of which some leaves, loam, or cocoa-nut fibre should be placed. This will answer the double purpose of plunging them in, to keep the roots in a uniformly moist condition, and the air about them surcharged too, both of which are matters of the greatest importance to their welfare. During sunny days they will require slight shade such as a piece of tiffany or anything of that kind affords, and every afternoon should be closed between 3 to 4 o'clock after being heavily syringed, in doing which it is necessary to drive the water well in under the foliage, as that is the part the spider generally attacks. If this syringing is persevered in every night and morning, they will be entirely free from insects, and such plants as will delight the heart of any one in their healthy appearance, and the floriferous display they make in return for the attention bestowed. Towards the end of October, when the nights are beginning to get cold, they should be removed to where they can get a little more warmth till they show bloom, and are ready for the conservatory or greenhouse, to either of which they may then be removed.

Unfortunately, the Linum trigynum is not of much value for cutting, as the flowers soon fall off; but possibly a little gum dropped down the tube, and coated on around the base at the outside, would prevent this, which, if it did, it is a colour and form that would tell well amongst others. *J. Shepard.*

STRAWBERRIES ALL THE YEAR ROUND.

To have ripe Strawberries all the year round is no longer a matter of conjecture but of fact. We can remember the time when a gathering of four ounces of Black Prince some time in February was considered almost a feat, now we can afford to discard that variety for another that is better in every respect and one that is well adapted for fruiting all the year round, viz., Vicomtesse Hédicart de Thury, a variety that seems to enjoy the questionable honour of many aliases. Whether it is profitable to call one variety of fruit by three or four names I know not, but I have more than a suspicion that the lists of Strawberries might be materially reduced by a fair comparison of so-called varieties.

The autumn and winter supply of fruits will of course depend in a great measure on what quantity is forced the spring previous, it should also be understood that reasonable means and facilities should be given to any one who is supposed to supply fruit in even moderate quantities through the autumn and winter. Judging by analogy the autumn and spring crops are very nearly balanced in point of merit up to November, after that time they are a nominal crop. We can have Strawberries in November quite as good as any Black Prince that ever was gathered in

February, October produce will compare with March September with April, and so on. There is therefore no reason why the Strawberry season should not be extended up to November or continued all the year through.

In every garden where the Strawberry is forced in spring there is material left for the following autumn and winter. Many of the earliest forced plants perish from cold and neglect or are thrown to the rubbish-heap as if they were so many weeds. True, a portion may be saved as the season advances, and planted out either with a view to having a few fruit during the autumn, or for general purposes the following year, and a more excellent plan cannot be adopted for an all-round crop. I think, upon the whole, the preservation of all forced plants is entitled to more consideration for one or other of three purposes, or for all combined. They may be either planted out in the open garden for fruiting a second time, or in cool brick pits where the crop might be protected from heavy rains during the autumn, or brought on later in the season in the Strawberry or other forcing-house. Plants that are turned out of warm houses in March become useless unless they are afforded the protection of a close pit or frame, and naturally brought back to their original hardy state. These plants should be planted out on a rich sunny border, and if elevated so much the better. In planting we assume the balls to be in a fit state to be partially shaken out, and the ground in a suitable state to admit of its being trodden round the ball, leaving all of equable firmness. Where late varieties of Strawberries, such as Eleanor and Elton Pine, continue to do well, the flower-spikes that are pushed up from the forced plant may be nipped off as they make their appearance, but this must be discontinued in time to secure a succession with, say, a week or ten days' blank between. We gardeners should never forget that the greatest dainty may become too common, so that a blank now and then rather enhances the estimation in which such things are held. A second lot should, if space can be spared, be similarly planted out in pits with the lights thrown off. These come in admirably during the latter part of September and October, and can be protected from rough weather, wasps, birds, and other enemies, and there will be no harm in having two strings to one's bow in the shape of a reserve coming on indoors.

The treatment of pot plants is simple enough providing there is adequate labour. If a portion of the early forced plants which were fruited in 5 and 6-inch pots are retained for winter fruiting they had better be partially shaken out after the throng of forcing is over and shifted in 7-inch pots. Those that already occupy this size will only require to have their drainage seen to with an additional top-dressing of horse-droppings or the remnant of an old Mushroom-bed in a workable state. The whole should then be taken to some shady position behind a north or west wall, where they will make fresh roots *ad libitum* through the summer. This position will minimise labour and promote a healthy second growth. The same attention in watering that is given to other plants in another stage of preparation must also be accorded to these, and a dew overhead once a day from a fine rose will also be beneficial after hot days. It may not be considered superfluous to remark that a well-grown Strawberry plant is always conspicuous by the size of its crown and the state of its roots rather than by the number of its leaves, so that in selecting a shady position to save labour and encourage a fresh supply of roots such conditions must be avoided as are known to be detrimental to fruitfulness.

After the second rooting process has exhausted itself flower-spikes will begin to make their appearance, and their removal will, of course, depend on the supply that is coming on elsewhere. It is well to be careful in securing a good crop before the season advances too far, as the process of ripening is so irregular that fruit may be gathered from the same plants for a period extending over several weeks. This is one advantage of winter Strawberry growing, and though we cannot say much of their flavour in December, yet they are, indeed, a rarity, and deserve a place with other dainties on the table in honour of old Father Christmas.

I herewith send you a sample, the produce of one pot, from which stray ripe fruit have been gathered more than once. The sample is neither better nor worse than others in the same house. *W. Hinds, Ottrspool.*

THE GENUS AGAVE.

(*Continued from p. 717.*)

Series II.—Carnoso-coriaceæ.—Texture more fleshy and pliable than in the Coriaceo-carnosæ. End-spine not pungent. Teeth never large.

Group IX. Serrulatæ. — Edge of the leaf minutely serrulate.

91. *A. pruinosa*, Lemaire; Jacobi, Monogr., 168; *A. Deharyana*, Jacobi, Nachtrage, i., p. 49; *A. Kellocki*, Jacobi, Nachtrage, i, p. 50; *A. Gheisbreghtii*, and *dentata*, Hort.—Stem short, 3—4 inches in diameter. Leaves 10—20 in a dense rosette, spreading, oblanceolate-oblong, 1½—2 feet long, 4—5 inches broad above the middle, narrowed to 2 inches above the base, where it is 1 inch thick, the face flat, the centre ⅛ inch thick, the texture soft and fleshy, the colour a pale glaucous-green, the end-spine very weak, the edge furnished with minute irregular spreading deltoid serrations not more than ¼ line long. Inflorescence unknown.

A native of Mexico, introduced by De Smet, of Ghent, in 1863. It is a very distinct plant, in habit resembling only A. attenuata, from which it differs by its serrulate margin. My description is taken from a fine specimen now in the Kew collection, and it is included in Mr. Saunders' series of photographs.

Group X. Attenuatæ. — Margin of the leaf quite entire.

92. *A.* (*Littæa*) *attenuata*, Salm-Dyck, Hort. Dyck., p. 303; Jacobi, Monogr., pp. 176, 261; Revue Hort., 1875, p. 149, tab. 31—32; *A. glaucescens*, Hook. in Bot. Mag., t. 5333; Jacobi, Monogr., p. 139.—Stem reaching a height of 4—5 feet and a thickness of 3—4 inches. Leaves 10—20 in a dense rosette at the top of the stem, oblong-spathulate, 2—2½ feet long, 8—9 inches broad two-thirds of the way up, narrowed to 2½—3 inches above the base, persistently glaucous, one of the most fleshy of all in texture, the face flat when mature, rather concave when young, the base 1 inch, the centre two lines thick, the tip not at all pungent, the edge pale and quite entire. Barren part of the scape twice as long as the leaves, with copious adpressed lanceolate leaf-bracts. Flowers in a dense spike 6—8 feet long and ½ foot in diameter; bracts overtopping the perianth, lanceolate from a dilated base; pedicels ¼—⅓ inch long. Perianth 2 inches long, including the narrow oblong ¾-inch ovary; segments greenish-yellow, oblong, longer than the funnel-shaped tube. Filaments under 2 inches long; anthers ⅝—¾ inch. Style reaching finally to the top of the filaments.

A most distinct plant, introduced from Mexico about 1834, and now spread in all our collections. A full account of it will be found in the *Botanical Magazine*, as cited, from a plant that flowered in the Kew collection in the autumn of 1861. Jacobi describes two varieties, *brevifolia* and *compacta*. Signor Fenzi has sent me a fine photograph of a plant from his collection, taken at Florence in October, 1876, and asks whether A. spectabilis, recently introduced by Roezl, which I have not seen, and do not find described, should not be referred here. The species is commonly grown in England under the name of glaucescens, but attenuata has twenty-seven years priority.

93. *A.* (*Littæa*) *Ellemeetiana*, Jacobi, Monogr., p. 178 and 313; Baker, in Saund. Ref. Bot., t. 163; tab. nostr. (fig. 145).—Acaulescent. Leaves 20—25 to a rosette, oblanceolate-oblong, 1½—2 feet long, 4½—6 inches broad at the middle, narrowed to 3—4 inches above the base, where it is 1 inch thick, slightly glaucous, the face flat above the middle, the end-spine not pungent, the margin pale and quite entire. Scape, including the spike, 12—13 feet high, stiffly erect, the lower 3—4 feet barren, with squarrose lanceolate bracts. Flowers in a dense spike 8—9 feet long, 7—8 inches in diameter when expanded; bracts linear from a deltoid base, reaching to the top of the perianth; pedicels ¾ inch long. Perianth, including the ⅝ inch narrow-oblong ovary, 1¼—1½ inch long; tube scarcely any; segments oblong, yellowish-green, ⅝—¾ inch long. Filaments inserted at the throat of the tube, 1¾—2 inches long; anthers ½ inch. Style finally overtopping the anthers.

A native of Mexico, introduced about 1864, and named in compliment to Mons. de Jonge Van Ellemeet, of Overduin, in Zealand, the companion and biographer of General Von Jacobi, and whose collection of Agaves, once so remarkable, has, we believe, been dispersed comparatively recently. It was flowered in 1867 by Mr. Saunders, whose rich collection, like that of M. Ellemeet, has also been dispersed, and a coloured figure appeared in the *Refugium*. It is now widely spread in collections, and was flowered at Kew in 1874, and again in 1877. It is a most distinct and unmistakable species. *J. G. Baker.*

Florists' Flowers.

Jottings from my Note-Book: Some Good Carnations and Picotees.—Florists are proverbially garrulous—they never tire of talking over the beauties of their favourites; and having a spare hour, it has just occurred to me to write out some notes I made of three of the four exhibitions of the National Carnation and Picotee Society whereat it was my privilege to be present.

The first exhibition, as your columns have recorded, was held in the Aquarium, Westminster, on July 18 and 19, and was, to us Northerners, especially interesting, not only as indicative of a revived and extended taste for these flowers in the South, but also from the mode in which the schedule of prizes proposed, to quote the words of the promoters of the show, to "illustrate the characteristics of the Carnation." Mr. Dodwell had done many bold things during his long residence and leadership in the North, but he never did a bolder thing, from the florist's point of view, than when he proposed to award prizes in the Carnation to "sports, selfs, and fancies." Considering that from the point of view referred to—the florists'—the variegation of the Carnation is a chief and essential property, so much so that a single petal without any colour, or without any white, would ensure the condemnation not only of the flower so circumstanced but all others associated therewith, I shall not be thought extreme when I say, it was a bold thing to do; but when simply recording the fact I go further, and say not only was the innovation not excepted to, but was cordially accepted by florists, I think I shall be entitled to assert that florists are capable of recognising beauty wherever found, and are far from being bound by the red-tape of narrow-mindedness too frequently imputed to them.

Of these "selfs, sports, and fancies" at the Aquarium I may here remark that whilst the "sports" from the fine florists' varieties were in all cases markedly superior to the fancies in colour, smoothness, substance, and size, yet in the declension from their high estate of variegation they had not suffered unalleviated degradation, inasmuch as the fragrance, which is, though not unknown, a rare property in the richly marked Carnation, had been returned to them in so liberal a measure that the table on which they were displayed was delicious as a bank of Violets.

The exhibition as a whole suffered from the late and untoward character of the season, many of the flowers other than those from Mr. Turner and Mr. Douglas lacking the completeness of fully developed growth, yet, nevertheless, it was fine, and I never remember to have seen finer specimens than those in the open class from the gentlemen named. Mr. Douglas' Picotees, indeed, were perfection.

Of the management too high praise cannot be accorded. So excellent was the organisation that the work of judging quite one thousand specimens, besides plants in pots, and the affixing prize-cards, &c., was performed within an hour; everything being ready for the earliest arrivals to the private view. On one point, however, I would urge upon the executive a reform, which needs but to be seen to be appreciated—the enforcement upon exhibitors of stands of uniform dimensions. This is not a large matter, but it greatly mars or makes the effectiveness of a show.

But to my notes, which, to avoid repetition, I classify. In Carnations, scarlet bizarres, Admiral Curzon, Dreadnought, Mars, Mercury, Sir Joseph Paxton, and True Briton have been everywhere good, Sir Joseph Paxton especially so; and of new varieties two seedlings of Mr. Simonite's will, I think, take high rank when available. One is named Samuel Cooper, and promises even to surpass Curzon; the other is called Joseph.

Crimson bizarres are a glorious class, and rejoice in a large variety. Of these I have notes of Rifleman, J. D. Hextall, Lord Milton, Lord Raglan, Marshal Ney, Eccentric Jack, Mr. Murray, and some others, but as they were unnamed they must go unrecorded until such a means of identity has been afforded.

Pink and purple bizarres are everywhere delighted in, and of these Sarah Payne, Falconbridge, James Taylor, and Satisfaction, the latter remarkable for its fragrance, should everywhere be grown.

Of purple flakes the best shown were Premier, James Douglas, Juno, and Dr. Foster. In scarlet flakes Sportsman, Clipper, and John Bayley; and in rose flakes Sibyl, grand; Crista-galli, James Merryweather, John Keet, Lovely Ann, Mary Ann, and Rose of Stapleford were all fine.

Of new flowers Unexpected, C.B. (Turner), was very fine: also a variety called Rainbow, produced by Mr. Battram; Mrs. Dodwell, R F. (Lord), requiring a few days' more growth, was well shown, and will doubtlessly prove an excellent addition to this already highly developed class.

In Picotees, red-edged, the varieties most to my fancy were John Smith, the premier of the whole exhibition, a flower rarely equalled; and others very superior in their characteristics were Princess of Wales, J. B. Bryant, Mrs. Dodwell, shown at Bradford so fine that in my opinion it deserved the premier prize, there awarded to Zerlina; Master Norman, also shown at Bradford, Colonel Clarke, Mrs. Gibbons, Miss Small, Rev. F. D. Horner, Mrs. Fuller, Robert Scott, Wm. Summers, and Thomas William (Flowdy), the latter undoubtedly the best light-edged red as yet distributed.

Of purple Picotees the best I have yet seen are Zerlina, Alliance, Ann Lord, Alice, Mary, Mrs. Niven, John Delaforce, marvellous for its breadth of colour and purity of the ground; Minnie, Mrs. Douglas, and Silvia, the two latter varieties of Mr. Simonite's sent out in the autumn of 1876. Mr. Simonite also produced a lovely medium-edged purple, named Mrs. Slack, which is likely to surpass the favourite old variety Mrs. Summers.

Of rose Picotees Mrs. Allcroft, Ethel, Edith Dombrain, Fanny Helen, Juliana, Mrs. Lord, Miss Lee, Miss Wood, and Mrs. Adams, the latter a variety from Newcastle, most approve themselves to my taste; whilst of new flowers Miss Horner (Lord) and Lady Louisa (Abercrombie) were very fine, and such as I think will win approval wherever seen; Fairy Queen (Hartley) has also properties which will ensure its being enquired for.

At Manchester, on August 4, Mr. Mellor showed a fine light purple, which obtained the 1st prize in its class, but being a single bloom only it must be seen again before a judgment can be pronounced upon it; and at the same meeting a First-class Certificate was awarded to Mr. Joseph Chadwick for his heavy-edged purple Picotee named Miss Chadwick.

I have spoken at the beginning of these remarks of the late and untoward character of the season, but exceptional as were the conditions prevailing in the South, with us they were intensified to a very high degree. So dark and sunless was the atmosphere that no ripening process could be completed, and though I fertilised numbers of seed-vessels, and the growth went forward to the stage even of developing the ovary the full length of the calyx, the calyx meanwhile being full of living petals, which I had to extract to make room for the swelling seed, no maturity resulted, and my labour in this direction was in vain.

I am glad to know that this experience is limited to this district, one of the highest in England where the Carnation is grown, as my friend Mr. Dodwell, unable from the backwardness of the bloom to produce his best flowers at the Aquarium, succeeded so well in fertilising them as to obtain the largest harvest of seed he ever reaped, and in due time will probably be rewarded with a corresponding number of new and desirable varieties. *George Rudd, Undercliff, Bradford, Yorkshire.*

Fig. 145.—Agave ellemeetiana.

Forestry.

Pruning (*continued from* p. 654).—There are in all trees what are termed latent buds lying in readiness to embrace any favourable opportunity of appropriating the materials necessary to form active buds and shoots, and whenever any neighbouring sap-vessel is ruptured, or the sap diverted from its natural course, it so far affects those sleeping buds as to arouse them into life and action, and ultimately induce them to form buds, branches, and leaves. So easily are these latent buds influenced that a slight variation of temperature will do it. It is upon this known principle that thinning is practised, and by it all pruning should be regulated.

The fine, healthy, and vigorous spray that thus covers the dismembered parts and newly pruned trees during the first summer after the operation has taken place, is very apt to mislead those of limited experience, and produce fatal errors. The spray thus produced being well nourished and abundantly supplied with sap, is so far accelerated in growth as to continue growing in autumn till suddenly stopped by frost, while the wood is yet tender and immature, and consequently a large portion of it withers and decays, and what of it remains still vital is so much weakened and otherwise injured that the leaves which next season cover it are weakly, ill-formed, small, spotted, and blemished, and scarcely one of them free from disease.

The injurious effects of pruning above alluded to are not so obvious in Conifers as in hard-woods, and are most conspicuous in the Oak, Elm, and Spanish Chestnut, but are very perceptible in the Picea family, as also the Larch and Cedar.

Ten years ago the writer pruned a considerable number of Scotch Pine trees in different ways and to different degrees, from that of removing only the terminal shoots of the lateral branches to that of denuding them of all, except as many small twigs upon each branch as to keep it vital; and the invariable result was a diminution of the thickness of layer of wood in the stem, in some cases the year immediately

succeeding the operation, and in others two or three years subsequently, but in every case just in proportion to the extent of pruning done so were the results injurious as far as discernible. By way of further experiment the writer denuded some Scots Pines, of about 6 to 8 feet in height, of all their pins or leaves, leaving only the terminal shoots covered, and the results were that, although making annual top-growths of from 12 to 14 inches the year previous, the next season they made only from 3 to 5 inches. The defoliating process was carried on two years longer (three years in all), during which time the top-growth still continued to decrease, but owing to the writer leaving the scene of experiments he cannot record further results, though the probability is they would all soon have perished.

The top-growth of a number of trees operated upon was likewise materially influenced by the foreshortening practice of pruning, but not so uniformly so as the upper tiers of the lateral branches. Those most severely pruned, or such as had their lateral branches cleared off to within one year's growth from the stem, or that part of the branch where the second year's growth begins, such trees showed a slight deficiency of growth the first season, more the second, and still more the third, and so on till the top lost its youthful character entirely, and assumed that of an aged round-topped tree.

The above experiment was made with a view of showing how the top-growth is influenced by reducing or confining the side branches, and the results shown were that the top-growth is not promoted by reducing or confining them, but is produced through shelter, by protecting the top of the tree from storm, tempest, and blighting winds, and by deep and congenial soil, by which the whole structure of the tree is nourished. This is very obvious, by what may be seen in the natural forest, where trees may be found standing singly, yet making top-growth equal to others growing in groups tall and slender as ship-masts.

Finding that pruning diminishes, or at least prevents the increase of wood, in proportion to the quantity of branches removed, the writer has devoted considerable time and labour to find out, as far as possible, what proportion of branches a well-balanced tree ought to have in order to make wood at the most desirable and satisfactory rate, neither too hard nor too soft, too fastly or too slowly grown; and in order to do this he has taken along with himself two practical men, and gone into an extensive natural forest, as well as into several plantations, and selected choice specimens of Larch, Scots Pine, and Norway Spruce. In making the selection some trees were taken which were considered perfect in all their parts and proportions; some, again, thought to have too few branches, some too tall in proportion to their girth, and others again too thick for their height. These conditions, be it observed, were unanimously agreed upon by all there, and written down before the tree to which they referred was cut, pruned, dissected and weighed.

After a protracted and minute inspection of all the parts, and specially of the concentric rings by which the annual deposit of cambium is known, it was found that too few rather than too many branches was the defect, and that it was comparatively rare to find trees in regular plantations between fifteen and thirty-five years old with sufficient branches upon them to sustain a proper and profitable growth.

Of the common species of Coniferæ none require or endure pruning so much and so well as the common Larch and Silver Fir. Both are disposed under certain conditions to produce a plurality of stems, and both submit well to their removal, which is quite an essential operation, in order to attainment of good and profitable trees; and beyond this thinning rather than pruning is preferable.

Without further going into the subject at present, but far from exhausting it, I conclude with a view of resuming it at a future time. *C. Y. Michie, Cullen House, Cullen, N.B.*

The Villa Garden.

THE difficulties that beset those who delight in cultivating a few plants, but whose knowledge of their requirements and the simplest rules of management are of a somewhat vague character, was forcibly illustrated a few days ago in the case where an attempt had been made to winter a few plants in a cold frame. The plants were Pelargoniums, Fuchsias, Caladiums, and other things of that character—subjects that can be wintered in such a frame with comparative safety, if only the right means are adopted. In this instance the cultivator had made a few mistakes, and these mistakes, if set forth, may serve to show others certain perils to be avoided. In the first place the frame was placed in the worst part of the garden, where if damp accumulated anywhere it would be sure to be found; it was under the drip of trees—it was placed in a hollow towards which the surface water naturally rose, and the plants were quite at the bottom of a deep frame, with the cold wet bottom below the pots, and the branches far removed from the glass. It was almost next to impossible that plants could be safely wintered under such circumstances. The frame should have been in the driest part of the garden, in the open rather than near trees; the site should be drained, so that water might be drawn away from it rather than impelled to it, and there should have been a raised bed of brick rubbish within the frame to keep the bottom dry and warm, as far as warmth could be obtained from it, and the heads of the plants near the glass so as to have the benefit of sunshine and drying winds. With a dry bottom assured and warm covering over the frame in severe weather the plants, if kept dry at the roots (avoiding, at the same time, that extreme dryness that would cause death), may be wintered with safety. The placing of a lighted candle in the frame of a night, when the frost is most intense, does wonders in the way of preventing injurious effects. Not long since an amateur gardener thought he had hit upon an excellent expedient for wintering plants in safety, and he set to work to dig out a kind of bed in his garden, and round this he built up a wall of half long fresh stable dung round his bed, intending to put a light on the top of it when completed. He had placed in it a quantity of cuttings of Pelargoniums in capital condition, thinking that the warmth from the dung would keep the plants secure from harm all the winter, but was quite forgetful of the ill effects of damp, which would have played sad havoc with the plants. Another difficulty to be surmounted is that of keeping plants sufficiently watered during the winter. Writers sometimes state that plants should not be watered during frosty weather, which is quite true as a general rule, but at the same time it is advice that must not be fully carried out under all circumstances. It is possible that a long spell of frost may happen with bright sunshiny and even warm days. Plants will dry fast, and besides the fire-heat employed, in whatever form, to keep out frost, will also aid the drying process. These two influences soon dry up the soil in the pots, and plants die from drought as well as from over-much sunshine. Water should be given sufficient to keep the plants alive, but not to encourage them to grow; it should be done by eleven o'clock in the morning, to allow of the soil draining a little by night, and when the sun is bright a little air may be given, but on the sunny and leeward side. These remarks apply more particularly to those who winter plants in unheated structures, and whose only chance of resisting frost is by the employment of a portable stove or lamp, or some such means of increasing the temperature.

Notices of Books.

Ferns of the British Isles, *Described and Photographed.* By Sy. C. London: Van Voorst.

The peculiar feature of this book is found in the photographic illustrations, which represent the species of British Ferns, in a series of eighteen plates, the plants being variously reduced from three-fourths to one-tenth the natural size, and two or three species being usually represented on a plate. The figures, though small, are generally clear and characteristic. The book is nicely printed, and elegantly got up, and is just suited for a drawing-room table. Brevity is one of its characteristics; indeed we are told that the contents are limited "to an accurate and concise account of each section or group, genus, and species," information on other points being purposely omitted. Some of the definitions are not so accurate as this would lead one to suppose; for example, under Adiantum it is affirmed that the membranous margin of the pinnules is "prolonged over the sori," which does not properly indicate the structure of the fructification in this favourite genus, in which the sori are affixed to and hang from the under-surface of the indusium, and are not merely covered by it, so that consequently any prolongation of this "membranous margin" would not lie over the sori, but beyond them. We cannot moreover agree with the author in referring Polypodium flexile to Athyrium, nor Lastrea remota to Lastrea Filix-mas.

—— The *Gardeners' Year Book* for 1878 (*Journal of Horticulture* office, 171, Fleet Street) has just been issued. The utility of this little publication has been tested by eighteen years' successive reproduction. Like its companion the *Horticultural Directory* it is indispensable in every garden office.

—— Issued under the auspices of the Secretary of the National Rose Society the *Rosarian's Year Book* for 1877 (Blackwoods) has disappointed us. There is an interesting paper on the weather by Mr. Edward Mawley, a valuable one by Mr. George Paul on the stocks used for Roses, and some others, but the reports of the Rose shows, for the most part fully chronicled in the gardening papers of the day, are surely too much like *cranbe bis cocta* to be of any value now.

A FLOWER HYMN.

GLORY to God for flowers!
They lift our thoughts from care;
So lovely hast Thou made them, Lord,
They seem Thy smile to wear.

Red Roses tell Thy heart,
Glowing with love divine,
Deep pierced for a world of sin,
That we might all be Thine.

To show Thy spotless robe
Is to the Lily given;
The robe Thou givest to Thine own,
That they may dwell in heaven.

The many fragrant blooms,
Each with a separate grace,
Thy Spirit's various gifts pourtray
In each true Christian race.

Others we love not least,
Yet wear no colours gay;
Like some who do a world of good
In their own quiet way.

The ever welcome flowers
Can health or sickness bless:
Lord, keep those selfish hearts of ours
From utter thanklessness.

Glory to God for flowers!
We would our praise renew;
Lord, send upon our thirsting hearts
Thy holy grace, like dew.

"*St. Andrew's Magazine*," *Derby.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Although from long and repeated experiments I am no advocate for bottom-heat, except to such plants as can be made to do better with it, yet the presence of a good body of tan in either a stove or intermediate-house benefits the plants in several ways; the gases given off whilst it is strongly fermenting are evidently an advantage to plants, as exemplified by the healthy appearance of the leaves where it is used. In houses devoted to subjects that require through the winter the continuous application of fire-heat, there must be some continuous means of providing moisture for the atmosphere to counteract the drying influence of the pipes or flues. This, no doubt, as is usually done, can be supplied by troughs or evaporating-pans, but there is one difficulty in their use, that in mild weather—such, for instance, as we have experienced for some weeks—the less heat in the pipes required will have caused comparatively slower generation of moisture from the evaporating-pans, necessitating more of them being kept filled. When the transition from mild weather to severe frost occurs, often very suddenly, this naturally requires the water in the pipes being kept at a much higher temperature, frequently, on severe nights—near to the boiling point; as a matter of course this produces a corresponding increase in the evaporation from the pans or troughs, often to an extent that causes all but a saturated state of the atmosphere, which by no means should occur. Where a good body of fresh tan exists, the moisture given off from it goes far to supply the atmosphere of the house with the moisture required by the plants, reducing in a comparative ratio the necessity for keeping the trough pipes filled. In the case of houses where nothing but ordinary pipes without troughs exist, and where the only available means for moistening the atmosphere is by throwing water on the floors, stages, &c., the tan, from the fact of its continually giving off moisture, is of still further assistance. Independent of the above considerations it materially assists in keeping up the temperature, and from this fact alone its use is a matter of wise economy. To reap the full benefit of its effects, I have found the present the best time for getting it in; in years past in country places where English bark was exclusively used for tanning pur-

poses, roughly ground, a considerable portion of that which had been used the preceding year was so little decomposed as by sifting to be available for mixing with the new; but where foreign bark is employed, finely ground, by the end of a year there is seldom anything left fit for use that would make it worth while going to the trouble of sifting, and when the whole is cleared out and new substituted a longer period elapses before it gets infested with worms so as to make them troublesome. For this reason the tan should always be used as fresh as it can be obtained directly it is taken from the pits, before it has had time to lie. In clearing the old out it is a good plan, with a view to the eradication of worms, to lime-wash the inside walls of the pits, and to strew on the bottom half an inch of newly slaked lime. If these precautions are taken, and means used to eject the worms from the soil in the pots that are ultimately to be stood on or plunged in the tan, it will have a material effect in lessening the number of these pests, which have such an injurious influence on plants generally by not only clogging up the drainage, but reducing the soil to a putty-like consistency ill adapted for the roots making healthy progress. The removal of the plants requisite for getting in the tan gives a good opportunity for cleaning the glass and woodwork.

In the vicinity of towns, where there are now such a number of glass erections for the cultivation of plants of all descriptions, it is necessary in the course of the year to wash the houses several times, both inside and out, to secure the admission of the greatest possible amount of light, as in such situations the atmosphere is so far charged with soot that the glass gets obscured in a way that keeps the plants much darker than they should be; even where the atmosphere is of the purest, stoves, by generally being in a position nearer the furnace than cooler structures, need more attention than they often get in this. This vital question of light is a matter that forces itself much more upon gardeners at the present day than in more remote times, when stove plants generally were kept in a comparatively low temperature through a good portion of the winter until there was a greater amount of solar light. Now, in most places, the regular and unceasing demand for cut flowers is such that many things have to be started earlier, necessitating the keeping up of a higher temperature, which excites growth, rendering every ray of light of paramount importance.

More Gardenias and Bouvardias should now be introduced to the warmest house at command. I should by no means advise Gardenias that are thus to be brought on into flower in a high temperature to be plunged in bottom-heat; no doubt where there is any deficiency of top-heat it will have the effect of causing the blooms to expand quicker, but the flowers so brought out will be of much shorter duration when cut than if grown without bottom-heat; and this holds good not only of the above plants, but also of most things that require a high temperature to bloom in winter. Another batch of Poinsettias, Euphorbia jacquiniæflora, Plumbago rosea, Thyrsacanthus rutilans, and Sericographis Ghiesbreghtii, should be removed from the intermediate temperature where they have been located during the autumn to warmer quarters, so as to succeed such as flowered earlier; by thus bringing these things on at intervals, the stove never looks quite so gay, but where there is a continuous demand for flowers the supply is much more effectually insured. *T. Baines.*

ORCHIDS.—Plants of Dendrobium Falconeri, whether grown in baskets or on blocks, in which condition in all probability the growths are allowed to hang down below the basket, &c, or whether, which is far better, the plants are grown in pots, and the bulbs tied up to and around a number of stakes, will, now that the plants for the most part have ceased growing, and the small lateral shoots that start away from the main bulbs have swollen and plumped up considerably, be treated to a more rigid course than has hitherto been adopted with them. The amount of water at the roots, which has gradually been diminishing, must now be withheld altogether, and the plants taken from the Dendrobium-house and stood or hung in a division where it is much drier and cooler, where the night temperature at present is about 45°. Should cold weather come on, a night temperature of 40° will not injure them. Here they should be so placed that they will not come in contact with cold cutting draughts when air is given during the daytime. Here they will keep with safety, and, in fact, it is only by thus resting and ripening them that any number of blooms can be obtained upon them in their proper season. The small-growing D. pulchellum having now also finished its growths must be stood with the Falconeri, and the least possible amount of water given for the next three months. Plants of D. crassinode as they show the buds for bloom along the newly-formed bulbs must be stood or hung again in the warmer division. At first they will need only a small quantity of water; but as the birds increase in size, and at the same time the breaks push away at the base of the flowering growths, it will be necessary to give more, so that the flowers and growths may not receive any check. D. Wardianum will also be found in about the same forward state as the preceding, only the growths being a little more forward the water required just at present will be a little more. The earliest D. nobile should now be in bloom or advancing quickly: a regular supply of these from December to May can easily be managed if a little care is exercised in placing the first ripened plants in the cool, and bringing them back into a gentle heat as they are required. D. Ainsworthii requires treating so exactly like nobile, and has proved to be such a free bloomer, that as every season it becomes better known it will be found to be one of the very best of the winter blooming varieties, as well, too, as being invaluable as an exhibition plant. In the Cattleya-house it will be seen that the true C. Warneri is just starting into growth, and the roots, too, showing signs of renewed activity. This, it must be remembered, flowers on the new growths; therefore when once the breaks show signs of life they must be encouraged and assisted so that nothing should hinder their full development, and that their flower-sheaths may be formed to enclose and protect their most magnificent blooms this should now be placed at the warmest end of the Cattleya-house, and watered with care and discretion during the dull and dreary months before us. Cymbidium Mastersii and eburneum, though very much alike in general appearance, and both natives of Northern India, are found to succeed best when treated to a little less heat than is given to the majority of plants from that vast empire. They should be grown in the Cattleya-house, where the foliage will keep a much better colour and be less liable to become spotted than when grown in a strong heat. Mastersii should now be in flower, whilst eburneum will soon be showing, so that its large and showy blooms may be opened by March and April. D. Parishii, too, succeeds well in the Cattleya-house; the imported plants of this, however, have bloomed only on rare occasions, if at all. Dendrochilum glumaceum, now breaking freely, must be stood in the East India-house, and treated to very liberal supplies of water. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

After the leaves are all swept up and wheeled to the rubbish-yard, or out-of-the-way corner in the shrubbery during damp or stormy weather when groundwork cannot so well be got on with, the heap of leaves, grass, &c., may be turned over, which in due time will become available for wheeling on the flower-beds and borders. In many gardens, where manure is scarce, this compound comes in very useful. As the ground is now unusually wet, plants are not in the most favourable condition for withstanding severe cold; have sufficient protecting material in readiness to cover up tender plants in the open air or cold pits and frames, for although the season up to this time has been unusually mild, a change may suddenly occur, and if not anticipated much damage might be the result. While the weather is favourable push forward all planting; where hedges of deciduous plants of evergreens are required the ground had better be trenched, and if the soil is dry and porous it will be greatly improved by a good dressing of well-prepared manure, which will afford the plant considerable nourishment, especially in dry hot weather. Give pits and frames air on every favourable occasion, so as to keep them as hardy as possible, and take care the plants do not suffer from too much wet, which at this season of the year is very injurious, most of the things being in a state of rest. In places where the turf has become unlevel the holes may be filled up with sand or any light soil, and after being well rammed the turf will be put back in its former place and well beaten, then a few turns of a heavy roller will give it the finishing touch. Gravel may be collected, and had ready for renewing the walks after the season is further advanced. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—The trees which were started last month will by this time be breaking forth into growth. At this period of the year, with sunshine and daylight at its lowest pitch, there is with this particular subject just a risk of hastening forward the growth too rapidly, so that its character will be attenuated and weakly. Be content, therefore, during the next month or so with a steady course of progress being made in this way. As soon as the leaves on the trees begin to expand 55° at night may be safely allowed, and this condition be advanced 5° more by daylight every morning, and be maintained whilst it lasts. Use tepid water for syringing the trees, and apply it over them every morning and again early in the afternoon if the moisture from the preceding application has disappeared. At 65° open the house a little way at its apex, and keep it so until such time as it is likely to fall beneath this point, when it should be closed up. If fermenting matter is employed in the house the vapour which arises from it will at times accumulate on the glass, and render it somewhat impervious for the free and full access of light and sunshine. This matter should at all times command attention, and it should be removed wherever necessary, as these important elements are now much required. Stop the shoots when they have made about five leaves, and take away entirely those which are not wanted. Exercise care in watering, giving it only when really necessary, and then plentifully. Now is a good time to commence a house with permanently planted trees, if ripe Figs are wanted at about the beginning of next June. The same temperature as indicated above will be suitable here for the present. *G. T. Miles, Wycombe Abbey.*

ORCHARD HOUSE.—In many places it is now becoming the practice to obtain a few early Peaches and Nectarines from trees established in pots, placed in a forcing orchard-house. Where this course is followed, such kinds as Early Louise, Alfred, Grosse Mignonne, Hale's Early, Abec, and York Peaches, Lord Napier and Elruge Nectarines, may now be taken in, and placed at once where they are to stand for the season. If the plants have been out-of-doors the soil will be sufficiently moist, but if they have been kept under glass the first care must be the gradual application of tepid water to the roots until every particle is brought into a growing state. Let forcing commence with open ventilators and sufficient fire-heat to maintain a minimum temperature of 45° with a rise of 5° to 10° by day. Syringe the trees two or three times a day, and damp all available spaces when the weather is fine, but guard against keeping the trees wet through the night. Should the weather become very cold and unfavourable, the supply of atmospheric moisture must be regulated by the amount of light and ventilation, as an excess of water is often as injurious as the want of it. Where this early compartment is to be succeeded by another containing the general stock in January, the trees may be kept out-of-doors until the end of the month, providing the weather continues mild, but in the event of a severe frost setting in they may be housed at once. *W. Coleman, Eastnor.*

CUCUMBERS.—The mild and open weather which has hitherto prevailed having been highly favourable to winter Cucumbers, plants in all stages are now looking well, and will continue productive so long as the cultural directions laid down in my last can be followed, and sudden checks in temperature are carefully guarded against. Where bottom-heat is partly produced by fermenting Oak leaves, a good stock must be always ready for taking into the pit, as a sudden check to the roots is often more injurious than a temporary depression of the internal temperature of the house; but the latter should and may be guarded against by the use of blinds, or some kind of covering at night and in bad weather, independently of the fact that a great deal of hard dry firing is saved thereby. Steadily remove old foliage and exhausted growths from bearing plants, and lay in all young growths their full length, so as to keep the trellis nicely covered with clean healthy young foliage. Be moderate in the use of atmospheric moisture until the days begin to lengthen, and discontinue filling the evaporating pans in dark damp weather. If plants that have been a long time in bearing show signs of exhaustion, they may be rested and strengthened by the entire removal of all fruit and flowers, moderate top-dressings with fresh turf previously warmed, and the frequent application of weak tepid liquid-manure. The latter is an excellent thing for syringing over beds, paths, and walls when plants are forced to yield heavy crops of fruit to meet the demand. Avoid the use of manure if possible, either for producing heat or mulching, as it only encourages worms, and the remedies, lime or soot-water in large quantities, often do considerable injury to the plants. Watch for red-spider and mildew, and apply flowers of sulphur or a weak solution of Gishurst, and use Pooley's tobacco-powder in preference to smoking for the destruction of green-fly. Do not distress the plants by allowing the fruit to attain full size before they are cut, and if not wanted for immediate use roll up in paper and keep in dry moss. Collect Oak leaves for next season, and store under cover before they get injured by the wet. If there is likely to be a scarcity of plants for early spring work a few cuttings may now be inserted in small 60's and placed under bell-glasses in a strong bottom-heat near the glass. *W. Coleman, Eastnor.*

THREE ILLUSTRATIONS OF A THEORY.

THOUGH dogmatists and dullards long opposed
His Theory with venomous persistence,
Darwin may now consider it has closed
Its—"Struggle for existence."

To calm research, not fierce polemic raid,
Truth yields her secrets. After fair inspection,
The age 'twixt Science and her foes has made
A—"Natural selection."

Thou canst not, Zealotry, as blind as hot,
Truth's champion slay, however hard thou hittest.
Darwin outlives detraction. Is this not
"Survival of the fittest"?—*Punch.*

THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 15, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Dec. 17	Sale of about 13,000 Bulbs of Lilium auratum, at Stevens' Rooms.
WEDNESDAY,	Dec. 19	Sale of Plants and Dutch Bulbs, at Stevens' Rooms.
THURSDAY,	Dec. 20	Meeting of the Linnean Society, at 8 P.M. Sale of Orchids, at Stevens' Rooms.
SATURDAY,	Dec. 22	Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

THERE can be little doubt that the new race of TUBEROUS BEGONIAS is destined to play an important part in the decorative gardening of the future. The Begonia is, so to speak, the coming flower, though, as our illustration shows, it has already made its advent amongst us, and some very beautiful forms, of which those we have figured are a mere gleaning, have been already obtained, while each year they go on improving in quality and increasing in beauty.

It is mainly due to the introduction of B. boliviensis and B. Veitchii, with one or two less conspicuous allies, that we owe this new race of ornamental plants, which have the recommendation of being most abundant and continuous bloomers, and of being of the easiest culture. The old B. Evansiana, or discolor, of our grandmothers' gardens, which was usually cultivated on the window-sill and wintered in the china-closet, is, horticulturally speaking, very closely allied to the modern forms; but the latter, in the brilliant richness of their colouring, possess at least one great advantage over the older and more familiar form.

There are two particular lines along which we may expect to see the tuberous Begonias extending themselves, namely, as greenhouse summer decorative plants, and as bedding-out or rock plants. In each of these they have already distinguished themselves.

As indoor decorative plants they come at a season when they are especially useful, namely, at the time when greenhouse flowering plants are becoming scanty, and when for the most part recourse must be had to the tender annuals. For this decorative use their free branching habit, and the abundance of flowers they produce while still of moderate size, eminently adapt them. Their usually rich and now varied colours particularly recommend them for this use. B. Evansiana, with its charming rosy-pink flowers, is in every way adapted for their companionship, since it requires the same mode of culture. Their introduction has at least taught cultivators how to grow the delicately beautiful, rose-coloured bulbous B. Martiana, which, drawn up and lanky as commonly seen under stove treatment, would not be known as the same plant under the cooler greenhouse treatment which these novelties have taught us to adopt.

Then as to bedding-out and furnishing rockwork, the success which has already been realised is most encouraging. As a rock plant B. Veitchii is one of the most brilliant, and this has been treated successfully on the open rockwork in the climate of London. We may, therefore, look for other varieties equally hardy, especially since the very distinct B. Davisii also comes from very elevated habitats. But irrespective of their capability to withstand our winters outdoors we know of no more charming subjects than such plants as B. Veitchii, B. rosæflora, and the improved forms allied to them, for occupying snug corners during the summer months. The varieties of the B. Sedeni type are remarkably floriferous and effective in the summer beds, where they are less affected by sharp showers of rain than the beds of Pelargoniums. Experience teaches; and so as we find available material for bedding-out amongst the earlier hybrids, we shall be led to look out for others amongst the more advanced types, when we shall get larger flowers and greater choice of colour. Their capability of bearing up against heavy rains is a quality one could scarcely have expected of them, and the knowledge of it is, therefore, all the more welcome.

The accompanying illustration will give some idea of the brilliant colouring of the modern varieties. Those here represented are all, we believe, raised or introduced by Messrs. VEITCH & SONS, of the Royal Exotic Nursery, King's Road, Chelsea; though other growers, notably Messrs. PERKINS, BULL, LAING, WILLIAMS, CHAMBERS, and MCLELLAN, together with M. LEMOINE and M. VAN HOUTTE, have realised good results. Our figure consists of B. Davisii (fig. 1); B. Emperor (fig. 2); Mrs. C. Scorer (fig. 3); Queen of the Whites (fig. 4); and Acme (fig. 5). With these representations at hand, the reader will need no technical descriptions. We may, however, remark that B. Davisii is of dwarf herbaceous habit, and Mrs. C. Scorer is dwarfer and less branched than the other larger sorts.

THE DISTRIBUTION OF PLANTS as affected BY MAN, directly or indirectly, presents some very singular anomalies. As might be expected, the spread of what may be termed the weeds of cultivation has been in the same direction as the tide of emigration of different peoples. But it is a remarkable fact that comparatively few of the numerous perfectly hardy exotic trees, shrubs, and herbaceous plants commonly cultivated in this country have become naturalised, or under the most favourable circumstances would reproduce themselves unaided. Even the number of cornfield weeds has increased very little since the publication of HUDSON'S *Flora Anglica* in 1798. It is not altogether owing to careful cultivation, though this must be taken into consideration, because even now in many parts of the country the crops are left to battle with the weeds to such an extent as to give the latter the advantage; and because the most careful farmer finds it impossible to prevent the spread of certain weeds. Some plants possess such an amount of vital energy and reproductive power that, once fairly established, all the agencies that can be put into operation fail to arrest their onward march. Veronica Buxbaumii is an example of an introduced species that has spread so much within the last few years as to have become, from a rare plant, exceedingly common and abundant. Geranium pyrenaicum and Diplotaxis muralis are two other plants which are rapidly gaining ground in the South of England. Another noteworthy fact is the small number of American plants that have established themselves in this country. Anacharis canadensis is the only one we can call to mind at the moment that has become a formidable enemy, and this, unlike those just named, has spread simply by extension, as only one sex is known here. Galinsoga parviflora is rather abundant in some of the market gardens near London, and a few other American plants are locally abundant. But our climate, although permitting the cultivation of a vast number of plants from various parts of the world, is, on the whole, unfavourable to colonisation. In contrast to this the slightly warmer countries of the southern hemisphere are too favourable to the development of European plants purposely or accidentally introduced by settlers. We recently noticed a pamphlet on the European plants which have become wild in Buenos Ayres and Patagonia. Upwards of 150 species are enumerated, 100 of which are British; and some of them have absolutely taken possession of square miles of country. One species of Cynara, it is stated, covers hundreds of square miles. New Zealand and Australia are equally overrun by European weeds; and in North America, too, they are very numerous and troublesome. The flora of Portugal, perhaps, of all European countries, has suffered most change from the naturalisation of plants from the southern hemisphere, and alien species from other parts of the Northern hemisphere. According to Dr. GOEZE'S recent sketch of the vegetation in the *Linnæa*, Australian shrubs seed freely and show every disposition to spread, unassisted, over the country. Among South African plants fully established and some of the exceedingly common are: Oxalis cernua, Amaryllis belladonna, Gomphocarpus fruticosus, Arctotis acaulis, Senecio scandens, and various species of Mesembryanthemum and Pelargonium. America is represented in the wild flora by Opuntia vulgaris, Agave americana, Yucca aloifolia, Chenopodium ambrosioides, Nicotiana glauca, Mimulus lutens, Datura spp., Physalis peruviana, &c. Examining the general tendency in the spread of plants, we find it to be in the direction of a gradualy warmer climate.

—— A CASE against some well known SEED DOCTORS, tried at the Southwark Police Court on the 10th inst., failed on account of a technical flaw in the Act of Parliament. The facts of the case were not disputed, but the wording of the Act left no option to the magistrate but to dismiss the summons, subject, however, to the right of appeal. We are informed that the opinion of the Court of Queen's Bench will be taken on the matter. In another column we give a report of the case, which excited great interest among the seed trade, who are, we believe, thoroughly in earnest in their endeavours to put down these fraudulent practices.

—— At a meeting of the Council of the ROYAL AGRICULTURAL SOCIETY OF ENGLAND, held on Wednesday last, Colonel KINGSCOTE, C.B., M.P., President, occupying the chair, the Botanical Committee presented the annual report of the Society's Consultiog Botanist (Mr. CARRUTHERS), in which it was stated that the samples of seeds for crops which had passed through his hands had been generally satisfactory, and no case had occurred to him this year in which either killed or spurious seeds had been foisted upon the purchaser. The samples condemned by him had been defective either through the presence of worthless or injurious weeds, or through bad or careless harvesting. It was satisfactory that, so far as his experience went, the members of the Society had not been imposed upon by the killed and coloured seeds which recent prosecutions had shown to be again found in the market. The extent to which killed or dead seeds are present in any sample might easily be determined by the purchaser, and no farmer should sow low-priced seed, or seed in any way suspicious, without experimenting himself or submitting it for examination. He believed no danger was to be feared from the trade generally, but unprincipled dealers in large towns were now known systematically to increase their profits by means of adulteration. The worthless article was generally imposed on general dealers who supplied seed but had no practical knowledge of this departmeot of their business, and who retailed in good faith what they had purchased in lowest market as good seed. The committee also stated that they had had under their serious considerations the startling disclosures made during the recent prosecutions already referred to, and they recommended that the Council give them similar power to that at present possessed by the Chemical Committee to present quarterly reports on the cases of adulterated, killed, coloured, and inferior seeds brought under the notice of the Consulting Botanist, for publication, together with the names of the vendors (subject to the approval of the Council) in the agricultural newspapers. They further recommended that for the future it should be styled "The Seeds and Plant Diseases Committee." These reports were adopted.

—— The annual meeting of the ROYAL CALEDONIAN HORTICULTURAL SOCIETY was held in the Music Hall, Edinburgh, on the 6th inst. Mr.

THOMAS METHVEN occupied the chair. From the financial statement submitted by the Treasurer, Mr. FRASER, it appeared that the receipts during the past year amounted to £713 14s. 1d, including £416 16s. for annual subscriptions, £39 4s. for special prizes, and £214 18s. 6d. for drawings at the various shows. The expenditure in the same period was £697 7s. 10½d., which included show expenses to the amount of £256, and prizes to the value of £362. The balance on the year's transactions was thus £16 6s. 2½d. On November 30, 1876, the funds standing at the credit of the Society amounted to £518 4s. 6½d., while at the corresponding date of the present year they were £534 11s. 9d. The Chairman congratulated the Society upon the continued prosperity which was attending it year by year; and the adoption of the report was approved of. On the motion of the Chairman, seconded by Professor BALFOUR, Mr. MACONOCHIE WELWOOD, of Meadowbank, was appointed a Vice President of the Society, in the place of the Earl of STRATHMORE, who retired by rotation. Mr. MACKINTOSH was elected to a seat on the Council in the place of the nurseryman who retired by rotation, and Mr. PATERSON, Meadowbank, was selected to fill the vacancy on the Council for a gardener. The Secretary, Mr. STEWART, and Treasurer, Mr. FRASER, were re-elected, and specially thanked for their past services. The Chairman mentioned that the next spring show of the Society was likely to be held in the Waverley Market, and being open for the first time to the world it would most probably be the largest and grandest exhibition of the kind ever held in Edinburgh.

—— The sixtieth annual general meeting of the proprietors of the ROYAL BOTANIC INSTITUTION, GLASGOW, was held on the 10th inst., and we gather from the annual report that the joint account, which embraced all the branches of revenue and expenditure in which the Garden and Palace Company mutually participate, shows an increase in the divisible balance, when compared with last year, of £79 5s. 10d. The number of annual subscribers remains almost unchanged, the increase being only seven family, four single, and four office tickets. The surplus on the promenade account is £87 12s. As in previous years, the gardens were thrown open to the working classes during the Fair week, and an entertainment of an amusing character was given in the conservatory at a charge of 6d. per head for adults, which was attended by upwards of 15 000 persons, yielding a nett surplus, after meeting all expenses, of £151 6s. 3d. The directors are glad to report that they have been able to keep the expenditure within the most moderate limits. The sum of £342 6s. has been realised from the sale of new shares. The old conservatories are now in an even more dilapidated condition than formerly, and are of course getting gradually worse, but the directors have not seen their way during the year to take any steps towards raising funds for their reconstruction. The new houses continue to give the utmost satisfaction, and are chiefly instrumental in enabling the curator, Mr. BULLEN, to maintain the garden in the highly creditable condition which it has attained under his skilled and careful management. The Professor of Botany in the University has been regularly supplied with specimens for the use of his class during the year, and every facility has been afforded for his demonstrations.

—— At a meeting held recently in the Town Hall at MANCHESTER—present Mr. BRUCE FINDLAY (in the chair), B. S. WILLIAMS, R. TAIT (DICKSON, BROWN & TAIT), J. ROBINSON (DICKSON & ROBINSON), R. P. KERR, of Liverpool, and several other gentlemen engaged in horticultural pursuits—a local committee was formed to promote the interests of the GARDENERS' ROYAL BENEVOLENT INSTITUTION, and Mr. CUTLER, the Secretary of the Institution, had the pleasure of adding several names to the list of yearly subscribers, besides a few life subscriptions. Eight pensioners will, we learn, be added next January.

—— We learn from the *Irish Farmers' Gazette*, that Alderman Sir J. W. MACKEY, the well-known Dublin seed merchant, will shortly remove his business, so long carried on in Westmoreland Street, to more commodious premises adjoining the Gresham Hotel, in Upper Sackville Street. Our contemporary has had an opportunity of inspecting the new premises, and can safely congratulate the proprietor on being able to introduce his numerous clients to an establishment which, for convenience, extent, and purposes of display, will be, perhaps, second to no establishment of its kind. Tradesmen have been for some time, and are at present, hard at work in order to have the new concern open and in full business swing in the first week of the new year.

—— In an elaborate paper read on Wednesday last before the Society of Arts Mr. J. B. LAWES argues against the RESTRICTIVE COVENANTS usual in farm leases. He has no difficulty in showing that in the improved state of agricultural science, particularly in the application of chemical manures, they are no longer necessary for the protection of the landlord, while they act injuriously on the farmer and the general public. Mr. LAWES' paper contains several interesting details which our space does not allow us to insert now, but which we may take an early opportunity of bringing under the notice of our readers.

—— The *Medical Examiner* states that the *Transactions of the Medical Society of Upsala* contains an account of an ingenious piece of RASCALITY IN THE HOP TRADE, said to be practised on a considerable scale in that city. Hops which have already been used for making extracts, or for brewing in the ordinary way, are damped with tincture of absinthe, or wormwood, freed from spirit by distillation, re-dried, and then placed upon the market as a genuine article, with or without the addition of a little fresh bloom. Owing to their increased bitterness they often command a better price than unadulterated Hops.

—— JASMINUM DIDYMUM is an elegant twiner, profusely flowering in the porch of the Lily-house at Kew. It has rich dark green foliage, composed of opposite ternate leaves, in the axils of most of which are panicles of pure white flowers, strongly and agreeably scented. The leaflets are usually ovate, sometimes oval, the middle one as a rule the largest, its length in average specimens being about 2 inches. The flowers, though they are little more than the fourth of an inch in diameter, and in rather Ligustrum-like panicles, have yet a pleasing effect, especially at this season of the year. It has perhaps not been figured in any botanical work; in several horticultural books there is no reference to it. At Kew it has long been cultivated, though perhaps scarcely known elsewhere. It is a native of the Society Islands.

—— M. LINDEN informs us that the beautiful CARLUDOVICA DRUDEI, figured by us in our last issue, was introduced by him several years since, and has been inserted year after year in his catalogues under the name of C. speciosa. As we never saw M. LINDEN's plant, and no figure or description of it has been hitherto published, the name C. Drudei must be maintained.

—— There has always been considerable doubt about the real nature of that curious fungus PTYCHOGASTER ALBUS. FRIES stated that he considered it a degeneration of Polyporus destructor, but there was no evidence to confirm his view. A specimen has, however, now been sent from Glamis by the Rev. J. STEVENSON, which at least makes it clear that Polyporus destructor has something to do with it. Before making a section, part of the specimen was seen to be in the usual condition of the Ptychogaster, consisting of erect irregular threads and abundant ochraceous spores, the other half exhibiting something like sinuous pores, but so soft and tender that it was difficult to say what their real nature might be. However, on making a section not only was a white, firm base discovered, but pores in the normal condition of those of the Polyporus in question. It does not seem, however, that it is a degeneration of the Polyporus, but rather the work of a parasite, which modifies the matrix in the same way that Nyctalis and Boletus are affected by their peculiar parasites. The parasite, however, cannot be referred to the Myxogastres, nor do the threads seem to belong to the parasite, but to be derived from the matrix, just as those are which occur in Ustilago olivacea. *M. J. B.*

—— CALLIPHRURIA HARTWEGIANA is an extremely pretty white-flowered evergreen bulb from New Grenada, introduced by Mr. BULL, and now in flower in the stove at Kew. In each umbel are six to eight funnel-shaped flowers which open in succession, and are rather more than an inch across. It is a smaller plant throughout than C. subedentata, and, like it, is evergreen. It flowers freely at this season with the same treatment as Eucharis, to which it is allied, and possesses also a similar habit.

—— The collection of cut flowers of ZONAL PELARGONIUMS exhibited by Mr. H. CANNELL, nurseryman, Swanley, at the last meeting of the Royal Horticultural Society, illustrated in a remarkable manner the value of this popular flower as an autumn decorative plant for houses. It could not but be noticed that the flowers possessed a size, substance, and brilliancy and depth of hue unknown to them in the summer. One variety in paticurlar—David Thomson—having on this occasion the finest form in petal and pip, is said by Mr. CANNELL to be quite loose in form during the summer; and he has found by experience that several varieties that are somewhat poor in character in summer shine out with surprising force in form and colour in autumn. How true this is of the pink-flowered varieties? For with the declining days and the dulness peculiar to the season, they take on a radiance unknown to them in summer, when the skies are clear and the "sun's directer ray" is tempered by no shade. The plants from which these fine flowers were taken were late spring-struck cuttings, finally potted in August; and, by the aid of a little fire-heat in his Pelargonium houses, Mr. CANNELL hopes to be able to send cut blooms of Zonals to the meetings of the Society during the winter. It will be seen Mr. CANNELL relies on young and vigorous plants to supply these superb floral results. The hint should not be lost, for some have confessed to failure, and failure has probably come because the plants looked to to furnish flowers were those which had already done good service during the summer.

—— We have received a prospectus of a company which has been formed in Dublin for the purpose of purchasing and carrying on the business of the *Irish Farmers' Gazette* as an agricultural weekly publication, also the printing and sale of the *Farmers' Almanac*, *Farm Account Books*, and other agricultural works, together with general printing business carried on at 23, Bachelor's Walk, Dublin. The secretary *pro tem* is Mr. JOHN PURDON, and the capital £20,000, in 2000 shares of £10 each.

—— The fruit-head of a species of PANDANUS from India, forming a brush, of which the fibrous tissue of the drupes constituted the bristles, was shown by Mr. THISELTON DYER to the Fellows of the Linnean Society (December 6). This novel brush, it is said, is used to scrape or dress cloth, similarly to our Teazle (Dipsacus).

—— The Government are setting the metropolitan vestries a good example by PLANTING TREES largely in and about the ROYAL ARSENAL AT WOOLWICH, some thousands of young trees having been sent there from Kew Gardens for that purpose. These are being planted in rows by the sides of the avenues and workshops, and in groups wherever space is available. It is anticipated that in a few years the general appearance of the Royal Arsenal will be greatly improved and the locality beautified.

—— The beautiful ST. DABEOC'S HEATH (Dabeocia polifolia), abundant in some parts of Ireland, and also an inhabitant of the southern parts of Europe, Mr. M. MOGGRIDGE recorded at the last meeting of the Linnean Society as having been found by him at Wallis Downs, north of Bournemouth. Doubtless introduced at this latter locality, it nevertheless appears to have there established a fresh habitat.

—— The authorities at Kew will be astonished to hear that TEMPLE BAR, which is now being pulled down, has saved the noble PALM-HOUSE from a great catastrophe. A writer in a local paper has announced it to have been his intention to carry a shell inside the Palm-house at Kew but for the interposition of Temple Bar. He does not say what sort of a shell: his bellicose style naturally leads to the inference that it was to have been a bomb, but that may have been an exaggerated inference and the shell after all nothing more than a figure of speech to illustrate the terrors of his criticisms. Our critic explains himself,

however, further on, and leads us to hope that he has some lucid intervals, for we find that the interposition of the City's historic gateway in preventing the intended disaster to the Palm-house is due to the fact that he has conceived the sublime idea that Kew Gardens is the most fitting place for the re-erection of Temple Bar. Perhaps the Kew officials will scarcely regard this suggestion with more serenity than they would the introduction of the bomb-shell into the Palm-house, but the critic claims to have art, history, and scenic effect in view, and therefore his opinions upon a subject that has so far bothered the Common Council as much as Cleopatra's Needle has bothered our metropolitan ædiles may be not unworthy of consideration. Temple Bar may have associated with it great historic deeds, it may have been serviceable in its day in protecting the City from the incursions of the western barbarians, it may even have looked picturesque in the days of the Pretender, but its warmest admirers can hardly claim for it the title of beautiful. Our critic, however, proposes to envelope it in a clothing of climbers and creepers, and thus swathed in living green its architectural charms might well be left to the imagination. It is a curious fact that whilst thousands are being spent to bring an ungainly obelisk of stone over here from Egypt simply because it has great historic associations we are about to pull down one of the oldest and most remarkable street piles of London. Cannot the authorities still keep it in the City and yet make it useful by incorporating it as an entrance into their new fruit and vegetable market?

—— "NAN-MU" is the native name of a tree which grows in Yunnan, between 25° and 26° N. lat. Its wood is highly valued by the Chinese nobility for building purposes and for making coffins. Enormous columns of it form the tombs of the Ming dynasty, some 300 years old. Mr. THISELTON DYER exhibited pieces of its wood and leaves at the Linnean Society (December 6), when he stated that while still botanically undetermined, though usually supposed to be Teak, it probably belongs to the Lauraceæ, the leaves closely agreeing with those of Phœbe pallida.

—— All those who had the good fortune to visit the noble GARDEN of the late M. THURET at Antibes, with its rich collections and superb illustrations of succulents and of Australian plants, will rejoice to learn that this garden—thanks to the generosity of Mdme. LOUISE FOULD—will for the future be devoted to public uses in connection with the Jardin des Plantes at Paris. This is indeed good news; for the contemplation of the dispersal of such a noble collection was grievous indeed.

—— Mr. E. J. LOWE, of Nottingham, informs us that he has had this year amongst his CHRYSANTHEMUMS some extraordinary SPORTS, and he has sent us flowers of those from which the following notes are taken:—

E. SANDERSON, a bronze-red sport of George Glenoy, having the fine form of Mrs. Dixon and Mrs. George Rundle. The blooms sent, which are only side blooms, were very symmetrical and neat. ANATA, a pure white sport of The Cossack, having very broad petals and only the outside petals curling like a Japanese. We are told this plant has borne some blossoms of immense size, that now before us being very large and full, and of fine form. From its exquisite shape it might be called a show Japanese. LUMEN, a white sport of Florence Nightingale, of very good shape. SCYLLA, an orange-bronze sport of Model of Perfection, with the exquisite form of that variety; very pretty. GERDA, a remarkable yellow sport of the crimson Julia Lagravère; none of the flowers are yet in bloom, but a side bud is sent showing the bright yellow colour. The leaves have the fine Fern-like form of those of the parent. Mr. LOWE remarks that he has about 1000 plants blooming this year; it is nevertheless remarkable that he should have got so many fine sports. He has also coming into bloom and showing colour three other sports; one from George Glenny, with a mixture of red and lemon, the others from Mrs. Rundle, one yellow and the other red. They are a very nice lot, Anata being particularly fine, and E. Sanderson is also likely to be useful variety, the quality being specially good.

—— The POISONOUS POWER OF THE YEW has once more been demonstrated in a somewhat expensive fashion to the owners of the tree that was the cause of offence. An action was entered in the Chesham (Bucks) County Court by a veterinary surgeon, the owner of a horse, against the Amersham Burial Board, the ostensible owners of a cemetery. The horse was turned out to graze in a meadow adjoining the cemetery, and the branches of the Yew tree projecting over the fence the horse ate of the same and was poisoned. The report specially mentions that it was an unconsecrated cemetery; perhaps the writer imagined that the tree derived its properties from that damnatory fact, but that of course would be a matter of opinion. At any rate, the judge, on the ground that the Board should have erected a taller fence, awarded the plaintiff 20 guineas damages. It is a noteworthy fact in this case that the animal ate of the fresh green foliage on the tree, and not of some clippings that were partially decomposed, as has generally proved to be the case in similar circumstances. Very recently a railway porter was prosecuted at the Old Bailey for promoting the death of his wife by obtaining for her some portions of Irish Yew with which to make a decoction to procure abortion, and this, it appeared in the evidence, was obtained also from a burial ground. Both of these instances, however, show how destructive to life the Yew may prove, but it is to be hoped that no active politician will therefore propose that it shall be regarded dangerous to the community and that its future growth be prohibited. The Yew is one of the most ornamental of evergreen trees, and, like the Oak, has many historical associations; probably in the middle ages it was the cause of more deaths in the hands of England's sturdy archers in one year than it has otherwise caused since the introduction of firearms into our armies.

—— The PRIVET is a shrub that has berried with great profuseness this year, and the fruit is seen more freely now that the leaves have fallen. We have but recently seen several hedges of this shrub that are kept clipped, and where the leaves have fallen, on the top of which there is literally a mass of the black berries of this well-known plant. There is little that is decorative about them, but great abundance of fruit on other hardy shrubs than the Holly is thus far demonstrated.

—— There is reason to fear the SHRUBBY CALCEOLARIA is just now passing through a season of neglect. Such a marked improvement has been made in the herbaceous type that public attention has been turned to them to the neglect of a very useful section. The herbaceous Calceolarias need attentive treatment during winter and spring; the shrubby varieties, being of a less tender, while they are much more vigorous in constitution, can be wintered in a dry cold frame, with a little protection during severe frosts. They are not nearly so subject to attacks of green-fly, and when attacked do not succumb so readily as their more aristocratic *confrères* in the vegetable kingdom. It is a somewhat difficult process to propagate the herbaceous Calceolarias by means of cuttings, but the varieties of the shrubby type can be quickly increased by cuttings. If plants be lifted from the open ground at the end of the summer, or turned out of pots and simply pulled to pieces, the side-shoots, if put in a prepared bed in a cold frame or greenhouse, will take root and make good plants by spring; but, as before observed, there must be protection against frost. Amateur gardeners who are fond of the Calceolaria, but hardly succeed with the herbaceous types (and there is reason to fear the method of improvement now adopted aims too much at increasing the size of the flowers at the expense of constitutional vigour), may be assured that with a little ordinary attention they could grow capital examples for flowering in pots, and, if needed, for exhibition purposes. But it would now be difficult to find a schedule of prizes which contains a class for shrubby Calceolarias.

—— All TULIP growers combine in recommending that the bed of choice varieties be covered with mats, or some such covering, during excessively wet, snowy, or frosty weather, taking care, however, to remove the covering on every occasion when drying influences other than frost abound. During the months of December and January the bulbs are not very active in germinating beyond the formation of roots, and as they have no foliage demanding a supply of nutriment little water is required. Then it is the heavy rain falling on the bed at this time, might, and undoubtedly does, work injury on the bulbs. The best form of covering is formed of iron rods so bent as that the points can be pushed into the soil just without the bed on either side, with mats or Frigi Domo stretched over them, and so fastened towards the ground as that the wind cannot carry the covering away. If the covering has to be kept on for any length of time it is well to open it at each end, tunnel fashion, so that a current of air may pass through and admit some light also. It might be thought by some that by using a covering the surface of the bed would be kept somewhat warm, and the bulbs would be excited to growth sooner than is requisite; but experience teaches that the bed is colder for the covering, especially if the two ends be left open as recommended. The covering (when requisite) serves the purpose of keeping the soil in a moderate state of moisture, and preventing it becoming too dense and heavy during winter; and the soil being preserved light and open the after-growth of the Tulip is thereby favoured by admitting sun and air in spring. These influences are most important, as they stimulate the plants to growth just at a season when such aids are most needed.

—— For the last five years the quantity of INDIA-RUBBER EXPORTED FROM PANAMA has been, at first steadily, and of late more rapidly, decreasing. In 1872 the value of the rubber amounted to £400,000, which fell in 1874 to £109,000, and last year the returns showed only £50,000. The scarcity of this valuable article on the Isthmus is due to the system pursued of cutting down the trees to procure the rubber, instead of tapping them, as is done in Brazil. While there has been this falling off in Panama, an increase is recorded from Guayaquil; but this is supposed to be only of a temporary nature, as the practice of cutting down the trees also prevails here, though immense numbers of rubber trees are known to exist in the less explored forests of the interior. The bulk of the rubber is exported to the United States of America, very little finding its way to Europe.

—— A new preparation from Eucalyptus, under the name of EUCALYPSINTHE, is announced from France. A Dr. MIERDUE, a colonial surgeon, has, it is stated, succeeded after many experiments and much research in distilling from the leaves a liquor which is at once grateful to the palate, exhilarating, and not only quite harmless but also possesses many useful medical properties. This new beverage is, we learn, being largely made and consumed in Marseilles, and it is thought that within a few months it will become as popular as absinthe and probably to a great extent take its place.

—— Some years ago GAY founded a new species of Cork Oak, which he called QUERCUS OCCIDENTALIS, on some specimens which appeared to show that the acorns did not reach maturity until the second year, thus differing in this respect from the true Cork Oak, Q. Suber. The late Dr. GOMEZ (*Journal de Sciences Mathem. Physique Naturaes*) fully explains the nature of this phenomenon, and states that it is not peculiar to any particular species of Oak. He says the apparently biennial nature of the acorns is due to the fact that the Cork Oak frequently makes two, or even three, growths in Portugal, so that the acorns of the first shoot appear to be on a previous year's wood, whereas they are really of the same year. These successive shoots during the same season often bear successive crops of acorns, which of course ripen at different periods, but none of them are biennial. The foliage of the Portuguese Oak upon which the supposed new species was founded is annual, when the position of the acorns with respect to the leaves is sufficient to determine, or it is biennial, or even persists three years, according to the weather, habitat, &c.

—— Mr. O. VON SEEMEN gives some particulars, in the *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, of a GIGANTIC OAK which is GROWING IN SPRINDLACK PARK in the district of Konigsberg, East Prussia. It is, as he says, one of the few glorious remains of the original forests. The main trunk is only about 8 feet high, and its girth breast high nearly 18 feet. It divides into five mighty branches, which again divide and form a spreading crown nearly 90 feet in diameter and 85 feet high. This tree is said to be, not only for its large dimensions but also for its

fine form, equalled by few others in Germany. From this it would appear that large Oaks are even scarcer in Germany than in England.

—— A correspondent of the *Monatsschrift*, writing from JAPAN on the VEGETATION of the country, states that the most striking feature of the herbaceous vegetation is in the variety and beauty of the Orchids. It is impossible to overlook the richness of forms and species. Especially conspicuous is the beautiful Cypripedium japonicum, also C. ringens, though much less abundant than the former. Among others, he mentions Cephalanthera falcata, C. erecta, Epipactis Thunbergii, various species of Liparis, Habenaria, Calanthe, Cymbidium, Dendrobium—the three last relatively rare.

—— We have already mentioned that Dr. KUNTZE, of Leipzig, has put forward a theory of A PRIMEVAL FRESHWATER SEA. He maintains that the conditions of the stratification of coal can hardly lead us to any other conclusion than that the plants of the period actually grew in the sea, which, as a consequence, must have then consisted of fresh water. The enormous area of some of the coal beds, as the Pittsburg, which is many hundred square miles in extent, shows that the coal was stratified where the plants grew, and hence the uniformity in the thickness of each layer. And the alternate stratification of coal, limestone, sandstone, &c., as in Nova Scotia, where there is a series of superimposed strata collectively nearly 15,000 feet in thickness, in which there are seventy-six layers of coal, many of them containing perpendicular trunks, proves that it must have proceeded quietly in the sea. If the coal plants inhabited bogs, periodic rising and sinking of the land must have taken place—seventy-six times in succession in this case. Furthermore, each depression and inundation by salt-water would have rendered the soil, argues KUNTZE, unsuitable for vegetation, to say nothing of the reproduction of the same kind of vegetation. He asks whether such conditions were really possible, and contends that his explanation is very simple as opposed to the generally accepted theory. The sea, he goes on to say, was saltless and covered with a luxuriant vegetation, which as it died off was precipitated to the bottom, just as the sphagnums of our bogs are at the present day, and in consequence of the simultaneous deposition of clay became stratified. This aquatic forest was not stationary, but the recurring monsoons drifted them slowly to certain places where there were greater accumulations of coal, whilst in the parts thus bereft of vegetation the deposits of clay were thicker, and hence alternate strata of coal and clay. Only in tranquil bays, where streams had little influence, would thick strata of coal be formed. KUNTZE further argues that the nature and organisation of the plants of the coal measures, as well as the amphibious and marine animals, support his theory, and through upwards of fifty closely-printed pages strives to show that all the phenomena of Nature are more in harmony with this explanation than any other.

—— Dr. BOLLE recently communicated to the Horticultural Society of Berlin some interesting particulars of the RELATIVE HARDINESS OF DIFFERENT TREES IN GERMANY. Species of Carya which succeed admirably in the Central States of North America suffer from May frosts. Pterocarya caucasica survives, but only on dry soil. The Cedar of Lebanon, although it ascends to the snow region in its native country, is not perfectly hardy, whereas the Deciduous Cypress, Taxodium distichum, is not injured. The latter inhabits the Southern States of Northern America, and is one of the few instances of plants which will bear a climate colder than that of the country in which they now exist in a wild state. In his useful *Book of Evergreens* JOSIAH HOOPES says, "The Deciduous Cypress, although strictly a Southern tree, thrives admirably in the climate of the Middle States. Its most northern natural limits are the Cypress swamps of Maryland, and the extreme southern part of Delaware. Throughout every portion of the Southern States this tree is found in the low miasmatic swamps, and occasionally very plentifully, especially along the borders of the rivers and larger streams. Indeed, in the Gulf States these Cypress swamps cover thousands of acres, and along the Mississippi River particularly they extend for hundreds of miles." Like the Arbor-vitæ this tree sheds not only its leaves but also its ultimate branchlets, which may possibly explain its hardiness. The Mexican variety, of which a tree girthing 100 feet is said to exist at Chapultepec, is tender. Dr. BOLLE thinks these peculiarities in the constitution of plants are governed by the distribution of heat in the different seasons of the year. One of the members present observed that deciduous shrubs generally withstand frost better than evergreens, because they are at rest in winter, mentioning as examples Magnolia glauca and Larix Kæmpferi.

—— Mr. JOSEPH WHEELER, for fifteen years gardener to the late J. PHILPOT, Esq., of Stamford Hill, and who during that period was a successful exhibitor of stove and greenhouse plants at the Royal Horticultural and Botanical Societies' principal exhibitions, has been appointed gardener to Sir F. H. GOLDSMID, Bart., M.P., Rendcomb Park, Cirencester.—Mr. NEWMAN FULLER, gardener at The Lodge, Oakham, and formerly foreman at Burghley Park, has been appointed gardener to A. R. BOUGHTON KNIGHT, Esq., Downton Castle, Ludlow, Salop.

Some Correspondence.

Cypripedium Roezlii.—Mr. Payne, Belmont, Taunton, in his article on Cypripedium Roezlii (*Gardeners' Chronicle*, December 1), writes to know if the peculiarities that he has noticed in the flowers of this beautiful Orchid have been observed by others. To which I answer that the very same facts were noticed in a fine and very healthy plant of Cypripedium Roezlii cultivated in my hothouse at Sesto (a country seat of mine not far from Florence). The flowers fall when the succeeding ones begin to expand, and remain in a state of perfection even for as long as a fortnight. I may add that I have observed the same peculiarities (at least in my own hothouses) in Cypripedium Sedeni, C. Pearcei and C. longifolium. As to the reason, I perfectly agree with Mr. Payne. *Marquis Bardo Corsi Salviati, Florence.*

—— Mr. Payne will find that the flowers of C. longifolium, C. Fairrieanum, C. Schlimii, and C. Sedeni fall quite as readily as C. Roezlii, but keep, as Mr. Payne truly says, a fortnight quite fresh. I cannot agree with him that expanded blossoms fall off to make room for their successors, as he will observe the last flower falls as readily as the first. *F. Newman.*

Desfontainea spinosa (p. 695).—This may be called a hardy bush, but a difficult one to grow. I once saw a magnificent specimen near Swansea. I have a specimen which is growing well, but has not yet flowered. I think it should be planted in a cool corner, where the wind will not reach it much; mine is under a north wall, and that position seems to suit it. *Henry N. Ellacombe, Bitton Vicarage.*

—— In response to your desire for more particulars in proof of the hardiness of this plant, I can only say that my plant at Broughty Ferry is within ½ a mile of the sea, but at an elevation of 200 feet. It is sheltered from the sea breeze by trees and shrubs between; still it is quite exposed to all winds, and particularly to the north. A Garrya, golden Euonymus, Osmanthus, Cryptomeria elegans, Erica vagans, and Daphne collina are round about it; it still (December 4) has flowers on it. *D. U.*

Thompson's Gardeners' Assistant.—I note with regret that Messrs. Blackie & Son do not feel disposed to issue any cheaper edition of this work as I suggested they might do at p. 686. That it can be purchased in thirteen parts at 2*s.* 6*d.* each, and the payments be so spread over a lengthened period, is but slight accommodation. This method of taking finished books out in monthly parts is an expensive process—the dearest and most unsatisfactory way of buying books. The cost of the thirteen parts at 2*s.* 6*d.* is equal to 32*s.* 6*d.*, to which must be added the cost of binding, say 4*s.* 6*d.*, making a total cost of 37*s.* instead of 35*s.*, the published price. These canvassing booksellers, with their beautifully got up "specimen copies," full of pretty pictures, and their easy accommodation—only 2*s.* 6*d.* a month, are a great nuisance to gardening society, almost as bad as the tea and tally-man. [Quite as bad most gardeners will say. EDS.]. Many a young gardener to my knowledge has been so induced to "take in" this work at 2*s.* 6*d.*, and that work at 1*s.*, and ultimately obliged to discontinue them or to sell them in fragments to his more fortunate companions for little or nothing. I again repeat, that these pictures are of no practical value to under gardeners, the principal readers of the *Gardener's Assistant*, and that they ought not to be called upon to pay for them. *A. F. B.*

Osage Orange.—If your correspondent, Mr. Haig, alludes to Maclura aurantiaca, I may say that we have here a specimen of this plant 15 or 16 feet high. It has never borne fruit or blossom. *G., Bath, Dec.* 7.

—— In answer to Mr. J. R. Haig's inquiry (p. 723), I can inform him that this plant (Maclura aurantiaca) is perfectly hardy, and grows very rapidly; I have grown it for many years in an exposed situation. I suppose the reason why it has not been more used as a hedge plant is the difficulty of increasing it, either by seeds or cuttings, but I have been told that it can be propagated freely by root-cuttings. I have never seen its curious fruit, which are described as Oranges of 7 or 8 lb. in weight. *Henry N. Ellacombe, Bitton Vicarage.*

The National Rose Society.—In your report of the annual meeting of this Society you mention that I resigned the office of honorary secretary. As very few of the members were present, I should like those absent to know why I so resigned a post to which I was only elected last September. When Mr. Charles Turner and other gentlemen urged my acceptance of the post Mr. D'Ombrain opposed my appointment with all the force he could. I accepted the office most reluctantly, as I saw that my appointment was most unacceptable to Mr. D'Ombrain. But being appointed I naturally supposed that my office would not be honorary both in work as well as pay, and that I should have some say in the matters of the Society. Mr. D'Ombrain, however, appears to have thought otherwise, for he settled on the agenda for the public meeting, and sent out the notices with my name appended without even consulting me. On my writing to expostulate with him on his want of courtesy (to say the very least) he never answered my letter. I felt, therefore, that I could not work with a man who treated me like this, and so tendered my resignation. *John B. M. Camm, Monkton Wyld, Dec.* 10. [This surely could not be the "annual meeting" at all, as we know at least of some members who had no notice of it. EDS.].

Ageratums.—All who have any use for Ageratums will readily admit their great value and the superiority of the new varieties over the old mexicanum. It is surprising the strides that have been made since this was sent out, both in dwarfness and freedom of flowering as well as in the colours of the flowers. When all the sorts are planted side by side it is seen that Countess of Stair and Lady Jane are decidedly in advance of the others, and the latter in particular, for all purposes in which the Ageratum is used. Of the last-named variety I send you a handful of flowers, to show their value for decoration even at this dull season. Could some one devise some simple method of destroying their present odour, and cause a more agreeable one to be imparted, this variety would at once become of greater value for bouquets, for its colour is exceedingly pretty. With us it blooms abundantly, and far surpasses all other blue varieties. Although I have anxiously and carefully tried all the light varieties yet sent out, I cannot recommend either for permanent bedding, although Snowflake is decidedly the best, and if planted in shady, wet situations, it answers the purpose very well. *H. Cannell, Jun., Swanley.*

The Mealy Bug.—This is certainly one of the worst enemies a gardener has to contend against, and unfortunately it appears to be more general, especially among stove plants, now than formerly, owing probably to the more extended culture of plants, and from a want of that constant watchfulness over plants fresh introduced among collections that is absolutely necessary in order to guard against it. If a place is clear of it watchfulness over plants fresh brought in from the nurseries should be observed. Stamping it out is the most effectual way of preventing its increase by burying any plants that have any mealy-bug. Of course plants can be cleaned, but great care and watchfulness are always necessary afterwards in case it should show itself. Nurserymen should be very careful in sending plants out, to see they are free from this pest. Young plants should always be put into quarantine after they are bought in until one is certain they are clean. Sales of plants sometimes spread this pest. A collection of plants that have it badly is sold by auction, and the plants go into several places, carrying mealy-bug with them; the plants, having undergone a thorough washing a few days previous to the sale, look bright and clean to the inexperienced, and are often put among the general stock, the presence of mealy-bug not being suspected

until it has spread to many of the adjoining plants. It is a very difficult task to get rid of mealy-bug when once it is established among a collection of plants, also in vineries and peacheries. There is nothing but washing and constant watchfulness to keep it down; perseverance in doing this, and doing it well and carefully, will keep it down. *M. S.*

Sutton's Magnum Bonum Potato.—As a grower of Messrs. Sutton & Sons' Magnum Bonum Potato, I can fully endorse all that your correspondents have stated in praise of this variety, in recent numbers of your paper. This last season has been the worst for disease that I have experienced since the fatal year 1846. The Magnum Bonum is, however, quite free from disease, the many other kinds growing alongside of it are all but wholly gone. It is, moreover, a great yielder and a good "cooker," and if it could be plentifully supplied to the Potato growers, would indeed be a great boon to them. The great fear is lest spurious stocks should be sent into cultivation to meet the great demand for this Potato. I have heard of the Belgian Kidney having been supplied for it. But if growers will purchase upon the general market they must always be liable to such disappointments. A neighbour of my own last spring planted some acres with what he bought at a great price as "Snowflake." When he found the tops still green after my own crop of them was ripe, he asked me to inspect them. On doing so I found a very true stock of "Bresee's Prolific" had been supplied to him, which does not ripen so early as Snowflake by three weeks. *John Fryer, Chatteris.*

Duke of Buccleuch Grape.—This Grape has now been sufficiently long in cultivation to enable fruit growers to form a tolerably correct estimate of its merits or demerits. Like your correspondent, "J. McC," my opinion of it does not improve with my longer acquaintance. Nearly four years ago, when planting two vineries, I ordered four plants of Duke of Buccleuch, two plants for each house; but such was the demand for it (I presume) that the parties who supplied the Vines could only send me three plants, and these (though not very strong) at a rather high price. They offered to send me a small plant to make up the number, but I declined having it. The borders were made entirely new, and the whole of the Vines were planted at the same time, the Duke of Buccleuch having a favourable place among them. The progress of the Vines has been very satisfactory, and all except the Black Morocco and the Duke of Buccleuch bore a nice crop of fruit this year, and some nice Grapes last year also. One plant of the Duke has not yet showed anything that could be called a bunch of Grapes, the other two had this season three miserable bunches between them. The few berries swelled to a large size and coloured well, but just when nearly fit for use became badly spotted. Two of the plants I have recently cut away, on the other I have inarched Foster's White Seedling, and when this makes a cane I intend cutting away the remaining plant of Duke of Buccleuch, unless it shows very different next year, but I must candidly say I have a very poor opinion of it, as I consider it had every chance of doing well. If it be all that it is said to be, why has it not been exhibited more frequently at the great fruit shows? I hope many of your correspondents will give their candid opinion of this Grape. If it be not worth growing, as I believe, the sooner the public is made aware of the matter the better. The failure of three Vines, bought at a high price, is no small matter after patiently waiting four years to see how they would turn out. Unfortunately, there have been too many new Grapes put into commerce of late years—some of them ushered in with a great flourish of trumpets. Testimonials have been so injudiciously given that gardeners place no value upon them. When people plant three or four new Grape Vines that turn out unsatisfactory, and three or four of the other Vines in the house do not prove true to name, it is very disappointing. The Duke of Buccleuch has put a damper on new Grapes, and yet I doubt if it will prevent people buying new Grapes—novelty and variety are so tempting. *M. S.*

Shade Loving Plants.—It affords pleasure to be able to advance information respecting those lovely flowers that cheer us in our avocation, and perhaps, as "Trowel" says, it may tend to some good. Allium Moly, known also as Luteum flavum, is a free-growing border plant, has umbels of pretty yellow flowers in early summer, increases rapidly by offsets, continues in bloom for a length of time, is at home anywhere, and not nearly so disagreeable as some others of the family. Allium narcissiforme paradoxum and azureum are desirable kinds. Alströmerias are allied to the Amaryllids, and are one of the most beautiful of all the races of hardy plants. A. aurea is perfectly wild with me in a moist shady border, and when in bloom is the admiration of all that see it. Gagea lutea, along with Ornithogalum umbellatum, give us a fine display under a Weeping Ash on the grass. O. nutans narbonense and fimbriatum are in partial shade. My Caltha is planted in a prepared moist place surrounded by burrs from the brickyard, not directly under the trees, but still shaded; it does remarkably well. I have had Lilium martagon, candidum, chalcedonicum, and other hardy kinds planted here and there by the walk-sides in the grass in partial shade for nearly twenty years, and when in bloom they afford us much pleasure. There are hardy Oxalids for a damp shady bank, and amongst them our own Oxalis acetosella is a charming plant in the spring. For less shaded places Oxalis floribunda and Bowiei with others may be named, they will also bear full exposure. Veratrum nigrum is a rather tall-growing autumn-flowering plant that does well in the shade with us. Campanula latifolia is a great favourite, and often found in shady woods. Aconitum Napellus succeeds well with us in the grass in shady places. Polygonum Bistorta in moist places under trees is quite at home. Andromeda axillaris is a fine evergreen in the shade, and especially fine when in bloom. The three colours of Daphne Mezereon should have a place in all shaded borders; no plants are more beautiful than those when showing their lovely flowers through the snow. We find a useful plant as a climber in Solanum dulcamara, and Lysimachia vulgaris and ciliata are at home in partial shade. Geranium nodosum, Saxifraga geum and americana, Honesty, Lunaria biennis and Dame's Violet, Hesperis matronalis, we have among the trees in abundance, with other plants that do well in the shade. I would advise "Trowel" to let the Aquilegias remain as they are till early spring, and then, if convenient, pot them two or three in a 3-inch pot, place them in a cold pit or frame if at liberty, otherwise prepare a place on a sheltered border, and prick them out 2 inches apart; afford them shelter until they are established, and then plant them out in good soil where they are intended to remain. *Constant Reader.*

The Sweet Bay: a Harvest for the Birds.—I have enclosed a small bit of this very ornamental tree, to show you how thickly they are loaded with berries. The tree that I took this bit from stands on the lawn here, and measures 41 feet in height and 30 in diameter. It is covered with berries more or less in the same manner as the bit I have sent you. The blackbirds and thrushes have commenced to feed on the berries, and in a month's time they will have cleared the trees. *D. S, Apley House, Ryde, Isle of Wight.*

Waterproof Card Labels.—Having tried the waterproof card labels for several months I have come to the conclusion that they will not last properly more than twelve months, but they are a step in the right direction, and, when thoroughly mastered, will be hailed with great satisfaction by thousands of gardeners and nurserymen. I have scrubbed them and rubbed them in hot water and cold water, but failed to move the ink. You will see by the labels enclosed that they lose their colour, and the brown labels turn rusty where inked, more so than the blue ones. The long label has been in use for nine months and the heart-shaped one for three months, and in each case the best black ink only was used. *F. Newman, Gr., Sunbury House, Tunbridge Wells.*

The Varying Qualities of Pears.—Is there any reason known for Pears varying so much in flavour from year to year? Pears grown in orchard-houses certainly do so vary, and I do not think it can be a question either of sun or of over-cropping. Most of our trees have been in pots for more than twenty-two years; they are turned out of the house when the fruit is safe from frost, and they always have the same treatment. Every year some sorts have excellent fruit, but not the same sorts; for instance, this year Easter Beurré, which with us is uncertain in flavour, was really fine, though ripe too early, while Joséphine de Malines, usually excellent, was poor, though its flesh had the right, warm colour. Winter Nelis was only fair, and had to be eaten quickly, as it soon decayed; Glou Morceau was excellent; Doyenné du Comice is always so very good that the variations in it are less marked. A Pear not usually very much thought of, Triomphe de Jodoigne, is often very good with us, and was this year excellent. Maréchal de la Cour was very poor. I could give more examples, but the above are probably sufficient. It would be a comfort to know what other growers, especially those with orchard-houses, have found. *George F. Wilson, Heatherbank, Weybridge.*

Calanthe Veitchii.—This is just now in very fine flower in the Orchid-houses of Wm. Leech, Esq., Oakley, Fallowfield, near Manchester. There are about a dozen pots of it, and quite sufficient to give the houses a fine tinge of red at this dull season. There seems to be two distinct varieties of this Orchid in cultivation, one a good deal deeper in colour than the other, and Mr. Swan has managed to get a fine stock of the best sort. The pots are not large which he grows them in, but the bulbs are strong, the spikes numerous, and the flowers and buds upon the spike numbering from thirty to forty. The bulbs are closely planted in the pots, appearing as if they were just the natural increase of one single bulb through the course of a few seasons. Besides this Calanthe being in extra good order at the above place, the other varieties of C. vestita are also in good form, fine spikes of Saccolabium giganteum, Odontoglossum Alexandræ, Lælia anceps, and many others that would interest the Orchid fancier more particularly than an ordinary visitor. A very nice block of Sophronites grandiflora was also to be seen. This though not a new thing is very beautiful, it is such a fine deep red colour. All the Orchids appeared to be in very good health, and the houses nice and clean. Respecting the cultivation you have it detailed fully in your journal from time to time. *R. M.*

Calanthes at Riddings House.—We have bulbs of Calanthe Veitchii 8 inches in circumference and 11 inches in length, producing three spikes from one bulb, and fifty flowers on one spike, together with other varieties, such as C. vestita, C. vestita rubra (oculata), which have been flowering since October, and are now a perfect boon to us. Dendrobium nobile is flowering to perfection; Cypripediums and Zygopetalums are in full beauty, and producing in combination a charming effect. *B. E.*

Chrysanthemum Sports.—A pretty and interesting sport has occurred here with a plant of the Golden Cedo Nulli Chrysanthemum. It is a trained specimen about 10 feet in circumference, and has about one-fourth of its flowers white—or more properly blush—a few of them being parti-coloured (blush and yellow). I enclose you a few flowers, all taken off the plant. *J. Wilkes, The Gardens, Park House, Cheadle.*

Pronunciation of Latin Plant Names.—Although Mr. R. C. Pryor has never met my request that he would act up to his voluntarily expressed intention to enlighten me as to the words *rejune* and *zizanion*, he probably considers his last letter (p. 725) entitled to some sort of notice at my hands. I certainly had no idea till I read this very singular composition that "petiole" was a Latin plant name. But it is never too late to learn, and I am always thankful for original information. The pronunciation of petiole has nothing whatever to do with the subject in hand. I may observe, however, that the best modern English dictionaries follow the low Latin pĕtĭŏlus, and give it as pĕt-ĭ-ole. Contrariwise, it is but courteous to add that not long ago a very high class London professor of botany, a distinguished author and lecturer, pronounced this word, during conversation with me, as peesh-eole. What can Mr. Pryor mean by saying that it is as easy *and correct* to pronounce the *p* in psamma as it is to do so in psychology? It may be as "easy," just as it would be quite as easy to call the writer who says so Mr. P—ryor as Mr. Pryor; but, the *p* in psychology is *not* sounded. It is never sounded, any more than in psalm, psalmody, psalter, pseudonym, pshaw, &c. Possibly enough, the initial *p* in Psyche, psamma, &c., had, 2000 years ago, some kind of phonetic value, and represented something of which the record is lost, unless in Theocritus, but in modern England it is invariably dropped, retaining its place in the spelling purely for etymological reasons. Every dictionary and every form of cultivated usage proves what I say. I admit that it is "hardly necessary" for Mr. Pryor to "add anything" in reference to Gladiolus; indeed, I think it is quite *un*necessary, and commend his prudence in abstaining from the enterprise. It may be well for him, should he ever approach the subject, to consider whether, if there be any value in comparison and analogy, the following classical words should be ignored. They are all of them diminutives, corresponding with Gladiolus, from gladius, and the pronunciations are those given in the dictionaries:—Calce'olus, aure'olus, fili'olus, radi'olus, modi'olus, malle'olus. At his leisure also he may compare the congenerate vi'ola and *ion*. To the above list of words, properly classical, may be added numerous modern botanical names:—Struthi'ola, Seri'ola, Mede'ola, Grati'ola, Rhodi'ola, Scari'ola, &c., the pronunciation of which is given in London as indicated. Of course, analogy is no proof, and there are exceptions to all rules, but in the present case it really seems as if the weight of illustration goes in favour of Gladi'olus. I do not pretend or presume to decide the question. I am acting simply as counsel for my client. I hope the readers of the *Gardeners' Chronicle* appreciate and duly admire the delicate scholarship shown by Mr. Pryor in detecting the obvious printer's error of diphthong for diphthong. On p. 615 the word is spelt correctly, and it is only in its later occurrence that the compositor has omitted the *h*. To have pointed out the error on p. 615 of Arœctochilus for Anœctochilus,

and to have told us what is the proper *fabrio* and the essential meaning of the word, so often misconceived, would have shown some really exact knowledge of orthography and etymology, and have done some really good service. Why did Mr. Pryor let let his opportunity go by? *Quien sabe? Leo Grindon, Manchester.*

Omphalodes Luciliæ.*—A very charming rock plant, not yet known as widely as its merits demand. The general habit is sufficiently well shown in the accompanying illustration (fig. 146), taken from a plant in Mr. Parker's nursery at Tooting. The leaves are glaucous, the flowers are those of a Forget-me-not on a large scale, and present, as stated in the *Botanical Magazine*, all shades of colour from pale pink, purple, to azure. It is a native of the mountains of Asia Minor, but is quite hardy. Those who are interested in the architectural arrangements of plants, if we may so term them, may notice that while in some cases the flower-stalks spring direct from the axil of the leaves, in other cases they spring from the main stem some distance above the leaf. This is a peculiarity often observed in the Borage family, and it has been the exciting cause of a very large amount of observation and record on the part of botanists. One explanation is, that the flower-stalk when between the leaves and not axillary to them is adherent to the main stem for some distance above the leaf, so that instead of coming off in the axil of the leaf next below it, it remains adherent to the main stem for some distance. In the plant before us we found this view borne out by the position and arrangement of the vessels of the stem and of the flower-stalk, which, on a transverse cut being made at various heights, exhibited the vessels thus arranged—○O, the large circle indicating the vessels of the stem, the smaller one that of the flower-stalk. In other Borages, however, the arrangement is different, but these are structural details for which lovers of rock plants in general will not thank us. We are sure we shall earn their gratitude by calling their attention to the beauty and long continuance of the flowers. *M.*

Fig. 146.—Omphalodes Luciliæ. Flowers blue and pink.

Covering Vine Borders.—I am sorry to see that "G." declines to furnish the temperatures of his Vine-borders. If my practice had been called in question I should have been only too glad, I think, to have vouched for it by the readiest means. I do not consider it too much "trouble" to look after the temperatures of our Vine-borders any more than the temperature of the vineries, and I am therefore in a position to contradict emphatically the statement of "G." that it is "impossible to drive the heat" down into the Vine-border to a depth of 1 foot or eighteen inches by the aid of heating materials. An early Vine-border here has been repeatedly tested during winter and spring, and the temperature about 6 inches under the surface was found to stand off and on about 68°, 1 foot under at 65° or thereabout, and 18 inches down at 60°. These temperatures, however, varied according to the weather, which regulated the heat of the fermenting materials—cold weather with wind cooling the latter down to 70° sometimes, while in mild weather it would be 80°, but not often above that. From 75° to 80° was what we tried to keep the litter at by periodical turnings and additions, and some 18 inches of materials was required for that purpose. Now these are facts which any one may prove for themselves, and I ask "G." in return, if it be too much trouble for him to note a thermometer daily, to furnish us with the temperature of his borders for three consecutive days in each month, which I think he cannot reasonably refuse to do. He asks for proof of better Grapes grown with the aid of fermenting materials than his friends—whom he does not name—produce without them. I shall be silent about my own practice, but I will give the name of one whose successful practice extends over some forty years, and whom everybody knows—Mr. Henderson, of Cole Orton Hall, who has recorded that he attributes much of his success to the use of fermenting materials, "thereby raising a gentle heat," and "drawing the roots to the surface," as he puts it, and which is all that others who adopt the practice aim at. Mr. Henderson has never changed his views, and his success as a Grape grower has been proved on many an exhibition table, and has often enough been commented on in these pages. Now I call this a very respectable "fact" indeed, and I shall be curious to see how "G." will deal with it, seeing he has predicted such disastrous results to attend the use of "heating materials," and I would ask him to match it if he can. I see, also, that your excellent correspondent, Mr. Coleman, of Eastnor, advised your readers about a fortnight ago to "have a good supply of thoroughly worked and sweetened Oak leaves and short stable manure always in readiness for covering up outside borders of early houses." Mr. Coleman's success is well attested, and if I am not mistaken, he has been going at it for a considerable while, and with pretty old Vines. Will "G." venture to affirm that the result of either the above gentlemen's practice has been, or is, "a large number of shanked berries," bad colour, and other evils described by him? *S. W. the Second.*

—— In common with some of your correspondents I have never seen any advantage in fermenting materials, have rarely seen them used, and satisfied myself that the heat is of no service to the Vines any more than it would be to early Peach borders. "D. M., Dunrobin," gives us the mean temperature of the soil for North and South Scotland, and concludes he has arrived at a fair average for all Scotland. Now the situation of the gardens at Thirlestane Castle is a very cold one, none more so between Edinburgh and the Tweed—so cold indeed that neither Peach nor Apricot will thrive outdoors, and yet good Grapes were cut and Peaches gathered in May, in my time, and that without any heat whatever to the borders or roots. Hard facts these In the winter of 1852 and 1853 the present gardener then foreman, Mr. Whitton, wrote me that they had registered 47° of frost, Fahr., or 15° below zero, which would render cold and useless any fermenting materials. I may say in conclusion that the same Vines had been forced annually for many years before my time (1851 and 1852), and showed no signs of weakness, &c. *W. A., Ford Manor, Lingfield, Surrey.*

—— In order to make an attack with some hope of success upon any old established system of doubtful utility, it is absolutely necessary that the assailant be bold and fearless in assertion, and prepared to support it with sound evidence. With this conviction I venture to uphold the opinion of another correspondent, that covering early Vine borders with fermenting material is a waste of labour and material in most cases. And I would add that in some instances it is a positive blunder, and is therefore injurious. To support my assertion it is necessary for me to go back for ten years, when with the vineries now under my charge I followed the common custom of covering with leaves and long dry litter an outside border, about the beginning of November, and using fermenting material of a like nature between 2 and 3 feet thick for inside border, when commencing to force the Vines early in January. This course I followed for two or three years, with results not so satisfactory as I expected. I accordingly gave up the use of any such material inside the house, but continued covering outside for three years longer, but never having Grapes earlier than July, and not so fine in flavour as they ought to be even then. Eventually I gave up covering the borders all together, having reduced it to only a foot of leaves, year by year. I resolved to change my system of management, which is now to cover with well rotted manure to a depth of 3 or 4 inches before frost sets in in autumn, and allow it to remain till April, when it is broken up with forks and any rough stuff cleared off. The Vines are allowed to start easily the second week in January, the house is shut up, and the pipes made slightly warm, the temperature of the house about 50°, but allowing it to fluctuate a good deal with the outside temperature until the Vines are all fairly and

* *Omphalodes Luciliæ*, Boisser, Diagn. et Flor. Orient., vol. iv., p. 267; Jamb. et Spach, Ill., tab. 366; Bot. Mag., t. 6947.

equally broken. It is then increased and kept with more regularity. We have now for three years past cut Grapes in May, the first bunches being generally sent to London dinner parties, and, I am told, are very much appreciated. I may also mention that shanking, to which the fruit was very much subject in former years, is scarcely any source of anxiety to us now. I make no claim to being a Grape grower of any repute, having never exhibited anything in my life, but I enjoy the pleasure of knowing that my employer and his guests consider my productions very creditable. I began my remarks with one assertion, I venture to finish with another—that if some of our renowned men in Grape cultivation could be persuaded to forego covering early Vine borders, their early summer exhibits would bear better comparison with their autumn displays. *Scotia.*

Wild Rice.—I should recommend your correspondent Mr. J. R. Haig to try the method of importing seed which has been so successfully adopted for Palms, Water Lilies, &c. This is to embed the seeds in slightly moist adhesive earth, and place the whole in a tin canister, made air-tight to prevent evaporation. On receiving the canister at once put it into water, to soften the earth and germinate the seeds. *W. B. Hemsley.*

Protecting Wall Fruit Trees.—My experience of the past season leads me to think that nothing short of covering entirely with glass can prove really effectual in protecting our wall trees. I have in vain looked for something that could be depended upon, but up to the present have failed. I have a wall 70 yards long and 12 feet high with a spar or eave projecting 18 inches and fitted with O.G. spouting. The number of trees on the wall is fifteen, all Apricots, which nearly cover the entire space. The south aspect is protected from N.W. to S.E. by buildings, and is considered in ordinary seasons to be somewhat proof against frosts; and the failure of the past season, I am confident, must not be attributed to frost at all, as I did not lose a blossom by it. The real cause was the wet and sunless weather. The rains beat on them all the winter, and they had no chance of getting dry. The buds swelled but could not burst, and dropped off in that state, while the wood might as well have done so, for it is all dead and nothing remains but the bare branches. Some years since this wall was fitted up with canvas stretched from the eaves suspended on poles in a slanting position to the surface of the border, which would have been better than nothing if the wind did not blow, but in windy weather such a breadth of canvas could not be kept in its position, and after costing £20 it was abandoned. Glass coping might be a safeguard in some seasons, but if it cost half as much to fit up as it would cost to cover the whole space it would not, I think, be saving anything in the end, as in the case of the coping. If netting had to be suspended in front the expense and extra trouble would soon cost as much as all the glass. And again, as regards netting, except a double thickness is used in case of frost, it is of no use, and in dull weather the trees would welcome what sun they could get. I have seen trees shaded during early spring with netting and canvas, which, when it has been removed, has caused the sun to curl the leaves, and the trees to look the picture of wretchedness all summer. Altogether there seems to be a difficulty which I am afraid will find no remedy where we have to depend on outside cultivation of our tender fruits in our variable climate. *R. C. E.*

Vinca acutiloba.—This pretty Italian Periwinkle has long been an object of attraction in the nurseries of Messrs. Backhouse & Son, of York, where it has been in flower for about three months. The blossoms for the first two months were pale lilac in colour, while, singular to say, the flowers are now quite white, resembling the flowers of Jasminum grandiflorum, but about half as large again. There is a fine stock of it in the York Nurseries in excellent health. Judging from the quantity of buds on the plants yet unexpanded they will continue to flower for some weeks to come. It is a most valuable and useful addition to our hardy autumnal border flowers. *B. P., Holgate, York.*

Cinerarias and the Frost.—In spite of what Mr. Brotherston says I should advise all amateur growers of the Cineraria (gardeners can hardly want advice in the matter) to keep their plants from frost as effectively as possible. Sailing too close to the wind may lead to a disaster, and, therefore, it is best to be on a safe tack. The old story of the gentleman who wanted a coachman, and put to each candidate the query, "How near could he drive to a precipice without tumbling the carriage over?" is very appropriate in this case. Some like your correspondent could venture to drive within an inch of the edge, but the gentleman wisely preferred the Irishman who exclaimed, "Och, by my faith, yer honner, I'd keep as far from it as possible." The Cineraria, whatever may be said, is one of the tenderest of greenhouse plants, and although it delights and thrives best in a cool temperature it has a decided horror of frost, and is killed, or at least much injured, where Primulas and Calceolarias escape unhurt. The tenderest part of the plant is the leading point or points; if it has begun to throw out flowering stems let these be once nipped, even though the foliage be little injured, and the plant is at once rendered valueless. Cold frames suit the Cineraria admirably when only a few degrees of frost prevail, as the covering of a mat will exclude this; but if the temperature lowers to 10° or 12°, then, unless there are heating materials in the frame, the plants will soon be in a bad way. With the danger from frost on the one hand and the pest of green-fly evolved by fire-heat on the other, the cultivator of the Cineraria is somewhat tried. In the latter case a little tobacco paper may soon settle the enemy, but for the former there is no antidote. If erring at all it is best to err on the safe side by having fire-heat in severe frost. *A. D.*

—— Some correspondence has lately taken place in your columns as to the hardiness of the Cineraria, one correspondent affirming that it will stand frost with impunity if thawed in darkness afterwards. My experience leads me to think otherwise, for if the plants are in a forward state, frost, which has scarcely perceptibly touched the foliage, will invariably turn the breaks blind. On the other hand, I have no hesitation in saying that if the plants have been grown as advised at p. 466—namely, in a cold frame, with abundance of air, much cleaner, healthier, and more robust plants will be the result than if coddled in houses with plants which could not with safety be subjected to so low a temperature. I always grow mine in a cold frame, on a bed of ashes, subjecting them to plenty of air, and never at any time while there does green-fly attack them. With plenty of covering material in the shape of mats and litter I have no fear of 15° or 16° of frost (outside) but should not like to entrust them to the tender mercies of 2° or 3° inside the frame. One rule I always observe, that is, when signs of frost appear to see the covering materials put on myself, as it is not so much the quantity as the way it is put on that keeps all snug. *J. Wilkes, Park House Gardens, Cheadle.*

The Mossy Saxifrage as a Decorative Winter Plant.—I am under the impression that it requires a more extended familiarity with these pretty plants to render them as popular as they deserve to be, and feel certain the time is not very distant when winter bedding with them will be general. Though handsome at all times, it is not in summer, when in flower, that they appear at the best, being mostly white, and that not always of the purest, though there are certainly exceptions in such forms as S. cotyledon (pyramidalis), which is a gem, but on the whole it is the conformation and habit of these plants when not in flower that adds to their beauty. It is in the dreary months of winter that they appear at the best. I grow somewhere about 130 species of Saxifrages, but am limiting these remarks to the "mossy" section. Of these I have about forty of every possible shade of green, from the very dark green of S. virens to the silvery green of pedata. They range in height from 2 inches to 6 inches, and grow all through the winter the most charming masses of verdure imaginable—little fairy emerald mountains, and one variety, S. islandica (cæspitosa), is so truly beautiful that one feels tempted to cover it with bell-glasses, or take it indoors. Beds of early bulbs should always be dotted over with these plants, and I do not hesitate to affirm that any person who thoroughly understood them would with their aid be able to make a parterre as interesting all through the winter as the highest style of bedding would be in summer, to say nothing of the transition from a blaze of high colour to masses of lovely green; and I am not certain that even through the whole of summer the highest style of decorative gardening would not be greatly enhanced by a liberal use of the green of these lovely plants. *Thomas Williams, Ormskirk.*

Charred Bones.—A correspondent writes to us saying that he can command quantities of charred bones; but he does not know what they are good for, and wishes that we would tell him what would be the best way to use them through the medium of the *Gardeners' Chronicle*, as a query on this same subject appeared there some time ago which no one has, as yet, answered. After carefully testing these charred bones we have come to the conclusion that, as they are, they are of very little use as a manurial agent, as they are in a state of insolubility in the first place, and in the second, from their being charred, they are much more likely to remain in the soil, when so applied, "in a fine state of preservation," than they are to decay, and of course so long as they remain in that state they can yield little or no plant food. Being denser they do not act so effectually as absorbents of manurial matter (ammonia, &c.) as common charcoal when mixed in the soil for that purpose; but they possess the property of an absorbent sufficiently to make them of real value for the purposes for which charcoal is generally employed by gardeners in pots or borders, &c. In their present state, then, they are of rather less value than common charcoal; but with little trouble, and at a trifling expense, they might be made into a very valuable manure for many garden crops, viz., superphosphate. The first process requires to be their reduction to ashes, and in that state even they would form a valuable manure, doubly so in soils where there is reason to believe that phosphoric acid is deficient, as it generally is in very sandy soils, &c., or applied to crops which generally exhaust the land as regards this compound, such as Peas, &c. But to get the full benefit of it the same season it is applied, it will be better to convert into the superphosphate of lime by the addition of sulphuric acid (vitriol). This sulphuric acid is to many crops as great a necessity as is the phosphoric acid which is contained in the bones, but its chief use in the present instance is to prepare the bone-ash for assimilation by the crop to which it is applied. Perhaps the best way to effect this would be to lay down a heap of the ash on the ground or on a brick or cement, or clay floor, under cover, and to carefully pour on the acid, mixing thoroughly from the centre outwards as in mixing mortar with an old spade or shovel, keeping the tools and everything else as clear of the acid as possible. We recommend mixing it in a heap on the floor or ground, because if mixed in an iron boiler, or such similar place, the acid would dissolve the iron whenever it came in contact with it, and for the same reason we recommend an old spade or shovel—the acid would spoil a new one, if used. A glass or glazed earthenware vessel would be a good thing for the purpose, as sulphuric acid has no action on glass. Enough acid should be put in to make the whole heap uniformly moist. After this has been accomplished the whole should be allowed to stand a few days to allow it to be thoroughly digested. It will then be superphosphate, and you can be sure that it is not adulterated superphosphate, a thing not unknown. Should the mass, after standing, not be in a condition to spread evenly it should be rendered dry and pulverulent by being mixed with wood ashes or quicklime, or any dry powdery material—preferring wood ashes as they would be the means of adding potash, soda, &c., which would enhance the value of the mixture. Such a compound would prove a first-rate manure if mixed with nitrate of soda, and applied in spring to Potatos, the Brassica tribe, and indeed anything. For a top-dressing to old lawns or old pasture lands nothing could be better. *A. H.*

Lynum trigynum.—In some notes recently on plants in bloom at Kew, you spoke of this fine old plant in favourable terms, but you have not said a word too much in its favour. I think it deserves to be better known, considering the fine display it makes, how accommodating it is, and how coolly it is grown. Every one desiring a showy yellow-flowered plant to bloom through the winter ought to grow it. Grown in 32's or 48's they make very useful plants for vases and baskets for house decoration, as I have found them stand a long time, and especially if grown in a temperature of about 50° at night and close to the glass, and put for a few days at the coldest end of the stove previous to going to the conservatory. Red-spider is its greatest enemy, but this is easily overcome by growing the plants in a moist pit through the summer, and syringing them every day. They may be had in bloom a long time by growing a lot and putting them into the stove in batches through the autumn. *H. G. C. J.*

The Rival Ivies.—Is not the above heading a misnomer? I don't think there need be any rivalry between the common and Irish Ivies. For covering old ruins, stone pillars, or old trees I don't think the common Ivy need fear a rival. We have it in the above positions here, and it looks as if at home, but on the walls of the mansion-house, alongside of the palmate Irish, it looks out of place altogether. On old trees it looks very beautiful, and if left to itself it throws out its side shoots, which soon acquire the consistency of stout branches and flower profusely. On stone pillars we trim it annually to the top of the pillars, above which it forms a large head, spreading out like an umbrella, perfectly even and rigid, and flowers at every point. For such positions I don't think the Irish Ivy can rival it. On the walls here, although it does not require annual cutting, yet from the tendency of the young shoots to lose their hold of the wall the labour required to keep it right is little if any less than the other. The mansion-house here is a large one of three storeys, mostly covered with Ivy on every side; and the owner takes great pride in it, and justly too, for it is very pretty when in full dress. Several gentlemen from the South have taken cuttings from it with them, believing it to be a superior variety, which I do not believe. It has been well cared for and planted in a suitable soil,

which I think is the chief secret of having fine Ivy. Being such a hardy, accommodating plant, it is supposed to grow in anything and anywhere, but we have found that such is not the case. An artificial terrace runs round three sides of the house here, composed chiefly of loam and small stones, in which the Ivy seems to luxuriate. On the other side, which has the least exposure, but where the soil is poor and rather wet, the Ivy loses partly its palmate character, becomes of a sickly yellow colour, the leaves being in tufts with a bare portion between each tuft: it was believed to be another variety until we took cuttings of it and rooted them along with the others, when they assumed the same appearance. One plant in the centre of this wing was strong and healthy, and on examining the roots it was found to have been planted where a hole had been filled up with loam, which proves that Ivy likes a good diet as well as most other evergreens. Judging from the growth of both here, I would hesitate before planting the common variety on fine walls; where the Irish can be cut annually it is in my opinion by far the best, but on old walls, trees, or such places, the common is the best, especially if left to Nature. *J. S., Aberdeen.*

Carnation Souvenir de la Malmaison.—This proves very useful from early spring onwards into summer, either as a flowering plant for the conservatory or for rooms. The flowers are also very useful in the half-open stage for filling glasses. It is grown here in quantity, and as the mode of culture pursued is very simple, whilst the results are all that could be desired, a record of the details may be of use to those who have not succeeded with this fine old variety. The plants are mostly propagated from layers every year, as these suit us best. The way they are propagated is as follows:—As soon in summer as the young growths are large enough for layering, the plants are turned out into the kitchen-garden, and if the soil is not of the best it may be made of a suitable condition by the admixture of light potting soils, leaf-mould, &c. We find it better to layer the plants into the border than to raise heaps of prepared soil round them, as the birds give more of their attention to the analysing of these mounds than is at all desirable; provided the border is in good open condition the plants lift with good balls. The layers are made as large as possible, and left to grow in the border till about the middle of September, when they are lifted, good plants with balls, and potted up in 4 and 5 inch pots. They are left out-of-doors, but in a shaded position, for two or three weeks, when they are removed to their winter quarters in a house where they are kept gently growing. The earlier plants are showing buds now, and by early spring the entire stock will be in a flowering condition. The main cause of failure appears to lie in the direction of keeping the plants in too cold a temperature during the winter months, in which they simply stagnate and die off. As a rule the temperature should not continue below 45°. Where larger plants are wanted the flower-spike may be nipped out when it appears, and the plants be turned out during the summer months, to be potted up with the rooted layers in the autumn, using pots not exceeding 7 inches in diameter. These should throw from six to a dozen flower-spikes and make charming plants for conservatory decoration. The bushiest of the young flowering plants treated as above will also make good two-year-old plants. Considering the great usefulness of this flower either for decorative purposes or for supplying cut flowers, which travel first-rate, also the ease with which it may be cultivated without chance of failure, we think it well worthy of recommendation. There are a couple of varieties besides the normal type in commerce. *Scoticus.*

Root Pruning.—Never before has this subject been so gone into, and yet I hope this is only the beginning of a discussion on what I consider a most important subject. Your correspondent "F." (see p. 684) has gone about it in a most admirable way; his reference to Mr. Rivers reminds me of what was said about his method of root-pruning and lifting by those who were not a little sceptical about it. I well remember his trees being called "toys," and the like, because they were "miniature"; but "toys," or whatever they were, they suggested what might be done, and I well remember some twenty odd years ago, when I had from him all that he could recommend in the way of Pears, Apples, Plums, and Cherries, how I at first tried to follow his instructions, and, failing to carry them out fully to my satisfaction, the thought occurred to me that it was not really necessary to keep the trees thus "miniature," that you might allow them to develope themselves and still retain their fruitfulness, and I was thinking of contriving a machine for lifting when they got too large to manage in the way that Mr. Rivers advised, when all of a sudden it came into my mind that it might be done without, and even more to the health and fruitfulness of the tree. I thought by digging a trench round the tree, at a proportionate distance from it according to its size, and leaving some two or three roots on one side, that it would be comparatively easy, and, with some of my men, I commenced operations, first by striking a circle round the tree and removing all the surface soil, and then digging the trench some three-fourths or so round, clearing it to the bottom quite clean, then with a Parkes' fork, carefully working out the soil into the trench—I say carefully, for without much care the roots would be pierced or scratched by the points of the fork, each perpendicular root being got up as deep as possible so that it might be placed horizontal when the tree was placed back again. This was continued till all the perpendicular roots were got up and all the horizontal ones cut off, except on the one side, after which the tree was turned back, the soil well worked over by the fork to a good depth, adding manure or compost, raising the soil in the centre some inches above the soil round the edges—that is, supposing the edge was 12 or 15 inches deep the centre would only be 9 or 12 inches (this I found a great help to securing the tree firm against the wind). Now that all is ready the tree is carefully placed in its new bed, one person or more, according to its size, steadying it, while another was placing the roots with the hand, while a third or a fourth was putting in a little well broken soil to keep the roots in their place. This done all round, the remainder of the soil was well broken and thrown in, and no treading or watering was ever practised. Few of the trees had any support, none of those that had been regularly lifted required it, but some of those that had not did, and nothing more was necessary except an occasional looking over after high winds. The next time the tree was lifted the roots that had been left were cut off and the tree turned the opposite way, leaving a few roots on the opposite side, and so on time after time; and although you would call Mr. Rivers' trees some 6 or 8 feet high "toys," you could scarcely call one between 20 and 30 feet high, with a spread in proportion, a "toy." So successful was I that I felt I had my trees under control, so to speak; that is, if I desired wood I could easily have it, or if I desired flower that I could as easily have, and flower, too, that appeared to have a surprising power of resisting adverse weather. For all this experience I considered myself under the greatest obligation to Mr. Rivers. *George Lee, F.R.H.S., Clevedon.*

Witch Knots on the Birch. — These are very common on trees here, from the size of rooks' nests down to very small ones. On one of intermediate size a pair of hawfinches selected this season to build their nest, hanging some 18 inches from the branch, where they hatched three young ones. These birds have not been so numerous here this season, I am thankful to say; green Peas and Cherries stand a poor chance with them. It is somewhere about ten years since we first had a pair here, but in Hertfordshire some forty years since I know they were very plentiful in the winter season at Knebworth Park, where they used to feed on the Hawthorn seeds, also the Hornbeam. *W. Hill, Rich Hall Gardens, Nov. 12.*

Strawberry Culture.—I fully endorse the idea of "Observer" (p. 468) as to the soil being exhausted and not the plants. I have ten beds grown on the broadcast, or what some might term "lazy-bed" system, which were all planted in 1866, and are consequently eleven years old. I had five years since doomed part of them to be broken up, but as press of work came on I was not able to do it; being considered an extra job it was put off. I thought I would help them through another year, having plenty of sewerage at command. I accordingly began during the winter months and gave them a thorough soaking, and in February or March following dressed them, or cut them down close to the crowns. I never cut my foliage off at any other time, as I consider it a bad plan. The year following I gathered an immense crop of very fine fruit, far exceeding in size and quality anything I had from them up to that time. I have since followed up the sewerage system, giving a dressing every other year. I last year gave them a thorough dressing in February with loam and good rotten dung from an old hotbed. Again last summer I picked an extraordinary crop of splendid fruit off them. I may just state the soil is of a free mixed gritty description, and appears naturally suited to the growth of the Strawberry. The plants now look as strong and as promising as ever. I do not say they are all the plants which were planted eleven years since, as I believe as the old plants wear out they rise, and by my system of close trimming in the spring they are cut off as they rise above the surface. The only difference I make as to treatment is that during the spring, when I give sewage, I do not trim them so early; and I find as a rule the fruit is not as early those years the liquid is used as it is with manure dressing, which matters very little as a main crop. When they can be had they are always in demand. My reason for not dressing so early when sewage is used is this: the foliage protects the crowns, whereas if they are dressed early with a good covering of manure that is sufficient protection I think. May I just point out what I think bad practice? Many growers, after the crop is off, cut off almost every leaf close to the crown of the plant. Where grown in rows every alley is deeply dug, which, for appearance sake, I admit is all very well; but if they can survive such treatment long those that treat them so are very fortunate. Then, as a result of this early "hacking," fresh foliage is thrown up, which in my opinion weakens the plant very much for the coming season, and deep digging mutilates the roots and renders them less fit to stand against droughts. My experience teaches me that the Strawberry plant requires the soil to be very firm. *R. C. E.*

Law Notes.

Seed Dyeing.—At Southwark Police Court on Monday, the 10th inst., before Mr. Benson, Walter Jacob Maas, James Frith, and Alexander Frith (trading as Frith & Maas), of Ewer Street, Borough, appeared to answer a summons under the Seeds Adulteration Act at the instance of Alexander Francis, charging them with having dyed certain seeds, namely, Clover seeds, in contravention of the Act.

Mr. Besley prosecuted, and Mr. Edward Clarke appeared for the defence.

Mr. Besley, addressing the magistrate, said: I dare say you are familiar with recent legislation, and it is just as well to tell you that prior to the passing of this Act in 1869 it was unfortunately a practice, very much resorted to, to mix with Swede or Turnip seeds those of a different and inferior description which had undergone a preparation by dyeing, to deceive the eye, or by "killing" so that by that fact the worthless seeds would not grow. In reply to Mr. Benson, Mr. Besley explained that the object of "killing" seed is that when mixed with seed of other kinds it should not grow and betray its worthless character. For instance, a case has recently been decided in the City of London in which the seed of Charlock, a weed bearing a yellow flower, used only for the purpose of extracting oil by a process of crushing, was sold for mixing with Turnip seeds. The farmer when he does not find a crop coming up cannot tell why it fails; it may have been a wet season, or there may be many causes to reconcile him to the loss he has sustained by fraud. And so it is in the case of dyed seeds; generally speaking they are killed by dyeing, and we shall now prove that these seeds had undoubtedly been dyed. Undoubtedly the practice prevailed to an extent, because seed merchants were obliged to compete in price with the fraudulent seed merchants. Very few cases have arisen under it, I believe, from the fact that it is difficult to obtain evidence. The present defendants carry on business at Ewer Street as seed merchants, and are also owners of machinery by which the dyeing process is done. After the passing of the Act of Parliament it was generally believed that the whole of the seed-merchants had given up such improper practices, and I believe that you may now correctly say that the offence is limited to one or two firms only. And before the magistrate at the Mansion House during the last fortnight the name of Mr. Frith was mentioned in the case of Mr. Strangeways, who was convicted of "killing" seed, and also of selling "killed" seed. Well, sir, we come to the first piece of evidence I shall give you. I shall be able to show you that the two defendants, the Friths who are mentioned there, have taken an active part in the matter, and I propose to prove it under the authority of the Act, which, for the purpose of enabling a tribunal to judge of the *mala fides* of a delinquent, permits evidence to be given of previous transactions of the same nature for the purpose of throwing light upon that which follows after. Thus, in a case of ordinary fraud—a sale of sham jewellery—it was reserved for the Court above to decide that the previous offering of similar articles fraudulently made for the purpose of deceiving the pawnbroker was evidence of intent. I shall prove to you that in August and September a treaty took place with the young Mr. Frith, first of all about dyeing some seeds, and afterwards, in September, with the other Mr. Frith in reference to the same subject; and I shall show you distinctly that when called upon to perform the bargain which they had agreed to per-

form, they made this reply—"That they could not at present do it, because there were detectives in the Borough watching these matters; that their machinery wanted repair, and that they intended to take the opportunity of the watchfulness of the detectives to repair this machinery." That is the case against the Friths. The evidence against Mr. Maas is that he is part owner of the machinery. Through a person of the name of Robinson I shall show you the purchase of 5 cwt. 2 qr. 14 lb. of white Clover by Mr. Francis. Mr. Robinson was arranging or had arranged to send a large number of sacks of seeds to Frith to be doctored. A sale took place of 5 cwt. 2 qr. 14 lb., the contents of two sacks of white Clover seed, at 30*s.* per cwt. That sale at that price was made by a person of the name of Drage, and the same quantity was sent to Frith's and delivered out by them after doctoring, and a sum of 3*s.* 6*d.* per cwt. charged for doctoring, and when it was turned out it was found that it smelt strongly of sulphur, and I shall give scientific evidence of this. This was done to make it more like white Clover seed: the seed was unfit for sowing purposes: it was a mixture of the smallest grain Clover seed and a great quantity of grains of bad seed which the weevil had rendered useless, and I shall show that it is rubbish, the siftings and screenings of seed, unfit for growing purposes. It was sent forward to Frith's, sulphured by them and sent back by them, with a charge of 3*s.* 6*d.* to the firm of all these partners. When I have given you scientific evidence I shall show you that it is a clear case of sulphur smoking, and the seed has been dyed and rendered like white Clover seed when it is nothing of the kind. White Clover seed is worth from 50*s.* to 80*s.* That is the case I shall first take against the defendants, and the second case is one of dyeing the seed contrary to the 3d section of the Act; and with the invoice from the firm and the facts I have mentioned, you will be satisfied it is well founded, and that it is your duty to inflict the penalty fixed by the Act.

Mr. Clarke: It is my duty to say that I shall give no trouble in proving the facts, or most of them, but I would call your attention to the fact that it is not an offence to dye seed or to sell dyed seed, but it is an offence to give by dyeing or colouring the appearance of seeds of another kind. I shall show you that these were white Clover seeds, and it is upon that case my client desires to stand.

Mr. Besley: I propose to prove my case first of all.

John Charles Ostler, examined by Mr. Besley: Lives at Walthamstow. About August 28 called on Frith & Maas in Ewer Street. Witness is a commission agent. Saw Mr. James Frith.

Mr. Clarke here asked the magistrate's opinion as this evidence. My friend has correctly opined that if he proves an offence within the Act then he is entitled to prove anterior facts; but at this moment he is not entitled to call witnesses as to a matter before the subject of the summons.

Mr. Besley: I was going to prove a conversation with Messrs. Frith with respect to the bargain to treat other seed.

Mr. Benson: I am quite of Mr. Clarke's opinion, that you must not refer to anterior matters in opening a fraudulent pretence—it would not be fair.

Mr. Besley said he did so for the sake of chronological order.

Witness continued: Was present on November 16 with Mr. Francis at the warehouse of Mr. Robinson in Snow's Fields. Mr. Robinson is keeper of a granary, a place where the seed is housed. Was present when a sample of seed was shown by Mr. Robinson to Mr. Francis. The sample was one of very low white Clover—screenings from white Clover. Mr. Robinson wrote down the weight on paper. No bargain was made with Mr. Robinson.

In consequence of Mr. Clarke's objections, Mr. Besley stated that the order in which the witnesses were called was not of importance, and the witness was therefore ordered to stand down.

Mr. Benson (to Mr. Besley): You did not open the transaction at all. If I understand it, it is this: these merchants are men who for a professional fee will carry through a certain process for the purpose of enabling other people to defraud.

Mr. Besley then called

Alexander Francis, of Barford Street, Islington, who deposed: Is a commercial traveller, and on November 16 was at Mr. Robinson's, in Snow's Fields, Bermondsey, and was shown a sample of seed, which he now produced. Witness looked at it, and it appeared to him that it was the screenings and siftings from white Clover of very small grain, in fact, rubbish taken out of good seed. Amongst it were some worm-eaten seeds, just the ordinary kind of siftings and screenings, entirely unfit for sowing. It contained several seeds of ribbed grass.

In reply to the magistrate witness said for the purpose of separating any seeds other than white Clover seeds the seed is sifted or screened.

Witness continued: Besides small grain seeds he found foreign seeds not white Clover seeds. Mr. Robinson did not make a sale to him. The seed was bought of Mr. Drage. Witness accompanied Robinson to Mark Lane. Robinson went to Drage's. Witness was not present at that interview. Robinson afterwards produced to witness the invoice now produced.

Mr. Clarke: I object to that.

Mr. Besley: I propose to argue this matter with you. I submit that for the purpose of identity we are obviously entitled to have the documents describing the sale put in.

Mr. Clarke still objected, on the ground that it was not shown that the defendants were party to its preparation, or that either of them had signed it. But ultimately it was admitted, and the

Witness continued: Gave Robinson £10 on that occasion. Saw Robinson again on November 17 at Snow's Fields, and had some conversation with him there. Saw him again on the 19th, Monday, in the Seed Market, and again had conversation with him. On Tuesday, the 20th, again saw Robinson, and in consequence of what he said then went again on Wednesday, the 21st, and remained there the greater part of the day. Ultimately saw the van arrive with the seed. Was there when it came back, and saw it arrive at Robinson's after his boy had been sent out. There was a receiving order brought by the carman. (Receiving order produced by Mr. Robinson.) The seed was weighed, and the weight was correct. The two sacks were put on the scale at the time, and the weight was correct. (The receiving order was from Frith, Ewer Street, and was put in.) Witness did not open either sack himself, but he was there when one of the men opened one on the same day. Saw the seed had been sulphured, and it smelt strongly of sulphur. The sack was sewn up again immediately after the sample taken out had been thrown back again. Witness left the sacks there with Robinson for some time, and then instructed Mr. Dawson to call there for the two sacks. Wrote an order as on authority to Mr. Dawson's carman to get the sacks. (Order produced.) Also gave Dawson an order to lodge the two sacks at Trig Wharf, which was an authority to Trig Wharf to receive the seed. (Order produced by Mr. Scott, of Trig Wharf.) Afterwards witness went to Trig Wharf, not the same day but a day or two afterwards. Witness himself saw the seed put upon Dawson's van. Witness drew the sample at Dawson's, the seed being there, as he could not cart it into Trig Wharf the same night. Handed sample to Mr. Dyer, having first marked the same. The value of genuine white Clover on November 21, varied, according to sample, from 50*s.* to 80*s.*; witness paid 30*s.* Witness received Frith's account for what they had done to the seed from Robinson. The account (produced) was sent to witness by post.

In reply to the Magistrate witness said there was no note with it.

Cross-examined by Mr. Edward Clarke: The sample of seed produced was a sample of white Clover siftings—of very low white Clover.

In reply to a question from the Bench, witness said it was a very poor specimen of white Clover seed.

Continuing in reply to Mr. Clarke: Had written a letter to Mr. Robinson, but could not remember the date. (The letter was produced by Mr. Robinson, and was read.) The Clover referred to in that letter was the same of which witness had taken a sample. Had not at any time been employed where seed was coloured.

The Magistrate: Are you educated in the seed-trade? Have you had experience in it? Have you experience enough to know one seed from another?—Witness: Oh yes.

Cross-examination continued: Could not say he had ever seen a sample of white Clover without some ribbed grass seeds in it.

Mr. Benson (to witness): Can you pick out a ribbed grass seed from this?—I believe I can, your Worship. Some are yellow and some much darker. Is that anything to do with it?—No. They are a different shape altogether. Is there a very large proportion of these things?—There is a good proportion of it in that sample. I suppose there will be some expert evidence about this. Witness selected from the sample some seeds of ribbed grass, which were handed to the magistrate.

Continuing in reply to Mr. Clarke, witness said: He had given 30*s.* for this Clover. Had not a sample of this seed as it was returned, but there was one in court: had seen it. Did not know what value he would place upon it, because he had never examined it closely. Had nothing to do with the value, but considered himself a judge of seed.

In reply to Mr. Besley witness said the sample was quite worthless, not fit to grow at all.

Mr. Richard E. Robinson (examined by Mr. Besley): Did not send the seed referred to in the letter of November 16, which he produced, to be dyed: sent some seed to be "improved." Is a warehouse-keeper, and warehouses seed for different merchants. Did not send to Frith's at the same time, nor within a day or two, fourteen or fifteen sacks on account of John Lee Barber & Co., Lowestoft and London. Sent to Messrs. Frith & Maas 5 cwt. 2 qr. 14 lb. of seed bought by him for Mr. Francis from Mr. Drage. Believed the price was 30*s.*, but could not remember. Invoice was made out to witness on the market, because Mr. Drage did not know Mr. Francis, and said he would sell it to witness, who would get the money. Did not arrange with Frith & Maas the price for improving. Did not notice what price they charged for the "improving."

Mr. Benson (to witness): What directions did you give?—I just sent the seed to Mr. Frith's to be "improved." I wrote a receiving note. (This note produced.)

Examination continued: Was present when the seed came back "improved," and the bag was opened and a sample taken out. Did not take particular notice how it smelt. Weighed the seed, and the weight was correct. Sent the invoice on as it came to him. Francis wrote for it (letter produced), and upon receipt of that note witness applied for the invoice personally. Saw Mr. Frith's son, their clerk, at witness's place of business. Mr. Frith's son came in, and witness asked him for the account, which he gave. No price was mentioned, and witness did not look at it. Sent on the invoice as it was made out by Mr. Frith's son—16*s.* 6*d.* The seed was afterwards put into Dawson's van while Mr. Francis was waiting for it and in his presence.

Cross-examined by Mr. Clarke: Had only known Mr. Francis a few weeks. He was introduced to witness as a seed merchant out of business. Knew nothing about an association. Francis did not tell him he was an inspector. Saw the sample before it was purchased; it was white Clover. Mr. Francis came to witness and said, "Do you know where I can get any low white Clover seed?" Witness said, "I do not know, but here is a sample belonging to Mr. Drage." Mr. Francis saw the sample: anybody could recognise the seed as being white Clover seed. Thought there was ribbed grass seed in every lot of white Clover seed grown. This was a fair sample of not very dear white Clover. By not being dear meant that the seed was "oldish." Had had the seed twelve months in the warehouse. Seed would become dark-coloured from being badly warehoused or badly kept. Could not say if the seed when dark-coloured is as useful for growing as before, because he is not a seed merchant. The seed, taken out as a sample, when it came back from Frith's was white Clover. It had been "improved" in appearance, but you could see it was the same seed. Had no idea or intention of assisting in a fraud or would not have done it. Did not mean to be fraudulent, nor help any one else to be so. Not acquainted with the process by which the seed is improved.

Re-examined by Mr. Besley: Not aware that seed ever got sulphur by keeping. Did not know if sulphur smoking had the effect of increasing size or weight. Had never troubled to inquire what Mr. Frith did when he improved seed. Not his business.

In reply to Mr. Benson witness said: Mr. Francis first mentioned Maas & Frith. Had known them before. They are hop and seed merchants and carmen. Simply understood that when he sent things

to them they were to be improved by some process or another. Did not know that it made any palpable difference, but it makes it a little lighter colour. Had occasionally sent things to Maas & Frith's before. Could not say if it was a very common thing to sulphur up the cheaper seeds. As a short statement of the transaction, witness said Mr. Francis came and asked him if he knew any one who had low white Clover to sell. Witness said, "Well, here are some samples I am going to take over to Mr. Drage." He said, "This will do for me; ask him the price." Witness went over to Mr. Drage, and said, "Here's your samples: a gentleman wants to buy this 5 cwt. 2 qr. 14 lb. What is your price?" He said "30s.: who is it?" Witness said, "Mr. Francis." He said, "We do not know Mr. Francis; you take the invoice and get the money." Witness took the invoice, got the money, handed the invoice to Mr. Francis. He said that he wanted 5 to 6 cwt. for a friend, and told me to send it to Mr. Frith's to be "improved." Witness did not mention how Maas & Frith would "improve" it, Mr. Francis was fully aware of that.

Mr. BERNARD DYER (examined by Mr. Besley), residing at 17, Great Tower Street, is an analytical chemist, and chemist to the Devon County Association, and to the Nottinghamshire Agricultural Association and member of the Society of Public Analysts. On November 17 received two samples of seed from Mr. Francis, one of them marked. Examined the sample so marked and submitted it to chemical analysis. Detected the presence of sulphuric and sulphurous acids, showing that the seed had been submitted to the action of burning sulphur. The effect of submitting the seed to sulphur is to exert a bleaching action upon it and to freshen its appearance in somewhat the same manner as straw is bleached for straw hats or bonnets. It does not materially increase the weight. Witness found in that sample sulphur in the proportion of one grain and a fraction over to the ounce. Many of the husks of the seeds were hollow and light. Witness found among them a few grass-seeds, but did not take any particular notice of them. Did not know the value of genuine white Clover seed on November 21.

Cross-examined by Mr. Clarke: Knew nothing about any Association, and had not been appointed analytical chemist to them. Would not commit himself to the statement that sulphuring would "kill" seed.

In reply to Mr. Benson: Witness could not say it had been subjected to any very great heat, but the seed had undoubtedly been freshened up by sulphur-smoking. Many of the seeds were evidently old, and in witness's opinion worthless in their natural state except for the sulphur. This process of sulphur-smoking is resorted to for the purpose of making old and dead and practically worthless seed appear like fresh. It is done entirely for the seed trade, and has no legitimate use.

Cross-examination continued: Is fairly well acquainted with the appearance of seeds though not an expert. Has had a very large experience in the examination of seeds for discovering adulteration. Did not consider himself an expert as a botanist but as a chemist. Knew enough to say if the seed submitted was white Clover seed. Was able to say, from the sample submitted to him, that it was not new seed: very many of the seeds were hollow shells, as was to be seen on close or microscopical inspection. Inspection without the microscope would probably reveal the same fact: a man by rubbing seeds between his fingers would be able to tell the quality of the seed, although the appearance might be considerably altered.

In reply to Mr. Besley witness said he had been engaged in making analyses for the different agricultural associations on his own account for the last two years. Previous to that was for three years assistant to Dr. Voelcker, chemist to the Royal Agricultural Society. Witness further stated that there were other ways of doctoring than smoking. Asked if he had sufficient knowledge to know whether this seed, before sulphuring, was fit for growing purposes, witness said he might have an opinion upon that matter but could not speak with authority: that was tested by germination. There was no other object in sulphuring than to give the appearance of good seed to old and decayed seed. He should expect the greater part of the seed in question would not grow. Had known very many cases where good practical farmers had been deceived. Thought it had been brought about by palming off a particular seed which had lost its germinating power by age. Asked if seed a year or two old would have lost its germinating power, witness said his opinion was that the germinating power would diminish, but he had never made any experiments. Had certainly read that seeds taken from the Egyptian mummies had retained their germinating power, but had also read records where seeds had lost that power.

Mr. CLARKE, addressing the Court for the defendants, said:—I submit, upon the construction of the Act of Parliament, there is no evidence to support a conviction. The witness has said that this was white Clover seed; the original seed he saw was white Clover seed. He writes a letter to Mr. Robinson, and instructs him to send the white Clover seed to "be done." He then receives from Frith & Maas, or indirectly, his identical white Clover seed. All that has been done in this matter is to submit white Clover seed to a process which, so far as he can say, does not mar its germinating power, which would not deceive a man of experience dealing with it, and which certainly has not altered the kind of seed. The kind of seed is white Clover, the same that it was before the process. It is white Clover seed; it was white Clover seed and nothing more before. I shall submit that upon an examination of the Act it is clear the meaning I attribute to the word "kind" is the true one. The term "to kill" means to kill by artificial power, and that would be so if they had palmed off stuff like sawdust. The killing of a seed is the killing a different seed from that asked for with the intention to defraud. Precisely the case of Charlock, a yellow flower, the seed of which resembles Turnip seed.

Mr. BENSON: I have been considering this ever since the case commenced. Though nobody can deprecate more than myself the offence with which the defendants are charged, I must concur in the objection raised by Mr. Clarke.

Mr. BESLEY: If your decision were to be acquiesced in by the persons interested in this matter, it would be in fact to render the Act of Parliament inoperative. I would suggest to you that they have infringed it if you will kindly look at the Act and see what it is aimed at. It is to prevent the adulteration of seeds, to prevent the practice of passing off seed of an inferior quality as seed of a superior quality.

Mr. BENSON: If a farmer were to sell from a fine sample and then go home and mix with his good seed other of an inferior quality?

Mr. BESLEY: Adulteration implies the reduction of the quality. If you remember in our great gin discussion there is the adulteration of gin by the introduction of one of its components parts, water, and the magistrates have decided that it was an adulteration within the Act; and a superior court has held by this decision that, if in a neighbourhood gin is sold at 30° under proof, and a man is selling at 40° under proof, that is sufficient. And I say we have not to consider the germinating power. We have not summoned upon that.

Mr. BENSON: I should have been almost inclined to have seen whether evidence could be got to show that such a process does kill the seed. But there is no evidence. I am quite sure if there could be prejudice, it would be on my part against the defendants. You may depend it is only my sense of duty under the Act of Parliament that influences me. I should like to hear you upon the argument of the appearance of seeds of another kind.

Mr. BESLEY.—I go entirely outside that. I say that when we deal with the interpretation of an Act of Parliament it does not exclude the natural meaning of the word, and that is clearly proved by the decisions which have taken place upon the meaning of certain words. For instance, I believe upon the meaning of "valuable security." It has a meaning attached to it by the Larceny Act, but it was held that a person might be guilty of attempting to extort a valuable security other than as defined by the Act. You are at liberty to construe the meaning of an Act of Parliament by the ordinary meaning of a word. But I contend it could not have been intended that it should have left untouched the act done by Messrs. Frith & Maas here, namely, to deceive the eye of a customer who is looking at the seed and thinks it is new seed where they know well that it is old seed prepared by sulphurous smoke or otherwise to make it appear like fresh seed.

Mr. BENSON: Supposing this interpretation clause had not existed, in that case you would have been convicted, Mr. Clarke.

Mr. BESLEY: Well then, sir, I submit that it does not mean to give the appearance of Clover seed, the appearance of Swede or Turnip seed. I must also submit that giving the appearance of new Clover seed to old Clover seed is a matter of kind. Mr. Besley proceeded to ask that the summons should be amended to one of "killing" seed, and stated that in the case already referred to the "killing" had been proved by a careful preparation of soil for discovering the germinating power, sowing the seeds and subjecting them to the proper temperature, and finding that none came up. Mr. Besley asked for a summons against the defendant for "killing" this seed, as he was limited in point of time.

Mr. BENSON would like it taken at once, and would grant a case upon the meaning of the word "kind." Mr. Besley, however, did not then take the case.

In dismissing the summons, Mr. BENSON, addressing the defendants, said: I regret to feel myself compelled to dismiss the summons against you. I am very sorry for it.

Natural History.

PHYTOPTUS GALLS (WITCH KNOTS).—The unequal distribution of witch knots, that your correspondent draws attention to in No. 202 of the *Gardeners' Chronicle*, and which is so very striking where Birch trees grow in near neighbourhood, seems to be caused by the habits of the Phytoptus keeping it mainly in the buds, instead of, as with some (very possibly all) of those which form the galls on deciduous leaves, sending them astray with the season of the withering leaf.

In examining the Birch buds I have found Phytopti lodged inside during the whole of the year—they may be elsewhere, but I have not noticed them—but with the leaf Phytoptus galls, such as those of the Maple, or the nail or cowl-like growths of the Lime, a microscopic examination of the under-surface of the leaf on which they grow during September will show the Phytopti straying about, whilst others close by are to be found moving on the twigs, or—their autumn move apparently satisfactorily over—snugly secured amongst the scales at the base of the leaf-bud, not fairly inside as in the Birch bud, but so as to make the most of the shelter given by the axiliary position of the bud.

The gall mite comes out of the egg perfectly developed, its embryology being traceable with the aid of a quarter-inch object-glass, from the obtusely oval and white egg, through the alterations in figure and size (showing, with the addition of a little turpentine, the form of the contained object,) to the exclusion of the perfect Phytoptus.

Its minute size might seem to militate against its existence where winter wet must often drench its shelter, but it will stand immersion for more than an hour and a half without destroying its vital powers, and with the larger-leaved trees, the autumn gales, bearing the leaves and their living passengers before them, must act as powerful agents of dispersal. *O.*

TOMATOS AND COAL ASHES.—Both Tomatos and Potatos are good this year where they have a monopoly of the soil—very good on manured lands, and phenomenally good on rich soils, which have been farther enriched by coal ashes. Having casually observed the effects of coal ashes to be, as I thought, something out of the common on Tomatos, increasing not so much the growth of the plants as the size, smoothness, and number of the fruit produced, a market gardener of experience confirmed my suspicion, and last spring I accepted his directions for

their use, which were to throw out a wheelbarrow load of earth where each plant was to stand, and then fill with half soil and half coal ashes, and therein set out the plants. I did so, and the result was quite surprising, the dozen plants thus treated bearing nearly double the fruit of others, and smoother and larger; but Tomato plants so set will, in case of drought, require water oftener, and more of it, than those growing in common soil. *Country Gentleman.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DEC. 12, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 65 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Dec.	In.	In.	°	°	°	°	°				In.
6	29.36	−0.40	54.6	39.1	15.5	47.0	+ 5.4	46.0	97	S.S.E.: S.S.W.: S.W.	0.21
7	29.74	−0.03	49.3	39.2	10.1	44.6	+ 3.1	38.9	77	S.W.	0.15
8	30.04	+0.27	47.1	34.5	12.6	40.9	− 0.5	36.6	85	S.W.: WSW	0.00
9	29.96	+0.19	49.2	39.5	9.7	44.8	+ 3.6	40.0	84	WSW: S.	0.01
10	29.81	+0.02	49.5	31.8	8.7	36.5	− 4.5	33.3	89	S.S.E.: E.S.E.: S.E.	0.00
11	29.87	+0.08	44.0	29.4	14.6	36.2	− 4.6	34.0	92	S.S.E.: S.S.W.: S.W.	0.00
12	29.68	−0.12	52.3	39.0	13.3	45.3	+ 4.6	39.3	80	S.W.: WNW: WSW	0.09
Mean	29.78	−0.00	48.1	36.1	12.1	42.2	+ 1.0	38.3	86	S.W.: S.E.	sum 0.46

Dec. 6.—Dull, with occasional showers till afternoon, then fine and bright.
— 7.—Fine and bright till noon, overcast and dull after. Heavy rain in evening. Solar halo seen at 10.30 A.M.
— 8.—A fine day. Cloudy, cold and dry.
— 9.—A fine bright day. Occasional sunshine.
— 10.—A dull, cold, cloudy day. Hoar frost at night.
— 11.—Fine till 11 A.M., overcast and dull after. Cold. Fog and hoar-frost in morning. Temperature of air at 9 A.M. was 33°.4, at 3 P.M. was 49°.2, at about 6 P.M. was 37°.2, and at midnight was 44°, which was the maximum for the day.
— 12.—A very fine clear day. Mild till evening then cold. Rain fell in early morning.

LONDON: *Barometer.*—During the week ending Saturday, December 8, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 29.64 inches at the beginning of the week to 30.18 inches by the morning of the 3d, decreased to 29.46 inches by the afternoon of the 6th, and increased to 30.28 inches by the end of the week. The mean reading for the week at sea level was 29.97 inches, being 0.60 inch above that of the preceding week, and 0.02 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 54½° on the 6th to 46° on the 4th; the mean for the week was 48°. The lowest temperatures of the air observed by night varied from 34½° on the 8th to 40½° on the 4th; the mean value for the week was 38¼°. The mean daily range of temperature in the week was 9½°, the greatest range in the day being 15½° on the 6th, and the least 5½° on the 4th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—December 2, 42°.5, +0°.7; 3d, 44°, +2°.2; 4th, 43°.1, +1°.3; 5th, 42°.3, +0°.6; 6th, 47°, +5°.4; 7th, 44°.6, +3°.1; and 8th, 40°.9, −0°.5. The mean temperature of the air for the week was 42°.9, being 1°.8 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 84¾° on the 2d, 76¼° on the 6th, and 71½° on the 8th; on the 3d the reading did not rise above 49°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 31° on the 2d and 8th, and 33° on the 3d; the mean of the seven low readings was 35°.

Wind.—The direction of the wind was N.N.E. and W.S.W., and its strength moderate. The weather during the week was dull and wet, and the sky very cloudy. A solar halo was seen during the morning of the 7th inst.

Rain fell on six days during the week, the amount collected was 0.52 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 54½° at Blackheath, 54° at both Truro and Plymouth, and 53¾° at both Bristol and Portsmouth; the highest temperature of the air at Hull and Sunderland was 49°, and Bradford was 49¾°; the mean value for the week from all stations was 52°. The lowest temperatures of the air observed by night were 29¼° at Wolverhampton, 31° at both Cambridge and Truro, and 32° at both Eccles and Hull; the lowest temperature of the air at Liverpool was 38½°, and at Brighton, Portsmouth, and Bradford 36½°; the general mean from all stations was 34¼°. The range of temperature in the week was the greatest at Truro, 23°, and the least at Sunderland, 13°; the mean range from all stations was 17¾°.

The mean of the seven high day temperatures was the highest at Truro, 50½°, Plymouth 49¾°, and Portsmouth 49¼; and the lowest at Bradford, 44½; the mean value from all stations was 47¼. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34¾°, Eccles 35½°, and Truro 36½°; and the highest at Norwich 41°, and Sunderland 40¾; the mean from all stations was 38½°. The mean daily range of temperature in the week was the greatest at Truro, 13¾, and the least at Bradford, 5½°; the mean daily range of temperature from all stations was 8¾°.

The mean temperature of the air for the week from all stations was 42½°, being 4¼° lower than the value for the corresponding week in 1876. The highest were 44½° at Portsmouth, and 43¾° at both Norwich and Sunderland; and the lowest at Wolverhampton, 40°, and Eccles, 41°.

Rain fell on every day in the week at Cambridge, Norwich, and Sheffield, and on four or five days at most other places. The amounts measured varied from 1 inch and one-tenth at Bradford and 1 inch at Sheffield to three-tenths of an inch at Wolverhampton and Sunderland. The average fall over the country was seven-tenths of an inch.

The weather during the week was dull and showery.

Snow fell at Bradford on the 7th inst., and *Hail* fell at Liverpool on the 7th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 51° at Leith to 47° at Dundee, Greenock, and Paisley; the mean from all stations was 48¾°. The lowest temperatures of the air varied from 31° at both Aberdeen and Paisley, to 34¼° at Leith; the mean value from all stations was 32½°. The mean range of temperature in the week from all stations was 16¼°.

The mean temperature of the air for the week from all stations was 40¼°, being 3¾° lower than the value for the corresponding week in 1876. The highest was 41¼°, at Glasgow, and the lowest was 39¼°, at both Paisley and Perth.

Rain.—Rain fell at Greenock to the amount of 2.11 inches, whilst at Edinburgh and Leith a quarter of an inch only was measured. The average fall over the country was 0.64 inch.

DUBLIN.—The highest temperature of the air was 53°, the lowest was 28¼°, the range 24½°, the mean 42¾°, and the fall of rain a quarter of an inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

220. CHINA: *A Subscriber* asks if there are any choice and valuable Orchids to be obtained in China; and if any, what are the prevailing species. [Yes, species of Cymbidium, Calanthe, &c.] Also if there are any nurserymen in China, from whom a person going there could obtain a quantity of really first-class Lilium bulbs in variety, and especially Lilium auratum; and what month they are at rest there. Neither a Flora of China, nor a Chinese Horticultural Directory has yet reached us. Perhaps our correspondent could get the information from the Chinese Embassy; certainly we have little to give him.

Answers to Correspondents.

ADDRESS: *A Subscriber.* There are several florists and fruiterers of the same name in London, four in Covent Garden alone. Which do you mean?

APPLE, POMME VIOLETTE: *J. P.* We cannot say where you can get this old variety in this country, but we note that it is included in the lists sent out by Simon-Louis Frères, nurserymen, Metz, Lorraine, Germany.

BOOKS: *G. W.* *Paxton's Botanical Dictionary* (Bradbury, Agnew & Co.).—*T. Richardson.* Paxton's *Botanical Dictionary.* We do not think you can get London's list in the way you suggest.

CAMELLIA BUDS FALLING OFF: *G. W.* Your question has been asked scores of times, but the same answer does not apply in all cases. It may be owing to the want of moisture at the roots: but we cannot say in the absence of details.

CHRYSANTHEMUMS: *E. H., Kelso.* We do not know where to look for the measurements of the largest Chrysanthemum flowers on record, and consequently cannot answer your first question. Do we think it can be true that a friend of yours has grown flowers of the white Queen of England 8 inches in diameter? Well, we do not think it improbable, but we have never seen any so large that we can remember.

COMPOSITION FOR PIPES: *St. Andrews.* Paint made of lamp black and linseed oil.

DAISIES ON LAWN: *T. B.* Try Watson's Lawn Sand; we have heard it well spoken of, though we have never tried it. Or, you can remove the Daisies with a spade, scatter some seeds of good lawn grasses, and dress the surface with some good fresh earth.

ERICAS: *B. E. S.* You do not give us sufficient information to enable us to judge of the cause, but as you have been troubled with mildew we think it probable that you have allowed the plants to get too dry at the roots.

INSECTS: *R. S. A. L.* The bark of the Pear tree is infested with the mussel scale, Aspidiotus conchiformis, a very troublesome pest to get rid of, on account of the difficulty of getting at them. If you can spare time now better than in May, when the

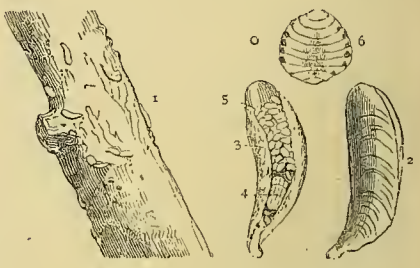

FIG. 147.—THE MUSSEL SCALE.

young brood begins to make its appearance, have the bark scraped with a piece of hard wood shaped like a knife-blade, and subsequently scrub the shoots with paraffin, using a hard brush.

FRUIT TREES DYING: *J. P.* No wonder that your Cherry-trees are dying, and the other fruit-trees showing signs of going the same way, if the soil they are growing in is fairly represented by the sample sent. It is nothing but a mass of the spawn of a fungus, in which no tree can exist long. How to account for it we are unable, in the absence of any details; but if all the ground is alike, we would not advise you to waste any time or money over planting any more trees in the same ground. You had better by far find another site for a new orchard, and by-and-by grub up the trees in the old one, and put the land under a liberal system of manuring and deep cultivation for a few years to clean it.

MONSTROUS MUSHROOM: *S. Kipps.* Instances of Mushrooms growing on the top of one another are by no means rare, and such peculiarities have been

FIG. 148.—MONSTROUS MUSHROOM.

more than once illustrated in our columns. See our volume for 1873, pp. 1016, 1017.

HOLLIES DROPPING THEIR LEAVES: *T. B.* The leaves doubtless fell off in consequence of removal. You can do nothing to prevent it, but shelter the plants from rough winds. It is much better that they should drop than wither on the tree, and in spring the trees should rehabilitate themselves.

MEALY BUG: *J. M.* If you use the soft soap and water hot you will find it very effectual. Don't use paraffin in any form, but try either the Chelsea Blight Composition, sold by Messrs. Veitch & Sons, or Bridgeford's Antiseptic Liquid, sold by Mr. Bridgeford, seedsman, Sackville Street, Dublin. We have letters which we hope to find room for shortly, highly praising both of these compositions.

NAMES OF PLANTS: *Horticulteur.* You must send better specimens. We cannot afford to waste time over such scraps.—*A Subscriber.* Probably some climbing Leguminous plants. We do not recognise the seed.—*W. B.* We do not recognise your plants.—*T. W.* 1, Retinospora filicoides; 2, Picea Lowiana; 3, Taxus tardiva (adpressa); 4, Libocedrus chilensis; 5, Torrya nucifera; 6, Retinospora pisifera filifera.—*T. D. M.* Your "Cattleya" species is Epi-

dendrum ciliare, one of the oldest and most venerable of Orchids, boasting the authorship of Linnæus himself. Never mind. *Solamen miseris socios habuisse malorum.* You are not the first who has fallen a victim to this usual *quid pro quo*, nor will you be the last. If, however, you would like to know how to escape it, ask Mr. Stuart Low, who will tell you all about it. Ask him about Mr. Bridge's famous sale of 1856. *H. G. Rchb. f.—J. K.* Next week.—*J. H. C.* The true Arundinaria falcata; the plant generally so called is properly called Thamnocalamus Falconeri.—*G. W.* 1, Begonia sanguinea; 2, Abutilon marmoratum; 3, Eupatorium, perhaps glutinosum; 4, Trachelium cœruleum; 5, Phlebodium aureum; 6, Selaginella pubescens. — *Bob.* 1 and 2, Cypripedium insigne; 3, C. insigne, var. Maulei.—*T. S. P.* Zygopetalum crinitum.—*E. Stroker.* Dendrobium chrysanthum.—*D. B., Woolwich.* Zygopetalum Mackayi.

PETROLEUM: *H. W. E.* No injury will accrue from its use if you do not turn the wick up too high, and especially if there is a little ventilation on.

POPLARS: *Comjee.* Write to Mr. Anthony Waterer, Knap Hill, Woking.

STOVE: *W. K. R., Glenlyn.* The terra-cotta stoves sold by Mr. Roberts, 12, Victoria Street, Westminster, S.W., would probably answer your purpose.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED. — Messrs. Dippe Brothers (Quedlinburg, Prussia), Trade Catalogue of Flower, Garden, and Agricultural Seeds.

COMMUNICATIONS RECEIVED.—W. R. (has not authenticated his letter with his name and address).—J. M.—J. D.—W. P. R.—D. D.—A. F.—P. G.—R. G.—T. L.—H. W. D. H.—J. R.—H. W. W.—T. S.—G. D.—D. M., Dunrobin.—L. B.—J. F.—J. E.—H. J. C.—M. A. L.—W. M.—J. B.—H. L. & Co.—W. H.—J. L.—T. C.—A. O.—W. H.—A. D.—D. T. F.—R. W.—J. H.—J. K.—R. H.—G. F. W.—C. D.—O. D.—Charles Darwin.—H. H. D.—C. S.—W. H.—M. D.—A. O. W. (many thanks).

Markets.

COVENT GARDEN, *December* 13.

We have no alterations to quote this week. Supplies, though short, are fully equal to the demand. Kent Cobs are making a better trade. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6– 5 0	Oranges, per 100	2 6–12 0
Grapes, per lb.	0 9– 6 0	Pears, per doz.	2 0– 6 0
Lemons, per 100	8 0–12 0	Pine-apples, per lb.	1 6– 6 0
Nuts, Cobs, per lb.	0 4– 0 6	Walnuts, per bushel	5 0– 8 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Herbs, per bunch	0 2– 0 4
Asparagus, Sprue, per bundle	1 6– ..	Horse Radish, p. bun.	4 0– ..
Beans, French, per packet	1 0– ..	Leeks, per bunch	0 2– 0 4
Beet, per doz.	1 0– 2 0	Lettuces, per score	2 0– ..
Brussels Sprouts, p. bush.	6 0– ..	Mint, green, bunch	0 6– ..
Cabbages, per doz.	1 0– 2 0	Mushrooms, per pott.	1 0– 3
Carrots, per bunch	0 4– 0 6	Onions, per bushel	3 6– ..
— new, Fr., bunch	1 6– ..	— young, per bun.	0 6– ..
Cauliflowers, per doz.	1 6– 4 0	Parsley, per bunch	0 4– ..
Celery, per bundle	1 6– 2 0	Radishes, per bunch	0 1– 0 3
Chilis, per 100	3 0– ..	— Spanish, doz.	1 0– ..
Cucumbers, each	1 0– 1 6	— New Jersey, doz.	2 0– ..
Endive, per doz.	1 0– 2 0	Rhubarb, per bun.	2 0– ..
— Batavian, p. doz.	1 6– ..	Salsafy, per bundle	1 0– ..
Garlic, per lb.	0 6– ..	Seakale, per punnet	2 0– ..
		Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 6 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Arum Lily, per doz.	9 0–18 0	Lily of Val., 12 spr.	4 0–12 0
Azalea, 12 sprays	1 0– 3 0	Mignonette, 12 bun.	6 0–19 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, various, per doz.	2 0– 4 0
Camellia blms., doz.	3 0–12 0	Pelargoniums, 12 spr.	1 0– 3 0
Carnations, 12 blooms	1 6– 4 0	— zonal, 12 sprays	6– 1 6
Christmas Roses, 12 blooms	0 9– 2 0	Poinsettias, per doz.	4 0–12 0
Chrysanth, 12 blms.	2 0– 6 0	Primula, double, per bunch	1 0– 2 0
Epiphyllum, 12 blms.	1 0– 3 0	Roses (indoor), doz.	1 6–12 0
Eucharis, per doz.	8 0–12 0	Stephanotis, 12 spr.	9 0–18 0
Euphorbia jacquiniæfolia, 12 sprays	2 6– 6 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz.	5 0–12 0	Tuberoses, 12 blms.	2 0– 4 0
Heliotropes, 12 spr.	0 6– 1 0	Tulips, per doz.	2 0– 3 0
Hyacinths, Rom. doz.	2 0– 4 0	Violets, 12 bunches	1 0– 3 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azalea, per dozen	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–12 0	Fuchsias, per dozen	6 0–12 0
Bouvardias, do.	12 0–24 0	Hyacinths, per doz.	10 0–18 0
Camellia, var., doz.	30 0–60 0	Mignonette, per doz.	6 0– 9 0
Chrysanth., per doz.	9 0–12 0	Myrtles, do.	6 0–12 0
Clematis	12 0–24 0	Narcissus, per doz.	15 0–24 0
Coleus, per dozen	6 0– 9 0	Palms in variety, each	3 6–21 0
Cyclamen, per doz.	12 0–24 0	Pelargon., scarlet, p. dozen	6 0–12 0
Cyperus, do.	6 0–12 0	Poinsettias, per doz.	12 0–24 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Scilla, per dozen	6 0–12 0
Erica Hyemalis, doz.	12 0–42 0	Tulips, per dozen	10 0–18 0
— gracilis, per doz.	6 0–18 0	Valotta purpur., doz.	9 0–18 0
Euonymus, var., doz.	6 0–24 0		
Ferns, in var., p. doz.	4 0–18 0		
Ficus elastica, each	2 6–15 0		

*** The demand for flowers being much increased for Christmas decorations, &c., the above prices must only be taken as a guide at this season, and must not be fully relied on.

SEEDS.

LONDON: *Dec.* 12.—The attendance on our market to-day was above the average, and there was an improved inquiry for farm seeds. Every description of red Clover keeps firm at late currencies. The American markets are also all reported to be exceedingly strong; latterly, the supplies in the West had been light, owing, to some extent, to unfavourable weather; but growers, moreover, in the hope of higher prices, had been keeping back their produce. It is evident that holders in the United States are unwilling to believe that the superabundance of the supply from France will render England this year largely independent of America. Several samples of new home-grown red are now appearing on Mark Lane, for which unduly high rates are demanded. Taking into account the comparative cheapness this season of really fine French seed, English farmers will go wrong if they base their present demands on the extravagant terms obtained last autumn. There has been some business doing in white at full quotations; choice parcels in particular having met a good request. In Alsike there is no material alteration. Trefoils, although neglected, well maintain their values. New American Timothy is very fine, and on account of its low price attracts attention. Surprise is often expressed on the other side of the Atlantic that this seed is not in greater favour in this country. In Sainfoin, Rye-grass, Lucerne, there is scarcely anything doing. The nearness of Christmas, and the consequent disinclination to embark in speculative dealings, naturally exercise a quieting influence upon those articles not needed for immediate use. Canary seed is rather firmer, the market having been relieved by some shipments to New York. The new Baltic Hemp seed proves satisfactory, both as regards price and quality. Linseed is easier. In blue Peas there is no variation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was firm. As regards Wheat, more especially foreign, there was a better inquiry, and a moderate business was concluded at the full prices of the previous Monday. Barley met with a limited demand, and prices were no better. Malt remained dull on former terms. Oats were a slow sale, and prices were the same. Maize moved off at recent currencies. Beans and Peas were unaltered, and no decided change was established in flour. American barrels were held for 6*d.* advance in some instances.—There was no important feature in Wednesday's trade. Business was generally very quiet, and prices were much the same, although the tone was moderately firm. The milder weather constitutes an unfavourable influence upon the trade, inasmuch as it is adverse to the sound preservation of the produce.—Average prices of corn for the week ending December 8:—Wheat, 51*s.* 4*d.*; Barley, 44*s.* 1*d.*; Oats, 23*s.* 1*d.* For the corresponding week last year:—Wheat, 49*s.* 1*d.*; Barley, 38*s.* 10*d.*; Oats, 25*s.* 4*d.*

CATTLE.

At Copenhagen Fields on Monday there were fewer beasts than on Monday se'nnight, the weight of meat was, however, proportionably larger. The trade was active for choicest qualities at fully the previous Monday's quotations. For sheep there were more buyers than of late, but prices could not be quoted higher, only the choicest qualities made our top quotations. Trade was scarcely so brisk for calves as of late, still choicest qualities maintained late prices. Quotations:—Beasts, 4*s.* 8*d.* to 5*s.* 4*d.*, and 5*s.* 10*d.* to 6*s.* 2*d.*; calves, 5*s.* 8*d.* to 6*s.* 4*d.*; sheep, 5*s.* 4*d.* to 5*s.* 8*s.*, and 6*s.* 4*d.* to 7*s.*; pigs, 3*s.* 8*d.* to 4*s.* 8*d.*—On Thursday the cattle trade was in much the same position as on the previous market day. Supplies of beasts were above the average for a Thursday, but those of sheep were short. For fine kinds a fair inquiry prevailed, at full prices; otherwise business was quiet. Calves sold at full quotations.

HAY.

The Whitechapel report for Tuesday states that, with rather a short supply, dry weather, and a brisk trade, prices were firm. Prime Clover, 100*s.* to 135*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 100*s.*; inferior, 70*s.* to 85*s.*; and straw, 44*s.* to 54*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 100*s.* to 110*s.*; inferior, 80*s.* to 92*s.*; superior Clover, 126*s.* to 135*s.*; inferior, 95*s.* to 108*s.*; and straw, 53*s.* to 58*s.* per load.

POTATOS.

The Borough and Spitalfields reports state that there is not much trade, and quotations show no material change. The tone as regards foreign Potatos, the supplies of which continue liberal, is distinctly weak. Kent Regents, 150*s.* to 165*s.*; Essex ditto, 140*s.* to 155*s.*; rocks, 100*s.* to 120*s.*; kidneys, 120*s.* to 140*s.*; flukes, 160*s.* to 180*s.*; Victorias, 150*s.* to 180*s.* per ton.—The imports into London during the past week were 119,087 bags from Hamburg, 32,402 bags 328 tons Stettin, 12,722 bags Antwerp, 7737 bags 122 tons Bremen, 2533 bags Ghent, 1761 Harlingen, 2324 sacks Dunkirk, 2210 sacks 596 bags Brussels, and 142 bags Rotterdam.

COALS.

There was little variation in the quotations recorded for Monday and Wednesday—the figures for the latter day being almost a repetition of those for the former, viz.:—Walls End—Hetton, 18*s.* 6*d.*; Hetton Lyons, 16*s.* 3*d.*; Hawthorns, 16*s.* 3*d.*; Lambton, 18*s.*; Original Hartlepool, 18*s.* 6*d.*; South Hetton, 18*s.* 6*d.*; Vanes, 16*s.* 3*d.*; East Hartlepool, 18*s.* 3*d.*

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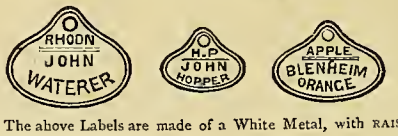

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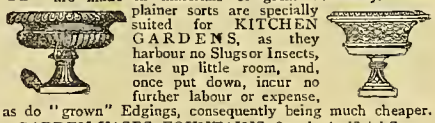

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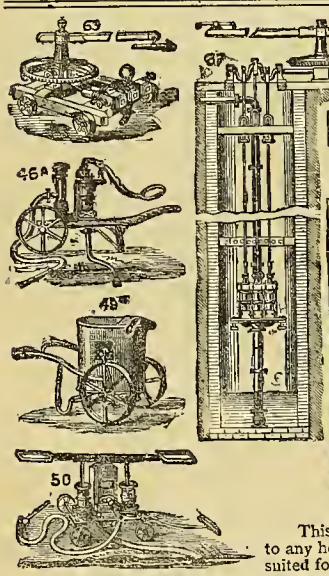

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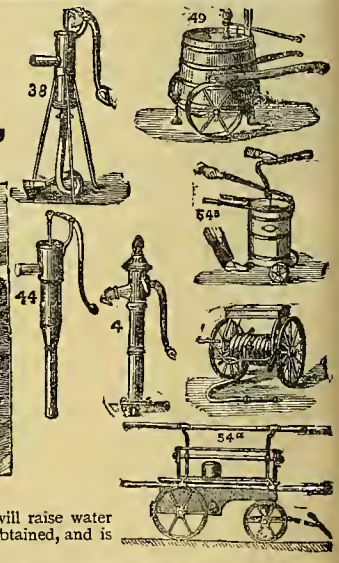

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HOT-WATER APPARATUS.

COMPLETE APPARATUS

FOR THE

HEATING of GREENHOUSES, CONSERVATORIES, Forcing-houses, Pits, &c.,

Erected complete in any part of the Country.

PLANS AND ESTIMATES FREE OF CHARGE.

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HOT-WATER APPARATUS WORKS,
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PAXTON PATENT SOLID CAST STEEL GARDEN and FIELD TOOLS. Made from one solid piece of cast steel, and carefully tempered.

In Sets as above, well finished, for Gardeners, 17s. per set.

In Sets as above, Polished and Japanned, for Amateurs, 20s. per set.

Manufactured by SPEAR AND JACKSON, Ætna Works, Sheffield, and Sold by all Ironmongers and Seedsmen.

WAGSTAFF'S

Patent Saddle and Cylindrical

BOILERS.

Efficient and Economical.

Awarded 6 Silver Medals.

Messrs. E. G. HENDERSON & SONS' Spacious Nurseries, Pine-apple Place, Maida Vale, are most satisfactorily Heated with two of these Boilers.

Plans and Estimates of Work in any part of the Kingdom gratis, and efficiency guaranteed. Price Lists, Prospectus, and Testimonials free on application.

THOS. WOLSTENCROFT AND CO., 46, Ludgate Hill, London, E.C.

J. G. WAGSTAFF, Albert Ironworks, Dukinfield.

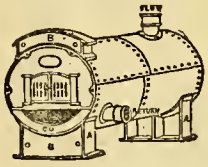
AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners! This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

STEVENS' TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Copy of a Testimonial.

"Royal Exotic Nursery, King's Road, Chelsea, S.W.—Aug. 8, 1877.

"Messrs. SILVESTER,

"GENTLEMEN,—In reply to your enquiry as to our opinion of your Stevens' Trentham Boilers, we do not hesitate to pronounce them to be *by far the best* Boilers we have ever used. Our establishment is a very large one, and we have tested most of the various descriptions of Boilers which have been brought out from time to time. We originally commenced with *one* Trentham Boiler, and we have now *thirteen* of various sizes at work.

"For certainty of action, economy in fuel, and freedom from breakdown, we have never had a Boiler at all equal to the Stevens' Riveted Trentham Boilers supplied by you, and we have never felt so little anxiety in connection with our hot-houses during the cold winter months as we do now.

"We are not in the habit of giving testimonials, but we think this may fairly be an exception to our rule, as the matter is one of such importance to the Gardening Public generally, and our experience has led us to form a very decided opinion.

"We are, Gentlemen, yours faithfully,

"JAMES VEITCH AND SONS."

For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER,

HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

THE THAMES BANK IRON COMPANY,

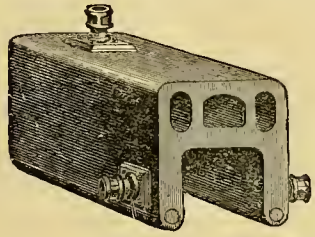
OLD BARGE WHARF,

UPPER GROUND ST., LONDON, S.E.

(*Surrey Side, Blackfriars Bridge*),

Have the largest and most complete Stock in the Trade; upwards of £20,000 worth to choose from.

Hot-water Boilers, Pipes, Connections, and all Castings for Horticultural Purposes.



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This Boiler is used by Mr. B. S. WILLIAMS *at his extensive Nurseries at Holloway, who will certify as to its extraordinary capabilities of heating power, with economy in consumption of fuel.*

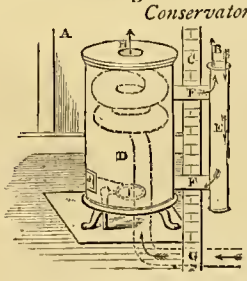
Hot-water Apparatus erected complete, or the Materials supplied at Wholesale Prices.

KEITH'S PATENT BOILERS, requiring no brick-setting.
THE IMPROVED FLUED or CHAMBERED SADDLE BOILER.
CRUCIFORM SADDLE BOILER.
NEW PATENT "CLIMAX" BOILER (1874). See p. 666, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
"WITLEY COURT" BOILER (Silver Medal, 1872).
PATENT "EXCELSIOR" BOILER (1871).
"TRENTHAM IMPROVED BOILER," with Waterway End and Smoke Consumer.
PATENT PAXTON INDEPENDENT BOILER.
"TUBULAR" and EVERY OTHER BOILER of known Merit of Excellence.

GEORGE'S PATENT CALORIGEN,

FOR

Warming and Ventilating Small Conservatories.



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Made in Wrought Iron, £3 3s.

Made in Copper, £5.

Height, 28 inches; diameter, 14 inches.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Conservatories, Offices, &c. Exhibited at the Exhibition of 1871 (Department of Scientific Inventions).

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This Stove introduces a strong current of warmed (not burnt) fresh air.

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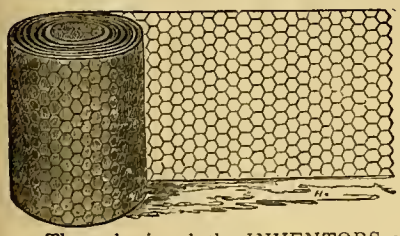

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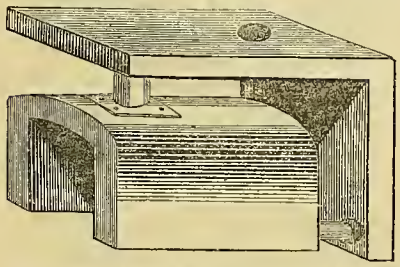

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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MADE of PREPARED HAIR and WOOL.

A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for pits and Forcing Frames.

PROTECTION from COLD WINDS and MORNING FROSTS.

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2 yards wide	1*s.* 10*d.* per yard run.
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ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen.

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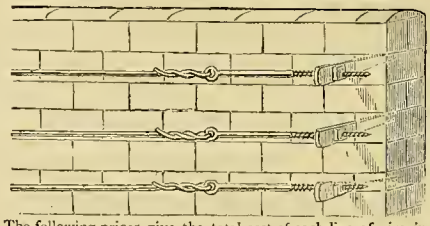
NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall:	20 yds.		40 yds.		60 yds.		80 yds.		100 yds	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
No. 14 Gauge Wire	1	0	1	7	2	1	2	7	3	1
No. 13 ,, ,,	1	3	1	10	2	5	3	0	3	7

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.

Five per cent. discount allowed for prompt cash on Orders amounting to 20*s.* and upwards.

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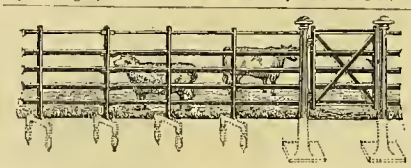

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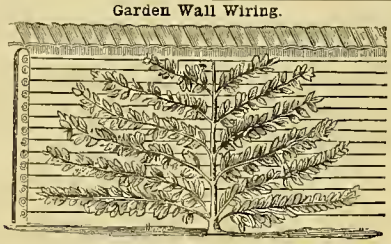

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Iron and Wire Work—Arches,
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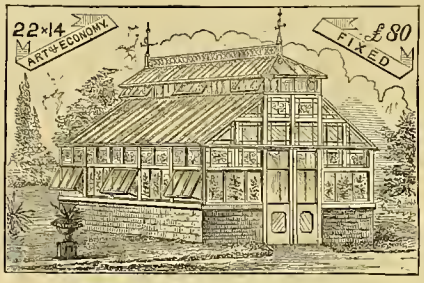

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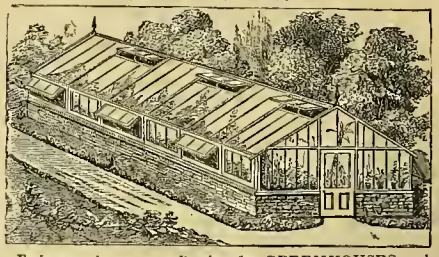

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"We are bound to recommend it. The amateur and gentleman's gardener, and the market grower cannot fail to share in the benefits to be derived from a careful study of Mr. Wood's routine."—*Gardeners' Magazine.*

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Borough of Nottingham.

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SAM. GEO. JOHNSON, Town Clerk.

Municipal Offices, Nottingham.

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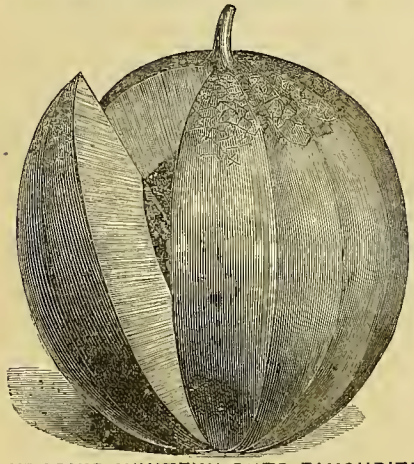

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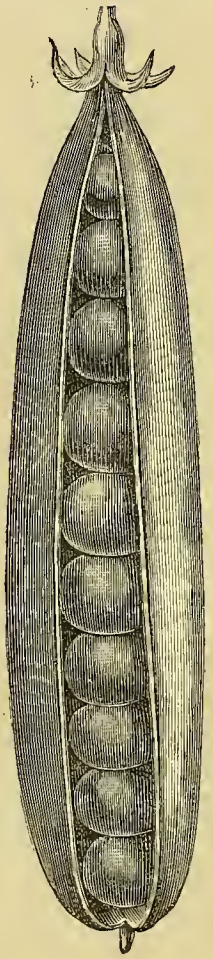

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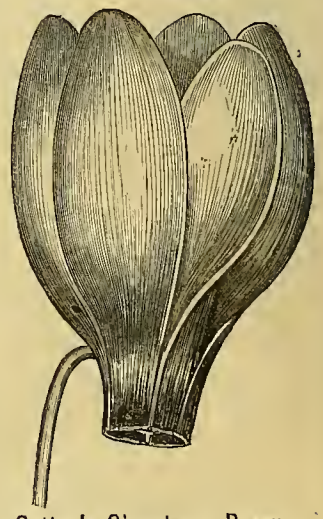

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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CATALOGUES on application.
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DWARF ROSES, on the cultivated Seedling Brier, of the leading Exhibition varieties, 9s. per dozen, package free. Cash to accompany order.
JOHN HOUSE, F.R.H.S., Eastgate Nurseries, Peterborough.

W. POTTEN can supply strong Standard ROSES, good sorts, W. P.'s selection, 12s. per dozen; RED CURRANTS, 3-yr., strong, 12s. per 100; 1-yr. AUCUBAS, strong, 40s. per 1000; QUICKS, 2 to 3 feet, strong, price per 100 or 1000 on application.
Camden Nursery, Sissinghurst, Staplehurst, Kent.

Vines for Fruiting and Planting.
JOHN COWAN, The Vineyard, Garston, near Liverpool, begs to state that his stock of Young VINES is this year in splendid condition, and that he is now Booking Orders to be supplied when required. Inspection of the stock is invited.

JOHNSTONE'S ST. MARTIN'S RHUBARB.—Earliest and best in cultivation, strong roots, 9s. per dozen. Trade price on application.
GENERAL NURSERY TRADE LIST now ready.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

RHUBARB, SEAKALE and ASPARAGUS, Extra Strong for Forcing. Price on application to
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

ASPARAGUS ROOTS.—Very superior lot of Connover's Colossal, 1, 2, and 3-yr. Also very fine CLUMPS for forcing.
C. R. FREEMAN, Seed Grower, Norwich.

ASPARAGUS, for Forcing or Planting.—A large quantity for Sale for cash. For samples and prices, apply to
H. McMILLAN, Nurseryman, Kingston-on-Thames.

ASPARAGUS. — Many thousand fine selected 4-yr. old Roots, at 2s. per 100. Packages for quantities of 400 and under, 1s. 6d. each. Terms, Cash with order. R. BATH, Crayford.

WHITE CAPE EVERLASTINGS, new crop, in splendid condition.
Silver leaves, natural (Witteboom). Prices on application.
C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

SALE BY AUCTION.

Importation of Lilium auratum from Japan, IN SPLENDID CONDITION.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, December 28, at half-past 12 o'Clock precisely, 8000 splendid BULBS of LILIUM AURATUM, just arrived from Japan in the best possible condition; 1000 tuberous-rooted BEGONIAS of sorts; 6000 GLADIOLUS BRENCHLEYENSIS, and a quantity of other LILIES and BULBS.

On view the morning of Sale, and Catalogues had.

WANTED, to PURCHASE, an Established SEED and FLORIST BUSINESS.
K. W., 7, Cary Parade, Torquay.

FOR SALE, a SEED BUSINESS, in a leading thoroughfare in Belfast, Ireland—Stock, Fixtures, &c., of an improving Retail Seed Trade. Rent and taxes about £70 per annum.—G. M., 4, Duncairn Terrace, Antrim Road, Belfast.

Brockley.

To MARKET GARDENERS, DAIRYMEN, and OTHERS.

TO BE SOLD, the LEASE of a small compact FARM, containing 22 acres, in good state of cultivation and fully cropped. Price, including Horses, Waggons, Boxes, Lights, &c., £1050. Apply to
Messrs. DENNANT AND PORTER, 127, Lewisham High Road, S.E., and 63, Queen Victoria Street, E.C.

NURSERY (Small), about 5 miles from town. Quantity of well-arranged Glass, partly heated by Hot water. Lease about fifteen years. Price moderate. Apply to F. W. SEARLE, Auctioneer, Tottenham.

Brighton.—To Floriste and Othere.

TO BE LET, in a main thoroughfare, in the centre of Brighton, a SHOP, with Plate Glass Double Front, Patent Revolving Shutters, and Glass Roof. Dimensions, 20 by 27 feet. For terms, apply to
Mr. S. RIDLEY, Auctioneer and Estate Agent, 155, North Street, Brighton.

In the Midland Counties (4317).

To NURSERYMEN, MARKET GARDENERS, FLORISTS, and SEEDSMEN.

TO BE DISPOSED OF, a capital BUSINESS, in a large and busy Market Town, with excellent railway facilities. Comprises 8½ acres of deep rich Nursery and Market Garden Land, convenient Dwelling-house and Seed Shop, 13 Greenhouses, ample Outbuildings. Manure and Sewage ready to hand for nothing. Lease nine years unexpired. Rent very moderate. Price required and further particulars may be obtained of
Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

Bristol (4338).—**To Florists and Others.**

FOR DISPOSAL, in a good neighbourhood, a small FLORIST'S BUSINESS. Comprises a nine-roomed Residence, also Shop, Show-house, and other Glass Erections belonging to Vendor, and standing on 1¼ acre of land. Rent on lease, £41 10s. Price £230. Stock optional. For further particulars apply to
Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS'S MONTHLY LIST of NURSERIES, &c., to be LET or SOLD will appear on the First Day of the New Year, and may be had gratis on application.

THE AYLESBURY DAIRY COMPANY (LIMITED), St. Petersburg Place, Bayswater, London, W.
The Company have recently opened large Provision Stores, and are now supplying, in addition to MILK and CREAM, all descriptions of DAIRY FARM PRODUCE:—Hams, Bacon, Lard, Bath Chaps, and every kind of Cheese, both English and Foreign; also smoked and rolled Tongues, Potted Meats, &c. Foreign and Country Orders receive every attention. Cash remittance or Banker's reference required with Country Orders. Full Price Lists sent on application to
Mr. HENRY WHELAN, Secretary.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.
NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING," price 21s. and 42s. each. For Detailed List and Descriptions, see BULB CATALOGUE.
NEW FIG, "HARDY PROLIFIC," price 10s. 6d. each. Extra sized fruiting plants, 21s. each.
B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Cucumber, Rollisson's Telegraph.

H. J. HARDY begs to offer to the Trade, SEED of his SELECTED STOCK of the above, by the 100 Seeds or the Ounce. Cash or reference. Price on application to
H. J. HARDY,
Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade.

SEED POTATOS.

H. AND F. SHARPE'S SPECIAL PRICED LIST of SEED POTATOS is now ready. It comprises all the best sorts, both English and American. They have all been grown from carefully selected stocks, are free from disease, and the prices will be found very reasonable.
Seed Growing Establishment, Wisbech.

POTATOS.—The finest Collection of New Varieties ever sent out, and all the standard sorts of value, both English and American. Wholesale and retail. CATALOGUE of
HOOPER AND CO., Covent Garden, London, W.C.
HOOPER'S NOVELTIES IN POTATOS for 1878, a splendid collection, quite unequalled.

To the Trade.—Azalsa amœna Caldwellii.

W. G. CALDWELL AND SONS beg to offer strong bushes of this fine improved variety (which at this early season is blooming profusely), at 18s. per dozen, £5 per 100.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to
EWING AND COMPANY, The Royal Norfolk Nurseries, Eaton, near Norwich.

ROSES, Dwarf Hybrid Perpetuals, very strong, of leading sorts, on Manetti Stock; these, being budded so low as to leave scarcely any of the stock, are admirably adapted for pots or beds; 9s. to 12s. per dozen, 70s. per 100.
YUCCA RECURVA, fine specimens, about 2 feet, 3s. 6d. each
PYRACANTHA, Red-berried, hardy plants, 1-yr., in 4-inch pots, 4 to 6 inches, 3s. per dozen, 21s. per 100.
,, 2-yr., in 5-inch pots, 9s. per dozen.
H. McMILLAN, St. James' Road Nursery, Kingston-on-Thames.

American Grown Tuberose Roots.

TUBEROSE ROOTS, of my own growing, finest quality Roots, £5 per 1000.
EULALIE JAPONICA VARIEGATA, £2 per 100.
FRANKLENIA PUBESCENS, 2 to 4 feet, 15s. per dozen.
All packed free; freight by steamer, Baltimore to Liverpool, low. JOHN SAUL, Washington, D.C., U. S. America.

Vines—Vines—Vines.

J. COWAN, The Vineyard, Garston, near Liverpool, has still on hand several thousands of strong, well ripened VINES. Fruiting Canes, 10s. 6d. to 12s. 6d. each; Planting Canes, 5s. to 7s. 6d. each. Catalogues free. Trade supplied. Terms on application.

Fruit and Forest Trees, Ornamental Shrubs, SEEDS, &c.

J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.
The "ORCHARDIST," price 3s. 6d. The best work on Fruit Trees and their cultivation in the English language.

TO EFFECT A CLEARANCE the following little LOTS are offered:—
5000 ASH, 1½ to 5½ feet, for 15os.
5000 RHODODENDRONS, 3 to 4 ft., fine, 75s. per 100.
Free into railway truck.
CHARLES NOBLE, Bagshot.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many Novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.
CATALOGUES post-free on application,
Lion Walk, Colchester.

To the Trade Only, for Cash on Delivery.

DIELYTRA SPECTABILIS, strong, 20s. per 100.
VESUVIUS GERANIUM, bloom splendid trusses, 10s. per gross.
THOMAS KITLEY, Oldfield Nursery, Bath.

Cover Planting, &c.

SAMUEL AND JAMES SMITH (late J. Smith, Sen.), Tansley Nurseries, near Matlock, Derbyshire, have the following in large quantities, viz.:—RHODODENDRON PONTICUM, 1½ to 2 feet, 20s. per 100, 180s. per 1000; 2 to 3 feet, 20s. per 100, 180s. per 1000; 3 to 4 feet, 30s. per 100, 200s. per 1000; 5-yr. seedling, 12s. per 1000, £50 per 100,000.
BROOM, 1-yr. seedling, 2s. 6d. per 1000, 20s. per 10,000; 2-yr. do., 4s. per 1000, 30s. per 10,000.
GORSE, 1-yr., 2s. per 1000, 25s. per 20,000.
Nursery LIST on application.

To Nurserymen and Florists.

TO BE SOLD, the whole of the PLANTS now at Ravensworth House, Walham Green, consisting of some large Camellias and Rhododendrons, Myrtles, 200 Azaleas, 100 Fuchsias, Pot Roses, Ferns, 150 Cinerarias, 130 Pelargoniums, over 4000 bedding plants, &c. Mr. Watts, the Gardener, will show the plants. For further particulars apply to Mr. HENRY WALLACE, Trench Hall, Gateshead.

WELLINGTONIA GIGANTEA, 50 fine plants, 5 to 6 feet, in large pots, 10s. 6d. each. Also 400 CEDRUS DEODARA, 10 to 15 feet, in pots, all safe to transplant, at 10s. 6d. each.
A large assortment of tall EVERGREEN TREES, 8 to 10 feet and upwards, grown expressly for Screens, Blinds, and Planting for Immediate Effect.
WM. MAULE AND SONS, The Nurseries, Bristol.

A SPECIALLY CHEAP OFFER.
ASH, 2 to 3½ feet; BIRCH, 1½ to 2, and 2 to 3 feet; ALDER, 2½ to 3½, and 3½ to 5 feet; LARCH, 1½ to 2, and 2½ to 4½ feet; SPRUCE, 1½ to 2 feet; SCOTCH, 1½ to 2 feet; BIRCH, 8 to 10, and 10 to 12 feet; CHESTNUTS, Horse, 8 to 10, and 10 to 12 feet; LAUREL, Colchic, 4 to 5 feet; SYCAMORE, 4 to 5, and 5 to 6 feet; LABURNUM, English and Scotch, 2-yr.; ACER NEGUNDO, 2-yr.; AILANTUS GLANDULOSA, 2-yr.; BROOM, Common, 2-yr. seedlings; DECIDUOUS FLOWERING SHRUBS in variety, 30s. per 100.
Preston Nursery Company, Preston.
WILLIAM TROUGHTON, Manager.

Special Offer of large Standard Fruit-bearing PLUM TREES.

R. AND G. NEAL have the above to offer in extra large plants, well-rooted, and in fine condition for removal. Price, with List of Sorts, on application. Also, extra fine RHUBARB for Forcing, viz.: Early Albert, Victoria, Sovereign, and Myatt's Linnæus.
The Nurseries, Wandsworth Common, S.W.

Now Ready,

THE LAWSON COMPANY'S NURSER CATALOGUE for 1878; will be forwarded free upon application.
The LAWSON SEED and NURSERY COMPANY (Limited), Edinburgh and London.

CHARLES SHARPE AND CO.'S Wholesale Priced LIST for 1878 is now ready, and will be forwarded, post free, on application.
Seed Growers and Merchants, Sleaford,

HOLLIES and YEWS.—A large quantity of Green and Variegated, both new and old varieties, to be Disposed of, in large or small lots; all recently transplanted, and in good condition for removal. Many of the Hollies are beautifully berried and admirably adapted for Christmas Trees.
GARDENER, St. Peter's Vicarage, Coventry.

To the Trade.

VINES, VINES, VINES.—Strong Fruiting Canes of Black Hamburgh, Mrs. Pince, Foster's Seedling, Gros Colman, and Lady Downe's, 5s. 6d. each. Strong Planting Canes of Black Hamburgh, Foster's Seedling, Muscat of Alexandria, White Tokay, and Black Alicante, 3s. each. The above are well ripened, short-jointed stuff.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

GERMAN LILY of the VALLEY.—Imported, extra strong roots for immediate use, at 42s. per 1000, packing included. Cash with orders, samples for six stamps.
The Nursery, 30, High Street, Clapham, S.W.

LINUM TIGRINUM (See *Gardeners' Chronicle* last week).—The finest yellow winter-flowering plant in cultivation. A quantity for sale, full of flower buds, in 32's, at 24s. per dozen.
WILLIAM MILES, West Brighton Nursery, Cliftonville, Sussex.

New and Choice Potato offered by

W. SMITH AND SON, Aberdeen.

GRAMPIAN (Robertson).—A very handsome and singularly distinct early round variety, raised by Mr. Robertson, Sunnyside, Blairs, Aberdeenshire. The tubers are large and flattish, having very shallow eyes, skin pinkish white, flaked with rich rosy pink round the eyes; flesh pure white, very dry, and floury when boiled, and of excellent quality. It is very early and a most abundant cropper, remarkable for its hardy constitution and vigorous growth, growing well in any soil. Grampian was to be seen in every prize collection of any importance at the leading competitions of the last two seasons. Price upon application.
Sole Wholesale Agents, NUTTING AND SONS, Seed Merchants, 60, Barbican, London, E.C.

SPECIAL OFFER.

APPLES, Standards, fine, 65s. per 100.
PEARS, Standards, fine, 70s. per 100.
,, Pyramids, fine, 12s. to 15s. per dozen.
APRICOTS, Dwarf-trained, fine, 28s. to 30s. per dozen.
APPLES, Dwarf-trained, fine, 18s. to 22s. per doz. [doz.
CHERRIES, Dwarf-trained Morello, very fine, 24s. per
PEARS, Dwarf-trained, fine, 20s. to 25s. per dozen.
W. BALL AND CO., The Nurseries, Bedford Road, Northampton.

KENTISH FRUIT TREES.—One of the largest and cheapest stocks in the county, consisting of tall Standard CHERRIES, Standard, Pyramid, and Espalier APPLES, PEARS, and PLUMS, from 70s. per 100; GOOSEBERRIES, CURRANTS, &c.
CATALOGUES of 300 varieties, including all the heavy and sure croppers suitable for Market Growers.
T. EVES, Graveseod Nurseries. Established 1810.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted; several millions of 1-year THORN. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Special Offer.

JOHN LUFF, St. Helen's Nursery, Hastings, offers as under, at very low prices for Cash:—
LAURUSTINUS, bushy, 1 to 2 feet, 4s. per dozen; 2 to 3 feet, 6s. per dozen.
,, splendid specimens, well rooted, 3 to 4 feet, 18s. per doz.
LAURELS, extra bushy, 3 to 4 feet, 6s. per dozen.
,, single specimens, 4 to 5 feet, 12s. per dozen; 5 to 6 feet, 18s. per dozen.
PRIVET, Evergreen, stout and well rooted, 3 to 4 feet, 20s. per 1000.
ASPARAGUS, 2-yr., 3-yr., and 4-yr., 10s., 17s. 6d., and 25s. per 1000.
IVIES, of sorts, strong, in pots, 3 to 5 feet, 6s. per dozen.

Queen of Lilies, Lilium auratum.

As this year's shipments have now arrived from Japan,

WILLIAM GORDON begs to call attention to the following reduced prices:—sizes: No. 1, 6d.; No. 2, 9d.; No. 3, 1s.; and splendid bulbs, 1s. 6d. each. Sampling orders are supplied only in the following quantities, and are carefully packed in tin boxes to contain only the following number of bulbs, the prices quoted including carriage to any part of the United Kingdom:—2 bulbs, 6d. extra; 4 bulbs, 1s. 6d.; 8 bulbs, 2s.; 12 bulbs, 2s. 6d., added to the foregoing prices. Quantities of 18 bulbs and over package and carriage free, less 10 per cent. discount. LILY LIST on application.
WILLIAM GORDON, Lily, Bulb, and Plant Importer, 10, Cullum Street, London, E.C.
Post-office Orders payable at Fenchurch Street, E.C.

THE NURSERIES, Wandsworth Common, Garratt Lane, and Tooting.
The Nurseries comprise 70 Acres of a remarkably useful and well grown stock of HARDY SHRUBS, FRUIT, FOREST, and ORNAMENTAL TREES, CLIMBING PLANTS, &c., especially adapted for planting near London. A personal inspection earnestly solicited. Catalogues free on application to
R. AND G. NEAL, Chief Office, Wandsworth Common.
The Nurseries are situated one mile from Clapham Junction, on the highroad from Wandsworth to Tooting, and a quarter of a mile from Wandsworth Common Station, London, Brighton, and South Coast Railway.

CHARLES SHARPE & CO.,

SEED MERCHANTS AND GROWERS, SLEAFORD,

Beg to call attention to the following NOVELTIES:—

THE RAUCEBY HALL MELON.

This splendid new Green-fleshed Melon has been raised by Mr. Brown, the gardener at Rauceby Hall, and has during the past two seasons been exhibited seventeen times—in every case gaining a First Prize. It is hardy, a fine setter, and a very heavy cropper. The fruit is very beautifully netted, the flesh juicy, sweet, and melting, and of a very rich flavour. Altogether it is a variety of unquestionable superiority, and worthy a place in every garden.

Price, 2s. 6d. per Packet.

TESTIMONIALS.

From W. INGRAM, Esq., *Belvoir Castle Gardens.*

"Dear Sir,—The Green-fleshed Melon exhibited by Mr. Brown at the Sleaford Show this year, and to which the First Prize was awarded, was of exceptional excellence, having a rich flavour, and being sweet, melting, and very juicy. "I am, yours truly,

"November 21, 1877. "W. INGRAM."

From Mr. JAMES BROWN, *Rauceby Hall Gardens.*

"Dear Sir,—My Seedling Green-fleshed Melon has a very hardy constitution, it is a very free setter and immense cropper, beautifully netted, and unquestionably the handsomest and finest flavoured Melon grown, averaging from 3 to 4½ lb. in weight. I have exhibited myself several times, and it has never been beaten. You can safely recommend it to be the very best Melon ever sent out, and the entire stock is in your hands. "I am, dear Sir, yours truly,

"November 12, 1877. "JAMES BROWN."

From Mr. C. BILLESON, *Syston Park, Grantham.*

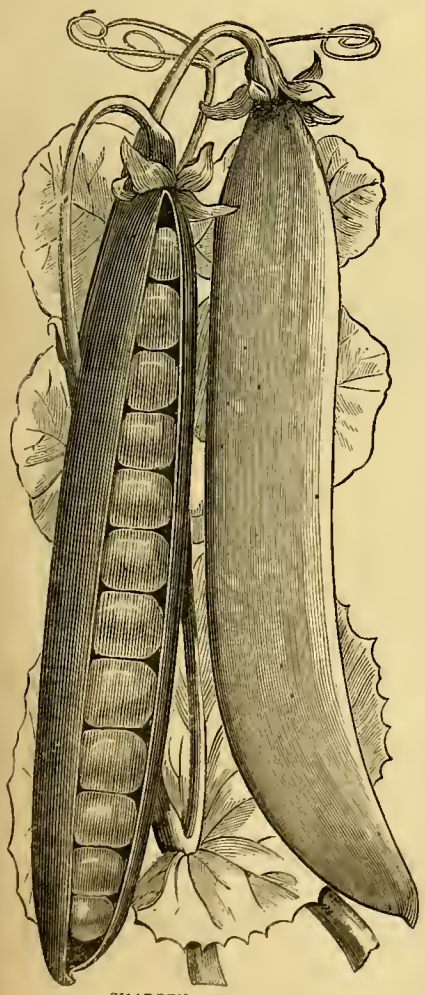
"Dear Sir,—I have tasted, and also seen growing, the Melon called Rauceby Hall Seedling, and I believe it to be a really first-class Melon, most delicious in flavour, free setter, and a very robust constitution. It is medium in size, thin rind, and very juicy. A most handsome fruit for the table. "I am, Sir, yours truly,

"November 16, 1877. "C. BILLESON."

From Mr. GEORGE SANDY, *Haverholme Priory, Sleaford.*

"Dear Sir,—I have grown your Seedling Melon, with several other varieties, the last two seasons, and find it to be of good constitution, a very free setter, fruit of medium size, beautifully netted, handsome in appearance, and of excellent flavour. It ripens its crop off much quicker than many other varieties now in cultivation, which will make it valuable for early and late crops. "I am, yours truly,

"November, 9, 1877. "GEORGE SANDY."



SHARPE'S INVINCIBLE.

SHARPE'S INVINCIBLE.

NEW LONG-PODDED BLUE MARROW PEA.

CHARLES SHARPE & CO.

Have much pleasure in sending out for the first time this invaluable new main-crop Pea, which has been raised by Mr. William Culverwell, of Thorpe Perrow, who has devoted a considerable amount of skill and attention to the improvement of this vegetable.

The Invincible is a cross between Veitch's Perfection and Essex Rival, and has the advantage of being but little liable to the attack of mildew.

The plant is about 3 feet in height, of a robust branching habit. The pods are produced in pairs, and occasionally three together, from near the ground to the top of the stem—the rows having the appearance of being clothed with pods from top to bottom. The pods are closely packed with from ten to twelve large Peas, which, when cooked, are of exquisite flavour, and of a beautiful deep green colour.

As a main-crop Pea, either for the Gentleman's Garden or the Market Gardener, CHARLES SHARPE & CO. have no hesitation in saying that the Invincible Pea will be found superior to anything yet sent out.

Price, per Quart, 5s.

Half-pint Packets, free by post, 1s. 6d.

PRICE TO THE TRADE ON APPLICATION.

TO THE TRADE.

LIMERICK SEED and NURSERY COMPANY,
8, GEORGE STREET, LIMERICK.
Established upwards of Half a Century.

EDWARD BAKER

Respectfully intimates that he has Purchased the interest in the old established Business, so successfully carried on by Alderman Abraham, J.P., at the above address, and is now prepared to receive TRADE LISTS and Special Offers of AGRICULTURAL and GARDEN SEEDS.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES:

ROSES, FRUIT TREES, CONIFERS.

Address—

CRANSTON & CO.,
KING'S ACRE, near HEREFORD.

Catalogues free.

ROSE BUDS.

All who wish to have a succession of Roses from the open ground, from June to November (without forcing), should plant

QUEEN of BEDDERS (Noble).

See *Gardeners' Chronicle*, May 5. A beautiful bouquet was cut from open ground Nov. 20, 1876. Price is within reach of everybody.

CHARLES NOBLE, BAGSHOT

WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1806,)

ROSE GROWERS,

TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS,
HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

AVENUE TREES.

PLANE TREES.—Several thousands of the true Platanus occidentalis, from 10 to 20 feet high, straight stemmed, stout, and splendidly rooted.

LIMES, 10 to 20 feet high.

POPLAR, canadensis nova, 12 to 20 feet high.

These Trees have been grown expressly for Street and Avenue Planting.

They are to be seen growing at Knap Hill, and are, without question, the finest stock of their kinds to be found in any Nursery in Europe.

ANTHONY WATERER,
KNAP HILL, WOKING, SURREY.

To the Trade.

AGRICULTURAL and GARDEN SEED.

H. AND F. SHARPE'S WHOLESALE SPECIAL CATALOGUE of HOME-GROWN SEEDS is now ready, and will be forwarded on application. Every variety named in it is of the very finest quality in every respect. The prices are very low.

Seed Growing Establishment, Wisbech.

The Finest Strain of Petunias in the World.

HENDER AND SONS can confidently recommend their superior strain of PETUNIAS. The Seed now offered has been saved from the finest selected varieties during the past summer. Flowers of immense size, of very thick substance, beautifully mottled and striped, very rich in colour; habit very dwarf and short jointed.

Mr. KEYNES, *Nurseryman, Salisbury, says:*—"I can with the greatest safety recommend the Petunia Seed sent out by Hender & Sons. I have grown it for two years, and it has never failed to prove true in every respect, scarcely any self-coloured flowers among them."—*November* 13, 1877.

Singles, per packet, 200 seeds, 2*s.*; Doubles, 5*s.*
Sealed with our name.
List of Testimonials post-free.

HENDER AND SONS, Bedford Nursery, Plymouth.

NOTICE TO THE TRADE.—We only supply Wholesale Houses with our strain of DOUBLE PETUNIAS, *NOT WITH SINGLE.* All packets sealed with our name. NOVELTY LIST post-free.

HENDER AND SONS, Bedford Nursery, Plymouth.

SPECIAL OFFER.

ABIES DOUGLASII, 5 to 6 feet, 2*s.* to 3*s.* 6*d.* each.
ARBOR-VITÆ GIGANTEA, 6 feet, 5*s.* each.
,, LOBBII, 5, 6, and 7 feet, 18*s.* to 24*s.* per dozen.
,, WAREANA, 5 to 6 feet, 12*s.* per dozen.
CEDRUS ATLANTICA, 5, 6, and 7 feet, 3*s.* 6*d.* to 5*s.* each.
,, DEODARA, 4, 5, and 6 feet, 3*s.* 6*d.*, 5*s.*, and 7*s.* 6*d.* each.
CHESTNUTS, Horse, 9 to 11 feet, 9*s.* per dozen.
CRYPTOMERIA ELEGANS, 5 to 6 feet, 5*s.* to 7*s.* 6*d.* each.
CUPRESSUS LAWSONIANA, 5, 6, and 7 feet, 24*s.*, 30*s.*, and 36*s.* per dozen.
,, ,, 7 to 9 feet, 42*s.* to 48*s.* per dozen.
LAUREL, Portugal, 2, 3, and 3½ feet, 9*s.*, 12*s.*, and 18*s.* per dozen.
LIMES, 8 to 10 feet, 9*s.* per dozen.
PICEA NOBILIS, 2½, 3, 3½, and 4 feet, 3*s.* 6*d.*, 5*s.*, to 7*s.* 6*d.* each.
,, NORDMANNIANA, 3, 4, 5, and 6 feet, 3*s.* 6*d.*, 5*s.*, to 7*s.* 6*d.* each.
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PINUS AUSTRIACA, 4 to 5 feet, 6*s.* to 9*s.* per dozen.
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The following is from Dr. HOGG'S *description:—*

"Fruit large, roundish, somewhat oblate, narrowing towards the crown, where it terminates in several prominent ridges, flat at base; skin smooth and shining, grass-green, strewed with large russet dots. Eye closed. Flesh very tender and juicy, with a pleasant sub-acid flavour, and a peculiar and agreeable aroma. I am convinced that this is one of the most valuable culinary Apples in cultivation, and is worthy of more than local fame."

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OLD AND NEW.

The old year passing so surely and steadily away, H. CANNELL embraces the opportunity of returning his warmest thanks and best wishes to patrons and friends who have kindly favoured him with their esteemed orders and visits, and assures them that it affords him infinite pleasure to gaze on the pile of testimonials before him from all parts of the world, complimenting him on the quality of Plants and Seeds, &c., supplied, and eulogising his strenuous endeavours to satisfy the public. He is also proud to say that his efforts have been crowned with success in importing his treasures into some of the remotest parts of the world, and with still further pride and satisfaction he begs to announce that, with the valuable assistance of his elder Son (who now participates in the business), great exertions have been made to meet the exigencies of the coming new year; neither money, time, nor labour have been spared to accomplish the one great aim, of supplying flower lovers with the "choicest of the choice." His Floral Guide will shortly be issued, containing plants of inestimable value, "White Vesuvius," for instance, which must be considered one of the greatest gifts to the Horticultural World; further, himself and son beg to intimate that in future

GOOD THINGS

will be announced at intervals, and all the best novelties of the season sent by post, so that both amateurs and nurserymen in the most secluded parts can be as well supplied with any varieties of plants as those residing in or near London. As the time could not be more *apropos*, himself and Son take the liberty of wishing the compliments of the season to all, and in conclusion trust to a continuance of the kind favours hitherto received, which they will strive to deserve by their unquestionable alacrity and attention.

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CARTER & Co., Messrs.	237, High Holborn, W.C.
COOPER, Mr. Robert	152, Fleet Street, London, E.C.
CANNELL, Mr. Henry	The Nursery, Swanley, Kent.
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Beg to call attention to and solicit an inspection of their fine and extensive stock of all the most useful Ornamental Hardy Trees and Shrubs, at their Nurseries, Coombe Wood, Kingston Hill.

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Strong healthy Plants as Standards, Half-Standards, and Dwarfs, of all the best varieties of Hybrid Perpetuals, Tea-scented and Noisette Roses, Moss, Climbing, and other kinds. An extensive stock in pots of all the best Roses suitable for Forcing, &c.

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Coniferæ, Retinosporas, Junipers, Lawson's Cypress, &c., in many variegated and beautiful forms; Euonymus and Dwarf Hollies, both Silver and Golden Variegated, in many varieties. Aucubas, Ericas, Dwarf Rhododendrons, &c.

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All the most useful and effective, including Andromeda floribunda; Azalea amœna, pontica (yellow, sweet-scented), and Belgian varieties; Clematis in variety, Deutzia gracilis, Lilac Charles X. and Persian, Double Chinese Prunus, Rhododendrons, R. Early Gem, very superior; Rhodora canadensis, very early; Spiræa Thunbergii.

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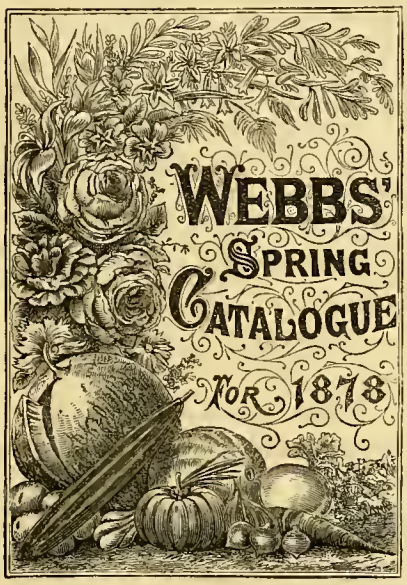

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FIVE PER CENT. DISCOUNT FOR CASH.

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CHRISTMAS!

FOLIAGE PLANTS FOR DECORATION.

THESE, if they do not rank so high in decorative value as flowers, which we spoke of last week, yet have their uses, and are made to play important parts at Christmas. Some of them, as, for instance, the Dracænas, Pandanus Veitchii, Crotons, and others, combine the hues of flowers in their richly-marked foliage, and make bright and winsome our dwellings and plant-houses when dulness and dreariness abound in the landscape, and the sun fades away—dwindles away to nothingness—soon after midday,

> "when with a gust
> Old Winter tumbles shrieking from the hills,
> His white hair blowing in the wind!"

The play of light and shade on Fern-frond and Palm-leaf, and the fresh green hue of Ficus and Cyperus, among others make spring perpetually present. The year for the market-grower is one long spring and summer from January till December. Autumn and winter are seasons that have passed out from the calculations of time.

The DRACÆNA is now being sent to market. The two favourite market plants are terminalis among the coloured-leaved section, and rubra among the green-leaved varieties. Mr. H. B. Smith, of the Ealing Dean Nursery, who makes a specialty of Dracænas, sends to market during the winter and spring some 3000 plants of terminalis. They are perfect examples when 20 inches or so in height in 48-pots, the young leaves richly coloured like a rosy vermilion blade. Cooperi is grown, and is very pretty, but it does not stand like terminalis, as the flashes of colour in Cooperi appear to be delicate and quickly fade; it is, therefore, necessary to send it to market just when it is at its best. Rubra has a good stocky character of growth, and it is also elegant in appearance.

Dracænas are propagated all the year round. Propagating pits are ever centres of activity. The stems of plants are cut up in inch lengths, each containing a circlet of eyes, and from these eyes two and three and five and six shoots will spring, and directly there is a sign of a root being put forth, and even before, they are put singly in thumbs and plunged in a brisk bottom-heat, where they soon grow away into size. The tops of the plants are put into small pots in fresh cocoa-fibre—it must be fresh, and not that previously used—and these make handsome plants in two or three months. Plants from eyes attain a size of from 18 to 24 inches in twelve months. It is interesting to know that the green-leaved Dracænas are slower to propagate than the variegated-leaved varieties—such is the testimony of Mr. Smith. At Ealing Dean the great bulk of the propagating is done by the middle of March. What charming plants Mr. Smith is now sending to market! The price they fetch is a capital indication of their merit. Dracænas are kept fully moist in autumn, but in winter, when the days are short and the weather dull, they require to be kept drier, or damp will injure them. The houses in which they were growing are comfortably warm, nothing more.

PALMS in a young state are much sought for as decorative plants in winter and spring, and indeed at all seasons of the year. The favourites are Latania borbonica, Corypha australis, Areca lutescens, Seaforthia elegans,

Ptychosperma Alexandræ, and Phœnix reclinata. These are bought on the Continent from the seed pots. They are got over in October and November, turned out of the seed pots, and the balls of soil secured in moss, and there are from twenty to fifty plants in a pan or pot according to their size. When received, the plants are potted singly into small pots and plunged in bottom-heat. A few of the foremost will be ready for market the following autumn, but the main portion in the spring succeeding. They are sent to market chiefly in 48 and 32-pots according to their size, and when growing cannot well be too moist, provided there be a fair heat. When fresh potted, Palms should have bottom-heat to induce them to start quickly into growth. Some cultivators of Palms import their seeds and sow them in this country, if they have the command of resources from which they can obtain supplies likely to germinate. Those who do not enjoy this advantage import plants in seed pots as previously set forth.

Pandanus Veitchii will make a capital market plant when it becomes plentiful enough to be produced in quantity. Small plants in 48-pots take on a charming variegation, and nice plants in 48 and 32-pots are likely to be in considerable demand. It can be had in market size in the space of twelve months from cuttings. Quite young plants throw up suckers round the main stem, and they are taken off constantly and struck in the same way as Dracænas, but require a little more care to prevent them rotting off. Silver sand appears to be the best soil for striking, and it reduces the chances of loss from rot.

FERNS are grown by the thousand in the market nurseries. The name of the marketable forms is legion; those of a few may, however, be set down:—Pteris serrulata, serrulata cristata, and cristata grandifolia, the last-named being a fine and handsome form; P. argyræa, cretica, and cretica albo-lineata; Nephrodium molle, and molle cristatum; Adiantum cuneatum, trapeziforme, formosum, scutum, and pubescens; Lomaria gibba, Phlebodium aureum, Blechnum corcovadense, and brasiliense; Nephrolepis exaltata [? tuberosa], &c., the last-named being very popular.

The Ferns are raised in immense quantities from spores. The spores are sown in September and October in 48-pots, well drained and filled with a light peaty soil, and the spores laid on the surface. The pots are then put under bell-glasses, as they do so much better in consequence, germinating not only more freely, but much more quickly. The surroundings are quite moist on a brisk bottom-heat, but as far as possible moisture is not allowed to cover the spores. A little fine mortar rubbish to cover the surface is used in some cases with great advantage. When germination has taken place the embryo plants are taken out in little patches, and pricked out into other pots, and when an inch in length they are potted off singly into small pots to grow on. All the Gymnogrammas are much grown, but they are bad doers during winter in a seedling state, and have to be watched with close attention.

Very large quantities of these Ferns are sent to market in April in thumb-pots, when the plants are some 3 inches in height, when they find a ready sale. Those that have grown on till they are put into 48-sized pots are sent to market in June and July.

Adiantum farleyense is largely and most successfully grown by Mr. H. B. Smith. As no seed of this is forthcoming, it is propagated by division of the plants, which are cut up in winter and spring—the best periods of the year, as they grow so much quicker. This fine Fern is marketed all through the year, and especially just now; plants in 60-pots being in admirable condition.

The Fern-houses at the Ealing Dean Nurseries are remarkable structures; they are sunk down low in the earth, and are reached by means of a descent of three or four steps, and there is just about room for a man of middle height to stand upright in them in the centre of the span of the roof; but they are admirably adapted for Ferns, and grow them excellently well.

CROTONS are a capital market plant just now, and of these pictus and variegatus are the best and brightest looking; C. Weissmanni will also make a capital market plant when the stock becomes more plentiful. C. pictus colours finely in 48-pots in an intermediate house at this season of the year; but they are scarcely in season yet as far as the order of market work is concerned.

ASPIDISTRA LURIDA, and variegata also, the latter especially, are excellent market plants, and the latter, when rightly grown, comes handsomely variegated. No plant is better adapted for a living room; it will bear a dry atmosphere, dust deposits, and gas with little apparent harm, and will retain its freshness for a long time if the leaves be occasionally sponged. It is propagated by cutting up the roots in spring—just as winter is giving place to spring—and when placed in bottom-heat soon starts into growth and makes plants.

Such are a few of the foliaged plants grown for service at the Christmas season. What activities are put into operation, and what results flow from them! Plant growing for market deserves a foremost place in the annals of practical horticulture, and the words of the Oriental sage might be aptly applied to the worker-out of these extraordinary results—

"There is in thy soul a certain knowledge."

R. D.

New Garden Plants.

CYPRIPEDIUM BOXALLII, *Rchb. f., supra, March* 24, 1877.

How quick is the progress of the knowledge of plants now when compared to the time twenty years ago. It was March 3, 1877, when Mr. Stuart Low, my oldest English Orchidic correspondent, sent me the first materials, all that he had, two dried flowers and a stretched sepal and petal, and some remarks of its discoverer, Mr. Boxall. After having meditated a few days, I named and described the new Cypripedium without the least hesitation on March 12. It appeared in these columns on March 24. Its London *jour de fête* at Mr. Steven's was March 29. We hear, undoubted well-founded complaints, that sometimes there are *quid pro quos* in nomenclature, whether *bona* or *mala fide* is the question, but our plant had the opposite fate. Proposed as a new thing, it was declared by somebody to be the old C. villosum (I believe easily distinguishable by its longer leaves) and in consequence it was paid for as old villosum. Such cases may be regarded as the counterbalance of the mistakes we have just alluded to. May 9, I had by Mr. Low's kindness a few words from Mr. Boxall—no doubt sent from the warmer parts of Asia. In autumn I purchased a good healthy plant from Messrs. Jacob-Makoy, and now early in December I have from Mr. Low a single fresh flower and a flowering plant, with its great roots and three breaks. I regard it quite an unusual pleasure to see the lovely plant in the best flower. The peduncle is shorter than in Cypripedium villosum, more in the way of that of C. insigne and Druryi, with many small violet-brown streaks, and brown and white not very dense hairs. The sheathing bract appears to be subject to many variations in length. It always occurs only half as long as the ovary, of a very vivid green, such as is more often seen in minerals than in plants, and with numerous small blackish spots at its base. The remarkably short thick ovary is covered over and over with dense ascending hairs, not quite so long as those of the old Cypripedium villosum. I cannot help thinking of a goat's winterly hair dress when I see these ovaries. The flower is as large as that of a good Cypripedium insigne, smaller than that of C. villosum. The upper sepal is of a beautiful, uncommonly fresh light green, with a narrow white border, covered with brownish-black spots, which are confluent in the disc in hieroglyphic figures up to the apex. There are small short hairs around the border, and some bristles outside, chiefly over the keel of the middle vein. All the inside looks as if just most carefully varnished, shining like a looking glass. Its outside is lighter green and there is a dark hue at the place where the spots stand underneath. The inferior sepal is oblong acute, shorter than the lip, bidentate at its apex, light green, with lines of very small reddish-brown spots, which are far more conspicuous outside; there is no varnish. The petals are very broadly cuneate at the base, dilated at the apex, blunt, with one or two undulations on the superior border and with numerous small hairs outside; their ground colour is a light green. A dark rather broad bluish-violet line runs from the base of middle line up to near the apex, bearing here and there some little prominences. The superior half shows the longitudinal nerves covered with cinnamon spots, most distinct and dark at the base, more and more confluent in the middle part, and nearly forming one great brown blotch near the top. The inferior part is very different, showing rows of angulate blotches nowhere confluent. Thus both halves appear quite different as to colours. The whole surface is beautifully varnished inside. The outside is pallid green, with light brown on both borders and over the central line. The lip chiefly forms a blunt conical sac with two channelled upright horns and a channelled claw. It is greenish-yellowish with dense rows of cinnamon spots under the orifice of the sac. The staminode is rather sagittate triangular, and bears a compressed triangular body before its apex in the middle line. It is obscurely three-lobed at its retuse apex, and full of warts on both sides. There are dark stiff hairs at its base.

The mixture of these blotches of several colours and various forms and different combinations on very distinct ground colours of unusual gay tints gives an extraordinary character to our good Benjamin of Cypripediums. It may be said to be amongst the Cypripedia what Cœlogyne Schilleriana and Hookeriana are amidst the Cœlogynes, the *enfant chéris* of creation. As a species it can only be compared to Cypripedium villosum which is much taller, has a much larger flower, with the upper sepal very narrow at base and generally nearly hastato-dilated, its petals with narrow claws and then much broader towards the top, the inferior sepal far more acuminate, the lateral horns of the lip much longer. Cypripedium insigne, Druryi, hirsutissimum, are all alike in the superior sepal not being unguiculate, all different by the various, most distinct hairs of the ovary, and then each species has its own discrepancies which it would be too long to enumerate. There exists no other species one could compare with these.

Investment of money in Cypripedia is most decidedly one of the safest in the exchange of orchidists. Very often you may earn a hundred and more per cent. by getting two or three plants of one in a year. It needs no very acute prophecy to predict that this lovely Christmas flower will become a beloved friend to all orchidists. It may serve to remind us of Mr. Stuart Low's keen enterprise, founded on a wonderful knowledge of so many districts of the globe and of Mr. Boxall's unusual successes, which have afforded so many lovely contributions to orchidology. *H. G. Rchb. f.*

THE FLOWERING AND FRUITING OF THE HOLLY.

THE Holly affords a striking illustration of the knowledge that may be gained by a minute study of common things. It is so well known to us, so near, so familiar, that we do not inquire into its structure or life history, for indeed what have we to learn? It is a hardy evergreen tree that sometimes bears red berries in great profusion, and in seasons when it fails to bear berries, we conclude that the weather was unfavourable in the previous month of May. It does not readily or obviously occur to any one that the fruiting of the Holly may depend on the bustling of some little fly amongst its flowers at the very moment when the pollen is ripe. Nor, if it be observed that some Hollies are fruitful and others barren, does it readily appear that this difference is in no way the result of accident, but is in accordance with a law—for to come to matters of fact, Hollies are, like bees, of three genders, males, females, and neuters. Of the last indefinite section there may be room to doubt, as will be explained presently; but of the distinctly sexual character of the majority of Hollies there can be no doubt at all, for an examination of the flowers will enable any one competent to such a task to predicate which will prove the barren and which the fruitful trees. The Holly is usually diœcious, but there are, probably, hermaphrodite varieties, and there are, probably, some that never flower at all, and are absolutely incapable of reproducing themselves by seeds. This subject is full of interest, as will be discovered by any one who will devote a little time to investigating the structure of the flowers of the more prominent varieties, for the males and females are easily distinguished, and the flowers vary in form considerably.

As a matter of course the subject has not utterly escaped the botanists. Withering says, "Great variations take place in the flowers of the Ilex Aquifolium, sometimes the stamens and pistils are found on distinct plants, sometimes on the same plant, but in different flowers; sometimes, again, the flowers have five stamens; and frequently there are male and female, as well as hermaphrodite flowers on the same, or on different plants (*British Plants*, 1801). Sir J. E. Smith (*English Flora*, 1824) makes no reference to the subject. Dr. Deakin (*Florigraphia Britannica*) is equally silent. Bentham (*Handbook of the British Flora*) ditto. Hooker says, "Flowers white, often subdiœcious" (*Student's Flora*). Mr. Darwin says, "In the several works which I have consulted, one author alone* says that the Holly is diœcious. During several years I have examined many plants, but have never found one that was really hermaphrodite. I mention this genus because the stamens in the female flowers, although *quite destitute of pollen*, are but slightly and sometimes not at all shorter than the perfect stamens in the male flowers" (*Different Forms of Flowers*, p. 297). I have italicised a very important observation, which I think will prove to be only partially true, for not only may we find perfect stamens in female flowers, but it is highly probable that such are truly hermaphrodite, and are fertilised by their own pollen.

The subjoined figures represent flowers of Hollies selected from a good collection in the month of May, 1877. It will be observed that the prevailing character is a wheel-shaped corolla of four petals containing (in the male) four globose anthers on stout radiating filaments or (in the female) no stamens, but a prominent ovary bearing four stigmas. In an examination of some hundreds of flowers comparatively few were found with five divisions, but many with more or less than four.

No. 1. A female, was taken from a seedling plant of the common green-leaved Ilex Aquifolium. All the flowers on this plant were fashioned as in the figure, with from eight to ten petals and a prominent ovary. The berries that follow are clavate, or incline to a pyriform outline, and have three or four deep sutures radiating from the umbilicus to about half the depth towards the stalk. [Query, is not the outer series a calyx?]

No. 2. A female, contains three supplementary petals [staminodes], which may be regarded as stamens transformed.

No. 3. A female, has six shell-shaped petals delicately suffused with rosy purple.

No. 4. A male, is typical every way, and calls for no remark.

No. 5. A male, is equally typical except that it is thrice divided.

No. 6. A female, is thrice divided, and has three supplementary petals, which, by their mode of insertion, appear not to be transformed stamens.

No. 7. A female, is a possible replica of No. 2.

No. 8. A hermaphrodite perhaps. Here, indeed, the stamens appear abortive, but I am persuaded that I have seen flowers bearing globose anthers well furnished with pollen, and also perfect ovaries. As to the last I can vouch, because I have marked them and seen the berries swell.

In classifying the hollies with reference to their sexual characters, we may make four classes—1 males, 2 females, 3 hermaphrodites, 4 non-flowering. The third class remains to be established on scientific evidence; and the fourth is in the position of a negative that no one can prove. To say that a plant of any kind never flowers is to violate common sense. If we could live long enough we might see it flower, and, irrespective of the element of time, while it may not flower in one place it may in another, and even then escape the observation of such as would understand and record the event.†

To entertain doubts on such matters is pardonable, seeing that, in respect of matters that may be determined with certainty and without difficulty, the authorities disagree. In respect of the flower, for example, there prevails a heresy that it is quinate, whereas it is quartate in its divisions, it being a most rare event to find a flower with five petals. Parkinson does not mention the Holly in his *Paradisus*, but in his grand *Theatrum Botanicum*, 1640, there is at page 1,486 an excellent description, accompanied with accurate figures of smooth-leaved and prickly-leaved varieties, with their flowers and berries. There are six flowers shown, five of which have four petals, and one has three. Mr. Fitch's figure in Bentham's *British Flora*, p. 553, represents a four-petalled hermaphrodite flower, and a four-petalled flower of doubtful sex with three short stamens.

In respect of the fruit it is usually described as round, but the normal form is ovate or elliptical; and a somewhat common variation is that of the clavate or pyriform berry sutured from the umbilicus, to which reference is made above in the description of the flower No. 1. The tree from which this flower was taken is a common green Holly of remarkably fine growth, the produce of seed sown in 1859. Its flowers are uniformly eight petalled, and its berries are larger than the average; in form obtusely clavate and distinct, and deeply sutured. I have seen examples of the yellow-berried Holly (lutea) bearing berries of large size and deeply sutured, but they were rounder than those of my plant, which, for the sake of distinction, I have named claviformis.

The number of seeds contained in the berries is described as averaging three to five. There should be four, of course; but two is the prevailing number of hard vital carpels, the other two being abortive or invisible.

A question of some interest arises out of my own observations of Hollies in respect of the constancy of individual plants in respect of sex. Having a number of seedlings of various ages always under observa-

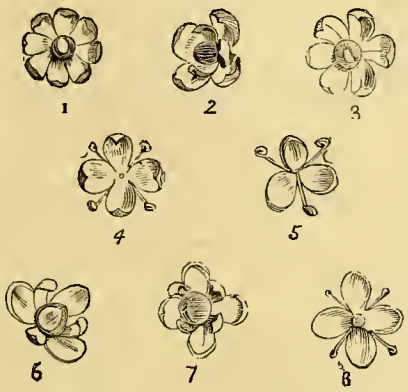

FIG. 149.—VARIOUS FORMS OF FLOWERS OF THE COMMON HOLLY (ILEX AQUIFOLIUM).

tion, it appears to me that they change their sex with age; that is to say, when as young plants (say about fifteen years old) they begin to flower they appear to produce male flowers chiefly. As time goes on they produce fewer males and more females, until, when they have acquired considerable size and age, they produce female flowers in very large proportion, a majority of the trees being females exclusively, and dependent on a very few males for fertilising pollen. These remarks apply to the typical Ilex Aquifolium only. The garden varieties have more distinctive sexual characters, as they have more distinctive styles of growth and foliage.

The varieties differ to an immense extent in their manner both of flowering and fruiting. The males for the most part flower profusely; but there are exceptions to this rule. The most floriferous of all the garden Hollies is laurifolia, a tree with neat, smooth, dark-green leafage, producing in the season a perfect sheet of foam-like flowers, which emit a delicious spicy fragrance. There are two or three female varieties with leafage similar to this decided male. Thus Fisheri, which bears a few berries, and fœmina, the most fruitful of all in every season and every aspect, may be easily mistaken for laurifolia when the birds have eaten the berries, and they are hastily judged by leafage alone. Every classification of Hollies must be imperfect more or less, for although we assume the species, as a whole, to be diœcious, we may find individuals that are decidedly monœcious; and, in fact, there may at times be found on the same tree perfect male flowers, perfect female flowers, and others that are hermaphrodite in various degrees, as, for example, with distinct stigmas and stamens destitute of pollen, or with distinct stigmas and only one stamen, and that perhaps conspicuously poliniferous. These vagaries are not confined to the garden varieties, for common seedling Aquifoliums exhibit them in every imaginable degree; and when seedlings first begin to flower, when about fifteen years old, they produce more male than female flowers, the case being reversed as times goes on—hence the fruitfulness of ancient Hollies, some few of which, however, are males all over, and produce no fruit at all.

In the following list garden names, good or bad, are taken as they come. Therefore, wherever Hollies are correctly named, the accuracy of the list may be tested in the garden. The female varieties have been verified by appeal to the splendid collection of Hollies in Messrs. Veitch & Sons' nurseries at Coombe Wood, Kingston:—

Male-flowered Hollies.

ferox, or Hedgehog	Silver Queen
Gold, few spined	Doningtonensis
longifolia aurea	heterophylla
Smithiana	laurifolia

Female-flowered Hollies.

g Denotes green leaves; *v* denotes variegated leaves; *x* denotes a plentiful production of berries.

angustifolia, *g*	Hodginsii, *g*
angustifolia aurea pendula, *v*	latifolia aurea, *v*
angustifolia medio picta pendula, *v*	lutea, *g x*
balearica, *g x*	maderensis, *g*
Broad Leaf, *v*	maderensis nigrescens, *g*
Dark Shoot, *v*	maderensis variegata, *v*
Fisheri, *g*	myrtifolia, *g*
flava fructu aureo, *g x*	Milkmaid, red berry, *v*
fœmina, *g x*	Milkmaid, yellow berry, *v*
Golden Milkmaid, *v*	Moonlight, *v*
Golden Queen, *v*	Perry's Weeping, *v*
glabra, *g*	picta aurea, *v*
Handsworthiana, *v*	platyphylla, *g*
heterophylla, *g*	scotica, *g*
	Shepherdi, *g*
	weeping, *g*

Hermaphrodite-flowered Hollies.

Smithiana, Silver Queen, heterophylla, laurifolia	Male flowers predominating, berries rarely or never produced.
lutea, flava, scotica, balearica	Female flowers predominating berries plentifully produced.

Shirley Hibberd.

PLANT PORTRAITS.

ABUTILON LEMOINEI, *Floral Magazine*, t. 287.—A handsome seedling Abutilon, with palmate leaves and long-stalked belt-shaped flowers of considerable size and primrose-yellow colour. Raised by M. Lemoine.

ADIANTUM CAUDATUM, Linn., *Flore des Serres*, t. 2298.—A well-known stove Fern with elongate pinnate fronds, the pinnæ semilunar, sharply toothed, decreasing in size upwards, and ultimately terminating at some distance from the naked thread-like end of the rachis. Native of tropical Asia.

× ALOCASIA SEDENI, *Illustration Horticole*, t. 292.—A well-known hybrid between Alocasia metallica and Loweii, raised by Mr. Seden in the nurseries of Messrs. Veitch. The leaves are cordate ovate, shortly acuminate and peltate, dark olive green on the upper surface, where the ribs are very prominent; the under surface is reddish.

ALLOPLECTUS PELTATUS, Oliv., *Botanical Magazine*, t. 6333.—A remarkable Gesnerad with opposite glabrous leaves, one of each pair being small (1—2 inches long), the other 6—9 inches long, about 2 inches wide, oblong, shortly acuminate, rounded and peltate at the base, and raised on a stout footstalk 1—2 inches long. The flowers are in axillary tufts, each flower about 2 inches long, with a calyx of five lanceolate bright red sepals and an irregularly funnel-shaped corolla of whitish colour, with the limb divided into five roundish fimbriated lobes. Collected in Costa Rica by the late M. Endres, and introduced by him to the nurseries of Messrs. Veitch.

ALSTRÖMERIA PELEGRINA, *Flore des Serres*, t. 2295.—A well-known old garden favourite, concerning which the editor, M. Planchon, tells us that the word "pelegrina" signifies in Spanish beautiful, hence the name given by the Spaniards in Peru to this plant. Pelegrino in Italian, like the French *pèlerin*, signifies pilgrim, and perigrino means pretty, while in Spanish pelegrino means beautiful, and peregrino pilgrim!

ARAUCARIA EXCELSA, R. Br., *Flore des Serres*, t. 2304-5.—A fine illustration of the ripe cone and seeds of the noble Norfolk Island Pine.

BARROTIA (PANDANUS) PANCHERI, Brongn., *Illustration Horticole*, t. 288.—A new species of Pandanad received by M. Linden from New Caledonia. The

* Vaucher, *Hist. Phys. des Plantes d'Europe*.

† The danger of a negative proposition is illustrated in Sir Joseph Hooker's description of Hedera Helix (*Student's Flora*, p. 172). He says, "The small sylvestral form never flowers." If he will plant it against a tower and let it climb to the top, he may see it flower within fifteen years.

leaves are arranged in tufts, are linear lanceolate, 3—6 feet long, in form denticulate at the edges, and traversed by three ribs, each provided with small spines.

BLANDFORDIA FLAMMEA VAR. PRINCEPS, *Flore des Serres*, t. 2314.—A noble variety, figured lately in *Botanical Magazine*, t. 6209.

CAMELLIA MADAME VERSCHAFFELT, *Revue de l'Horticulture Belge*.—A beautiful variety with very regular flowers, the petals of good substance, white flushed with salmon colour, and striped with longitudinal stripes of carmine.

CHÆROPHYLLUM ROSEUM, M. Bieberstein, *Gartenflora*, t. 915.—A pretty umbellifer, with very finely cut leaves, and umbels of pink flowers. Native of the Caucasus and hardy in cultivation.

CŒLOGYNE SCHILLERIANA, Rchb. f., *Flore des Serres*, t. 2302.—A dwarf species with small pseudobulbs, oblong lanceolate leaves tapering to a stalk, and solitary flowers 3 inches in length; sepals and petals yellow lanceolate; lip oblong, contracted in the middle, expanding into a roundish two-lobed lamina marked with regular purplish blotches. Moulmein.

CRINUM BRACHYNEMA, Herbert, *Flore des Serres*, t. 2303.—The sweet-scented white flowers resemble those of the Eucharis, but have no corona or cup. The figure is copied from *Botanical Magazine*, t. 5937. Native of Bombay.

CROTON (CODIÆUM) LYRATUS, Lind. et André, *Illustration Horticole*, t. 293.—A curious form with obovate leaves, contracted above the middle into an oblong lobe, about half the length and breadth of the basal portion. The leaves are green traversed by a yellow midrib and lateral veins. M. Linden.

CUPHEA ROEZLII, *Revue Horticole*, December 16, 1877. Judging from the figure, this is a novel and striking undershrub, with lanceolate leaves and dense panicles of curved cylindrical flowers, scarlet and orange in colour. Mexico. Introduced by Roezl. Distributed by M. Charles Huber, of Nice.

× CYPRIPEDIUM HARRISIANUM, Rchb. f., *Flore des Serres*, t. 2289. See *Gardeners' Chronicle*, 1869, p. 108.

DAPHNE BLAGAYANA, Freyer, *Flore des Serres*, t. 2313.—A shrubby Daphne, native of Styria, with glabrous lanceolate leaves, and dense heads of white tubular fragrant flowers. It flowers in April, and would probably form a good plant for forcing. The figure was taken from a plant in M. Van Houtte's nursery.

DIPLADENIA MARTIANA, A. D C., (CRASSINODA, *Hort.*) *Flore des Serres*, t. 2310.—A stove creeper, with oblong-lanceolate leaves, and pretty rose-coloured flowers. It is an old friend, but nearly superseded by newer and more showy species, and should be called D. Martiana. See *Gardeners' Chronicle*, 1870, p. 109.

ERANTHEMUM CINNABARINUM, Wall., *Gartenflora*, t. 916.—A species with ovate lanceolate acuminate leaves, and loose panicles of reddish pink flowers. Native of Martaban.

ERANTHEMUM LAXIFLORUM, A. Gray, *Botanical Magazine*, t. 6336.—A handsome stove undershrub, with ovate-oblong glabrous-stalked leaves, tapering at both ends, and terminal panicles of purplish flowers, each about 1½ inch long, and nearly as much across the flat five-lobed limb. Native of the new Hebrides, whence it was introduced by Messrs. Veitch.

EUCOMIS PUNCTATA, Ait., *Flore des Serres*, t. 2307.—A well-known greenhouse bulb, noteworthy for its crown of green bracts above the flowers. Cape of Good Hope.

FUCHSIAS MISAI, REMOR, and TATLO, *Flore des Serres*, t. 2301.—Three varieties raised by M. Coene, of Ghent; all very double flowers, with reflexed scarlet sepals, and purple petals more or less blotched with red.

GLADIOLUS ECKLONI, Lehmann, *Botanical Magazine*, t. 6335.—A dwarf habited species, with relatively small flowers of a whitish colour, copiously besprinkled with small pink spots. Native of South Africa, whence it was originally introduced by Mr. Thomas Cooper.

GRAMMATOCARPUS VOLUBILIS, Presl, *Flore des Serres*, t. 2300.—A plant described by Don as Scyphanthus elegans. It is a climbing plant allied to Loasa, with palmately divided leaves, and yellow flowers with ten pouches. It is a native of Chili, and too rarely seen in our gardens.

HELIPTERUM EXIMIUM, D C., *Flore des Serres*, t. 2312.—Introduced in 1793 from the Cape, this remarkable everlasting claims notice for its lanceolate leaves densely covered like the stem with white down, and for its globose flower-heads covered with rose-coloured overlapping bracts.

HEPATICA ANGULOSA, D C., *Flore des Serres*, t. 2306.—A fine species, native of Hungary, at one time thought a mere variety of H. triloba.

LILIUM NEILGHERRENSE, Wight, *Botanical Magazine*, t. 6332.—A noble white Lily, closely allied to the Japanese L. longiflorum. Figured in *Gardeners' Chronicle*, 1876, vol. vi., p. 332.

LIMATODES ROSEA, Lindl., *Flore des Serres*, t. 2294.—A well-known and charming rose-coloured Orchid, which in the hands of Mr. Dominy has, in the establishment of Messrs. Veitch, given rise to a fine hybrid with Calanthe vestita. Native of India.

LINARIA TRIORNITHOPHORA, Willd., *Flore des Serres*, t. 2297.—A fine old garden plant with large purple flowers in groups of 3, the long spur with which each flower is provided giving the bird-like appearance whence the name is derived.

LINUM PUBESCENS VAR. SIBTHORPIANUM, *Flore des Serres*, t. 2299.—A very pretty species, with lanceolate ciliated leaves, and large rose-coloured flowers. Native of Cilicia.

OLEARIA HAASTII, *Revue de l'Horticulture Belge*, *Nov.*, 1877.—A coloured figure of this very ornamental hardy shrub, first introduced to the notice of horticultural readers in our columns 1872, p. 1195.

ONCIDIUM MARSHALLIANUM, *Floral Magazine*, tab. 285.—One of the finest of the yellow Oncids with large flowers; sepals and petals yellow barred and spotted with brown; lip roundish, 1¾ inch in diameter, clear yellow. Brazil. Figured from a specimen in Mr. Bull's collection.

ORCHIS FOLIOSA, Soland., *Flore des Serres*, t. 2308.—A native of Madeira, occasionally seen at our exhibitions, and always with pleasure. M. Planchon is under the impression that it needs the protection of a frame or greenhouse in this country, but if sheltered and taken care of, it thrives out of doors.

PEACH EARLY ALFRED, *Florist*, December, 1877—One of Mr. Rivers' seedlings from Hunt's Tawny Nectarine, and with white melting richly flavoured fruits of medium size, globose form, and rich colour next the sun.

PEACH MAGDALA, *Florist*, December, 1877.—A medium-sized fruit of a straw yellow colour flushed with crimson. Flesh greenish white, melting, separating freely from the stone, and of rich flavour. The leaves have reniform glands. Raised by the late Mr. Rivers from Rivers' Orange Nectarine.

PEAR LOUIS CAPPE, *Bulletin d'Arboriculture*, p. 337, 1877.—A seedling from Doyenné d'Hiver, and like its parent except in its earlier season.

PELARGONIUM NEW LIFE, *Floral Magazine*, t. 288.—A Zonal Pelargonium, with singularly striped red and white flowers. It is stated to have originated as a sport from Vesuvius, a variety notorious for eruptions of this character. Mr. H. Cannell.

PENTSTEMON CENTRANTHIFOLIUS, Benth., *Flore des Serres*, t. 2309.—A fine species, with sessile lanceolate leaves, and many-flowered racemes of tubular scarlet flowers. Native of Upper California, whence it was introduced to Chiswick by Douglas.

PITCAIRNIA MUSCOSA, *Revue Horticole*, 1877, p. 430.—A species with tufted linear leaves and long-stalked racemes, well set up above the leaves, and bearing a large number of handsome linear orange-red or vermilion-coloured flowers, each nearly 2 inches long. Native of Brazil.

PRIMULA SINENSIS EVA FISH, *Florist*, December, 1877.—A double-flowered variety, with flowers of good form, and of a bright rosy lilac tint. A very pretty variety, sent out by Messrs. E. G. Henderson.

RHODANTHE MANGLESII, Lindl., VAR. MACULATA, *Flore des Serres*, t. 2991.—A charming "everlasting," well known in this country; at first grown under glass, but shortly found to be hardy, and, what is more remarkable, the plant is recorded by Schübeler to have flowered and produced seed in the Lofoden Isles! off the northern coast of Norway! thanks to the continuous sun and light during the short summer of those all but Arctic regions. The plant is a native of Swan River.

ROSE GUSTAVE REVILLIOD, *Journal des Roses*, December, 1877. Seedling raised by Joseph Schwartz from Victor Verdier. The habit seems like that of Baroness Rothschild, the flowers large, full, globular, rose pink.

SALVIA LEUCANTHA, Cav., *Flore des Serres*, t. 2293.—A species with lanceolate leaves, covered with white down on the under surface. Flowers white, in terminal verticils arranged in a terminal cluster. Native of Mexico.

SEDUM UMBILICOIDES, Regel, *Gartenflora*, t. 917.—A species with tufted oblong linear pointed fleshy leaves, and long flower stalks with scattered sessile leaves and loose panicles of small white flowers spotted with red. Collected in Alatan by Mr. A. Regel.

STATICE BOURGÆI, Webb, *Flore des Serres*, t. 2292.—A species with broad lyrate leaves, winged stems, corymbose inflorescence, lilac calyces, and white corollas. Native of the Canaries. Figured also in *Botanical Magazine*, 5153.

SPENOSPERMATIUM WALLISII, Mast., *Botanical Magazine*, t. 6334.—A very remarkable and beautiful Aroid with nodding boat-shaped ivory white thick spathes. Figured in *Gardeners' Chronicle*, 1875, i. p. 558. Central America? Wallis, Messrs. Veitch.

TODEA INTERMEDIA, *Illustration Horticole*, t. 290. A very beautiful Fern, with pinnately much divided translucent fronds, arranged in tufts. A native of New Zealand. M. Linden.

TREE CARNATIONS, *Floral Magazine*, t. 286.—The varieties figured are Sir Garnet Wolseley, buff ground striped with red; Osman Pacha, brilliant red, fine substance; and Tricolor, ground colour pale yellow striped with magenta. All seedlings raised by Mr. Turner, of Slough.

TRILLIUM SESSILE, L., *Flore des Serres*, t. 2311.—Figured so long ago as the 2nd volume of the *Botanical Magazine*, t. 40. This curious North American species demands the attention of the plant lover from its spotted leaves and purple flowers.

ZAMIA OBLIQUA, Regel, *Illustration Horticole*, t. 289.—A tree with a crown of foliage, the individual fronds being pinnately divided with broad ovate lanceolate segments. Corrientes, New Granada. M. Linden.

NEW PLANTS CERTIFICATED

BY THE FLORAL COMMITTEE AT THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS, 1877.

*** *F C., First-class Certificate; S.C., Second-class Certificate; H.C., Highly Commended; B.C., Botanical Commendation.*

Abies Menziesii Parryana ..	Waterer, Aug. 21—F.C.
Abutilon Lemoinei . ..	R.H.S., Aug. 21—F.C.
Adiantum Williamsii	Williams, May 2—F.C.
Aerides crassifolium	Veitch, July 3—F.C.
Agave schidigera princeps ..	Kellock, May 2—F.C.
Alsophila pycnocarpa	Veitch, April 4—F.C.
Amaryllis Princess of Teck ..	Veitch, Feb. 14—F.C.
Anthurium Brownii	Veitch, May 2—F.C.
,, Scherzerianum Wardii ..	Veitch, April 4—F.C.
,, Veitchii	Veitch, June 19—F.C.
,, Warocquianum	Veitch, June 19—F.C.
Alocasia Thibautiana ..	Veitch, July 3—F.C.
Aquilegia hybrida californica .	Douglas, June 5—F.C.
,, ,, cœrulea	Douglas, June 5—F.C.
Aralia filicifolia	Williams, May 2—F.C.
Auricula (alpine) Florence ..	Douglas, May 2—F.C.
,, ,, John Ball	Turner, May 2—F.C.
,, ,, Prince	Douglas, May 2—F.C.
,, (show) Sarah	Turner, May 2—F.C.
Azalea (amœna) Mrs. Carmichael	Williams, March 7—F.C.
,, mollis Couleur de Paille	Veitch, May 15—F.C.
Begonia Empress of India ..	Perkins, Aug. 21—F.C.
,, Gloire de Nancy ..	Laing, June 5—F.C.
,, Monarch	Veitch, July 17—F.C.
,, Mrs. Barron	R.H.S., July 25—F.C.
,, Mrs. Charles Scorer ..	Veitch, July 17—F.C.
,, Oriflamme	Laing, June 19—F.C.
,, Queen of the Whites ..	Veitch, Aug. 21—F.C.
Calanthe vestita oculata rubra gigantea	Lawreoce, Feb. 14—F.C.
Carnation (clove) Mrs. H. Matthews	Turner, July 17—F.C.
,, (tree) A. Alegatière ..	Turner, Dec. 5—F.C.
,, ,, Guelder Rose ..	Turner, March 7—F.C.
,, ,, Osman Pacha ..	Turner, Oct. 2—F.C.
,, ,, Rose Perfection ..	Turner, March 7—F.C.
Catasetum scurra	Lawrence, Feb. 14—B.C.
Cattleya Skinneri alba.. ..	Veitch, June 5—F.C.
Chrysanthemum (large-flowered) Golden Empress of India	Henderson, Dec. 5—F.C.
,, (Japanese) Fulton ..	Jackson & Moorman, Dec. 5—F.C.
Cibotium pruniatum	Bull, Dec. 5—F.C.
Cineraria Mary..	James, March 7—F.C.
,, Mrs. Beck	James, May 2—F.C.
,, Thomas Winter	James, March 7—F.C.
Clematis Aurora..	Noble, April 4—F.C.
Cœlogyne corrugata	Green, Aug. 21—S.C.
Coleus multicolor	Veitch, May 2—F.C.
Croton Earl of Derby	Veitch, March 21—F.C.
,, MacArthuri	Veitch, March 21—F.C.
,, Mortii	Bull, Feb. 14—F.C.
,, picturatus	Bull, Dec. 5—F.C.
,, Queen Victoria	Williams, July 17—F.C.
Cycas media latissima.. ..	Bull, Feb. 14—F.C.
Cyclamen persicum Brilliant	Clarke, April 4—F.C.
,, ,, compactum magnificum	Edmunds, Feb. 14—F.C.
,, ,, Ruby	Little, March 21—F.C.
Cydonia japonica flore-albo ..	Veitch, Feb. 14—F.C.
Cypripedium albo-purpureum	Veitch, July 3—F.C.
,, candidum	Elwes, May 15—F.C.
Dahlia Bessie Ford	Keynes, Sept. 4—F.C.
,, Charles Wyatt	Keynes, Sept. 4—F.C.
,, The Countess	Keynes, Sept. 4—F.C.
,, Henry Bond	Keynes, Sept. 4—F.C.
,, Louisa Neate	Keynes, Sept. 4—F.C.
,, Mrs. Shirley Hibberd ..	Rawlings, Oct. 2—F.C.
,, Mrs. Willing	Rawlings, Oct. 2—F.C.

Dendrobium barbatulum grandiflorum	Lawrence, April 4—S.C.
,, crassinode Barberianum	Lawrence, March 7—F.C.
,, Lindleyanum	Lawrence, Jan. 17 S C.
,, sculptum	Lawrence, April 4—F.C.
,, suavissimum	Williams, Aug. 7—F.C.
Desmstædtia davalliioides Youngii	Veitch, March 7—F.C.
Dianthus Heddewigii	Benary, Aug. 25—F.C.
,, ,, hybridus atropurpureus	Benary, Aug. 25—F.C.
,, ,, laciniatus	Benary, Aug. 25—F.C.
,, ,, plenissimus splendens	Haage & Schmidt, Aug. 25—F.C.
,, ,, hybridus flore-pleno	Benary, Aug. 25—F.C.
,, chinensis flore-pleno	Benary, Aug. 25—F.C.
,, imperialis flore-pleno	Benary, Aug. 25—F.C.
Dicksonia Berteroana	Veitch, Nov. 6—F.C.
Dracæna Bausei	Williams, Aug. 7—F.C.
,, Mrs. Bause	Wills, May 2—F.C.
,, Robinsoniana	Veitch, May 15—F.C.
,, terminalis alba	Wills, March 7—F.C
Echinocactus grandicornis	Croucher, July 17—F C.
Eulophia guineensis	Lawrence, Aug. 7—F.C.
Eurycles australasica	Veitch, March 7—F C.
Fritillaria (?atropurpurea)	Elwes, April 18—B.C.
Fuchsia Lord Beaconsfield	Laing, July 25—F.C.
Geonoma princeps	Bull, Dec. 5—F.C.
Gladiolus Baroness Burdett Coutts	Kelway, Aug. 21—F.C.
,, Charles Noble	Kelway, Aug. 21—F.C.
,, Cymbeline	Kelway, Aug. 21—F.C.
,, Odalisque	Kelway, Aug 21—F.C.
,, Prince George	Kelway, Aug. 21—F C.
,, Rhamnes	Kelway, Oct. 2—F.C.
Gloxinia Paragon	Kinghorn, June 5—F.C.
Houlletia Lowiana	Lawrence, May 15—B.C.
Hydrangea Thomas Hogg	Veitch, July 17—F.C.
Iberis coronata hybrida nana alba	Vilmorin, July 25—F.C.
,, ,, nana rosea	Vilmorin, July 25—F.C.
Iris Kæmpferi alba grandidissima	Barr, July 3—F C.
,, ,, Mrs. Barr	Barr, July 3—F.C.
,, ,, Robert Parker	Barr, July 3—F.C.
Ixora formosa	Fraser, Aug. 21—F.C.
Juniperus virginianus albospicatus	Fisher & Co., June 19—F.C.
Lælia Dayana	Lawrence, Jan. 17—F.C.
Lathyrus latifolius splendens	Parker, July 17—F.C.
Lilium croceum var. Chaixii	Maw, July 3—F C.
,, elegans var. Mawii	Maw, July 3—F.C.
Lomaria discolor bipinnatifida	Veitch, May 2—F.C.
Masdevallia Chimæra (Wallisii)	Veitch, Feb. 14—F.C.
,, macrura	Denning, Feb. 14—B.C.
,, triari-stella	Veitch, July 3—B.C.
Nepenthes Courtii	Veitch, Oct. 2—F.C.
,, rubro-maculata	Veitch, Oct. 2—F.C.
,, hybrida maculata elongata	Veitch, Oct. 2—F.C.
Nephrolepis Duffii	Veitch, April 4—F.C.
Odontoglossum Alexandræ roseum	Ollerhead, June 5—F.C.
,, Cervantesii decorum	Lawrence, Feb. 14—F.C.
,, coronarium miniatum	Mill, July 17—F.C.
Oncidium crispum marginatum grandiflorum	Lawrence, May 15—F.C.
,, metallicum	Lawrence, May 15—B C.
,, prætextum	Veitch, Aug. 21—F.C.
Osmunda palustris	Veitch, March 7—F.C.
Pavonia Wioti	Veitch, June 19—B.C.
Pelargonium echinatum Spotted Gem	Cannell, Aug. 7—F.C.
Pelargoniums (show) Commander	Brown, May 2—F.C.
,, ,, Duchess of Bedford (dec)	Beckwith, April 18—F.C.
,, ,, Eloquence	Turner, June 5—F.C
,, ,, Empress of India (dec.)	Sweet, May 2—F.C.
,, ,, Fascination	Brown, May 2—F C.
,, ,, Mr. J. A. Dickson	Brown, May 2—F.C.
,, ,, Mr. King (fancy)	Turner, June 5—F.C.
,, ,, Sultan	Brown, May 2—F.C.
,, ,, Venus (dec.)	Turner, June 5—F C.
,, ,, Virgin Queen (dec.)	Turner, June 5 F C.
,, (zonal) Atlas	Pearson, July 25—F.C.
,, ,, Beauty of Surrey	George, July 25—F C.
,, ,, Blanche Gordon	Pearson, July 25—F.C.
,, ,, Charles Smith	Pearson, Aug. 27—F.C.
,, ,, Dr. Denny	Cannell, Sept. 4—H.C.
,, ,, Excelsior	Denny, Aug. 27—F.C.
,, ,, John Fraser	Cocker, July 25—F.C.
,, ,, Lady Eva Campbell	Pearson, Aug. 27—F.C.
,, ,, Lais	Denny, Aug. 27—F.C.
,, ,, Lord Giffard	George, Aug. 27—F.C.
,, ,, Lord Mayo	George, July 25—F.C.
,, ,, Louis	Pearson, Aug. 27—F.C.
,, ,, Louisa	Pearson, July 25—F.C.
,, ,, Lustrous	George, Aug. 27—F.C.
,, ,, Mabel Eden	Pearson, Aug. 27—F.C.
,, ,, Miss Wakefield	Pearson, Aug. 27—F.C.
,, ,, Mrs. J. George	George, July 25—F.C.
,, ,, Mrs. Holden	Pearson, Aug. 27—F.C.
,, ,, Mrs. Huish	Pearson, Aug. 27—F.C.
,, ,, Mrs. Lancaster	Pearson, Aug. 27—F.C.
,, ,, Mrs. Pearson	Pearson, Aug. 27—F.C.
,, ,, New Life	Cannell, Sept. 4—F.C.
,, ,, Portia	Denny, Aug. 27—F.C.
,, ,, Rebecca	Pearson, July 25—F.C.
,, ,, Rev. A. Atkinson	Pearson, July 25—F.C.
,, ,, Tom Bowling	Burley, June 5—F.C.
,, ,, White Vesuvius	Cannell, Dec. 5—F.C.
,, (double Zonal) Député Ancelon	Lemoine, Aug. 27—F.C.
,, ,, Lafayette	Lemoine, Aug. 21—F.C.
,, ,, Le Nord Est	? Aug. 27—F.C.
,, ,, Littre	Lemoine, Aug. 21—F.C.
Phaius Dodgsoni	Williams, Aug. 21—F.C.
Polyanthus Duke of Wellington	Smith, April 18—F.C.
Primrose Brilliant	Dean, April 4—F.C.
Primula capitata	R.H.S., Nov. 6—F.C.
,, cortusoides cœrulea alba	Dean, April 18—F.C.
,, ,, purpurea	Dean, April 18—F.C.
,, ,, maxima	Dean, April 18—F.C.
,, purpurea	Dean, March 21—F.C.
,, sinensis Marchioness of Exeter	Gilbert, March 21—F.C.
,, ,, Mrs. Barron	Gilbert, Oct. 2—F.C.
,, ,, Princess	Gilbert, Oct. 2—F.C.
,, ,, White Lady	Gilbert, Oct. 2—F.C.
,, sp. (Sikkim)	And.-Henry, Aug. 2—B.C.
Pultenæa rosea	Rollisson, April 4—F.C.
Rhododendron Countess of Derby	Veitch, July 3—F.C.
Rhododendron Taylori	Veitch, March 7—F.C.
Rose (H.P.) Duchess of Vallambrosa	Bennet, March 21—F.C.
,, ,, Emily Laxton	Paul & Son, May 2—F.C.
,, ,, Marchioness of Exeter	Paul & Son, July 3—F.C.
,, ,, Marquis of Salisbury	Paul & Son, Aug. 7—F.C.
,, ,, May Quennell	W. Paul & Son, July 3—F.C.
Sarchochilus Fitzgeraldii	Veitch, April 4—B.C.
× Sarracenia Chelsoni	Veitch, Nov. 6—F.C.
Schlimia trifida	Lawrence, Jan. 17—B.C.
Spathoglottis Lobbii	Lawrence, Feb. 14—B.C.
Streptocarpus Greenii delicata	Green, Aug. 26—F.C.
Torenia Fournieri	R.H.S., Aug. 21—F.C.
Tropæolum Perfection	Dean, Dec. 5—F.C.
Tulipa Greigii	Elwes, April 18—F.C.
Vanda Parishii	Veitch, July 3—S.C.
Verbena Carl Sieglig	Fraser, July 25—F.C.
Viola Golden Prince	Dean, July 25—F.C.
,, Holyrood	Dickson, July 25—F.C.
,, Vestal	Fromow, July 25—F.C.
Zamia Lindeni	Bull, May 2—F.C.
,, obliqua	Bull, May 2—F.C.
,, Roezlii	Bull, May 2—F.C.
× Zygopetalum Clayii	Williams, May 2—S.C.

NEW FRUITS AND VEGETABLES

CERTIFICATED BY THE FRUIT AND VEGETABLE COMMITTEE AT THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS, 1877.

*** *F.C., First-class Certificate.*

Fruits.

Apple, Stone's	Killick, Oct. 2—F.C.
Melon Cream Pine	Carter, Oct. 10—F.C.
,, Exquisite	Tyler, Nov. 6—F.C.
Nectarine Lord Napier	Rivers, Aug. 24—F.C.
Peach, Hale's Early	Rivers, Aug. 7—F.C.
Pine apple Lord Carrington	Miles, Jan. 17—F.C.

Vegetables.

Broccoli, new self-protecting	Veitch, Dec. 5—F.C.
Seakale Lily-white	Stuart & Mein, April 4—F.C.
Tomato Little Gem	Bliss, Aug. 24—F.C.
,, Criterion	Vick, Aug. 24—F.C.
,, Trophy	Carter, Veitch, Wheeler, Aug. 24—F.C.
,, Vilmorin's Large Red	Vilmorin, Aug. 24—F.C.

MERRY CHRISTMAS COME AGAIN.

HERE'S merry Christmas come again,
With all it ever used to bring;
The Mistleto and Carol strain,
The Holly in the window-pane,
And all the bloom from hill and plain
That Winter's chilly hand can fling.

It must be welcomed with a song,
Though nothing new may fill the ditty;
Old-fashioned feelings may be wrong,
But prejudice is very strong,
And dear old Christmas, wooed so long,
Shall find us faithful, if not witty.

It comes with roar of city bells;
It comes with many a village chime;
And many a village grandam tells
Of places where the white ghost dwells,
Of demon forms, and robbers' cells,
And all the tales for Christmas time.

It comes with music in the hall,
That stirs the old man in his chair;
And when the midnight measures fall,
He'll lead the blithest dance of all,
Spurning alike the chimney wall
And seventy years of wear and tear.

It comes with frolic, feast and mirth,
It sings the chants it used to sing;
And makes the yule log on the hearth
An altar-forge, where links of earth,
That bound and broke in strongest girth,
And welded fast in Memory's ring.

Here's merry Christmas; and methinks,
Although it seems an olden story,
There's something pleasant in the winks
Of blue-eyed fire that boils and blinks,
Mocking the palm that snaps and shrinks
Above the tempting plums of glory.

Here's merry Christmas; and it seems
To call back Childhood to the breast,
With kindly words and laughing screams,
With leaping steps that shake the beams,
With noisy games and happy dreams,
And all of Life that's bright and best.

Bring fragrant Bay with Laurel tied;
Bring shining Chestnuts—how we'll roast 'em!
Bring forth the bowl in wassail pride,
Bring sack and brown ale, side by side,
Bring foaming flip in endless tide,
Bring friends around—and how we'll toast 'em!

Here's merry Christmas come again;
Cling heart to heart and hand to hand.
"Love one another," was the strain
Of Him who never taught in vain;
And let it sound o'er hill and plain,
And rule the feast in every land. *Anon.*

WHEN TO PROPAGATE CHRYSANTHEMUMS.

MR. BAINES, who as all the world knows is one of the best plant growers of the day, and whose advice is nearly always sound and good, is evidently not so well up in Chrysanthemum lore as one would expect. I agree with his opinion that the Chrysanthemum is easily propagated and easy to grow—in a way; and also that it is about the most neglected plant we have, but that early-struck cuttings have an advantage over late ones is a mistake. In fact, it is just the reverse, as I will endeavour to prove. The very thing that Mr. Baines recommends, viz., early propagation, is the greatest enemy to good cultivation that can well be imagined. Taking the case on its merits, Mr. Baines will find out that there is not much "solidity" in his mode of propagation for the following excellent reasons:—In the first place, good cultivators who know how to finish off fine flowers to perfection never allow cuttings to grow before the flowers are fully developed; and in the next place, if they did they would make but a poor beginning, by selecting for a future stock such growth as the Chrysanthemum generally makes under the shade of its own foliage, and huddled together, as they very often are, in order to make the best show possible.

Let us, for sake of argument, assume that cuttings are allowed to grow as soon as they will, and that they are cut off and inserted in their cutting-pots and rooted and finally potted off. I think it will be admitted that cuttings struck so early in the season require more or less warmth, and do what one will once the first rootlet is made, the young plants will sprout away apparently fresh and healthy. Just for the sake of example let us take the state of the weather in the present month when there is not a ray of sun, and at times not much light; are these conditions favourable for laying a foundation for a twelve-months' growth?

Take another view of the case, and use no heat in propagating save the bare exclusion of the outer air, and our former remarks will apply just the same in this case after growth, or, rather, I should say, rooting commences. Then, again, after the young plants are pulled to pieces and potted up individually, they must be kept close for a few days, when the conditions that are necessary to induce root-action operates in two ways; whilst the plant is being established at the root the top is drawing up, and the moisture that so conduces to growth contributes also to darkness in the shape of condensation.

I do not think Mr. Baines or any one else ever saw a plant struck and grown in the midst of winter retain its foliage of a sparkling green down to the rim of the pot to the end of the growing season. Why? the reader may ask; and I answer, because it is impossible to build a strong house on a weak foundation.

The simpler plan, and one that changes the aspect of affairs altogether to the benefit of the plants and the grower, is to defer propagating till the days begin to lengthen in January, or even on in February. No suckers should be encouraged early in the season, and those that are intended for stock should be left no longer than can be avoided in unfavourable situations.

After the stems are cut down, if suckers appear in quantity, let them be reduced to a limited number, with room for air and light to play among them; have the pots removed to a cool pit or frame and kept close to the glass, and do what is possible to retard growth on fine days, giving liquid-manure every second or third watering. As the days brighten and lengthen, growth must be encouraged, and what you lose in lanky growth you gain in thickness and solidity, and you have a framework on which to grow a stem like a walking-stick. You avoid checks by inserting each cutting in a pot by itself, and you avoid the consequences of inclement weather by feeding the future plant on the parent stem till all danger is past, and a free and rapid growth, uninterrupted by stages of transition, is sure to reward the grower for his labour. One other point that is worthy of being urged against early propagation is, that it entails the consequence of giving the final shift early, a fact that has more to do with naked stems than many people are aware. The propagation of cuttings that are to form trained plants does not come within the range of these remarks, the ultimate object in their case being to cover a given amount of trellis.

As to the different sections of Chrysanthemums, I hope to hear of some arrangement being come to soon

whereby every section shall be exhibited by itself. What amusement would be caused in the horticultural world if some exhibitor showed two bunches of Black Alicante Grapes in the class for Hamburghs, or *vice versâ;* and yet we read of Elaine being set up in company with some of the large incurved section. The Japanese section deserves a prominent place, and should be exhibited by itself. The same may be said of the large incurved, the medium incurved, and reflexed sections; whilst the quilled type, of which Faust is an example, ought to be omitted from the lot.

Chrysanthemum culture is only in its infancy, and the sections require re-adjustment; but too much need not be expected till some enterprising society takes the matter in hand. Can the Royal Horticultural Society do nothing? *W. Hinds.*

THE GENUS AGAVE.

(*Continued from p.* 748.)

SERIES III.—FLEXILES.—Texture of the leaf thinner, less fleshy, and more flexible than in the *Coriaceo-carnosæ* and *Carnoso-coriaceæ*, but still rather rigid. End-spine usually slightly pungent, and teeth distinct.

Group XI. VIVIPARÆ.—Leaves distinctly toothed. End-spine sub-pungent.

** Leaves linear-ensiform.

94. *A. pugioniformis*, Zuccarini, in Nova Acta, vol. xvi., part 2, p. 676; Kunth, Enum., vol. v., p. 836; Jacobi, Monogr., p. 142.—Acaulescent. Leaves linear-ensiform, 1½—2 feet long, 6—8 lines broad, rigid, glaucescent, narrowed gradually to a firm brown-purple or blackish end-spine 6—8 lines long, slightly concave on the face, the teeth small, distant, deltoid-cuspidate, dark brown, straight or uncinate. Inflorescence unknown.

Mexico, introduced about 1830. It seems a very distinct plant, but I have not met with it in any of the English collections.

95. *A. serrulata*, Karwinski; Jacobi, Monogr., p. 142.—Acaulescent. Leaves linear-ensiform, 2—2¼ feet long, 1 inch broad at the middle, narrowed to ¾ inch above the base, glaucescent, the old ones hanging down, the end-spine very small, black, the face shallowly channelled, the small teeth crowded in the lower part of the edge, at first greenish, finally brown. Inflorescence unknown.

A native of Mexico, introduced in 1842. Not seen in the English collections.

** Leaves lanceolate or ensiform.

96. *A. rubescens*, Salm-Dyck; Kunth, Enum., vol. v., p. 835; Jacobi, Monogr., 143.—Acaulescent. Leaves narrow lanceolate, reaching a length of 2 feet, 1½ inch broad, glaucescent, or in bright sunshine or when fading purplish, subflaccidly recurved, the upper part deeply channelled, the margins undulated, the end-spine slender and brownish, the minute crowded teeth whitish with a yellow-brown tip. Inflorescence unknown.

Mexico, described by Salm-Dyck in 1834. Not seen in the English collections.

97. *A.* (*Euagave*) *vivipara*, Linn., Sp. Plant. edit. 2, p. 461 (at any rate as regards the synonym, Rumph., Amboin., vol. v., p. 273, tab. 94); Wight, Icon., tab. 2024, non Salm-Dyck; *A. Cantula*, Roxb. Fl. Ind., vol. ii., p. 167; *A. Rumphii*, Hassk., Cat. Hort. Bogor., p. 37; Jacobi, Monogr., 143; *Fourcroya Cantula*, Haworth, Syn. Succ., p. 42; Kunth, Enum., vol. v., p. 843; *Agave Cantula*, Galeotti; Jacobi, Nachtrage, i., p. 45; fig. 150.—Shortly caulescent. Leaves 20—50 in a dense rosette, ensiform, reaching a length of 2—3 feet, 1½—2 inches broad at the middle, narrowed to 1—1¼ inch above the base, dull green when mature, narrowed gradually from the middle to the point, glaucous in an early stage, thin but firm in texture, flat or channelled down the face, the base ½ inch, the centre 1 line thick, the brown firm end-spine ½ inch long, the deltoid subdistant brown hooked teeth ½—1 line long. Inflorescence reaching a height of 20 feet or more, the deltoid panicle about a quarter the length of the scape, the flowers in dense corymbs on stout peduncles. Ultimate pedicels very short, subtended by minute deltoid bracts. Perianth 1½—2 inches long; ovary narrow-oblong, ½—¾ inch; tube broadly funnel-shaped, ¼—⅜ inch; segments greenish, yellow on the face, linear-oblong, ¾—1 inch long. Filaments inserted at the throat of the short tube, finally half as long again as the segments; anthers ⅝—¾ inch. Style reaching to the top of the filaments. Flowers often changed into bulbillæ, which bear lanceolate leaves ½ foot long before they fall and take root.

This is the Agave widely spread through various parts of the Old World, for which I follow Dr. Wight in keeping up the Linnean name of vivipara, as it is evidently what is intended by Rumphius, whose figure Linnæus cites. Jacobi and Salm-Dyck describe another plant, relying upon a reference by Linnæus to a plate of Commelinus, which I have not seen. The above description of the rosette is taken entirely from specimens at Kew and Reigate, and of the inflorescence from Wight's account and copious specimens in the Kew herbarium, but it quite coincides with the detailed description by Jacobi of A. Cantula, Galeotti, at p. 45—47 of his first *Nachtrage*. The habit of the plant is quite that of lurida, but the texture is different, the colour less glaucous, and the end-spine and the prickles are smaller. It has been flowered lately by Mr. Thos. Hanbury at Mortola. Besides copious specimens from different parts of India we have it from Fernando Po, gathered by Mann, and it is not unlikely *A. angustifolia*, Haworth Syn., 72, from St. Helena, may belong here. This, I think, is the plant intended for A. vivipara by Miller in his *Garden Dictionary*, so far as can be gathered from a short description. Judging from the descriptions alone I should expect *A. bulbifera*, Salm-Dyck, Jacobi, Monogr., p. 163, said to be a Mexican plant introduced by Karwinski, and *A. stenophylla*, Jacobi, Monogr., p. 257, to belong here. *A. flaccida*, Haworth, which I know only from a very short diagnosis, may perhaps fall in this vicinity.

FIG. 150.—AGAVE VIVIPARA.

98. *A. laxa*, Zuccarini; Kunth., Enum., vol. v., p. 838; Jacobi, Monogr., p. 146, fig. 151.—Shortly caulescent. Leaves 50—60 in a rosette, ensiform, reaching a length of 2—2½ feet, 18—20 lines broad at the middle, 1 inch broad above the base, narrowed very gradually from the middle to the tip, bright green, slightly glaucous towards the base in an early stage, the base ½ inch, the centre $\frac{1}{12}$ inch thick, the firm dark chestnut-brown tip about ¼ inch long, the distant minute lanceolate-deltoid brown curved spines about 1 line long. Inflorescence unknown.

History unknown; first noticed in Salm-Dyck's *Hortus Dyckianus* in 1834. I strongly suspect it to be a variety of A. vivipara. My notes were taken from the specimen which was photographed in the Saunders collection and is now here engraved.

99. *A. bromeliæfolia*, Salm-Dyck; Kunth, Enum., vol. v., p. 834; Jacobi, Monogr., p. 164; *A. teoxamuliana*, Karwinski.—Acaulescent. Leaves lanceolate, spathulate, reaching a length of 2—2½ feet, 2—2½ inches broad at the middle, narrowed to 1 inch above the base; bright green, the end-spine weak, the distant lanceolate-deltoid hooked red-brown teeth 1—1½ line long. Inflorescence unknown.

A native of Mexico, introduced by Karwinski in 1834. My notes are taken from a small specimen in the Kew collection. It is allied to A. sobolifera.

** Leaves oblanceolate-oblong.

100. *A.* (*Euagave*) *sobolifera*, Salm-Dyck, Hort., 1834, p. 307; Kunth, Enum., vol, v., p. 822; Jacobi, Monogr., p. 121; *A. antillarum*, "Desc.;" Engelm., Notes, p. 25.—Shortly caulescent. Leaves 20—40 in a rosette, oblanceolate-oblong-spathulate, 2—3 feet long, 3—5 inches broad at the middle, narrowed to 2—3 inches above the base, very bright green, the base 1 inch, the centre $\frac{1}{12}$ inch thick, the face deeply channelled, the border much raised and tip often recurved, the sub-pungent chestnut-brown end-spine about ½ inch long, the distant brown deltoid uncinate teeth $\frac{1}{12}$—⅛ inch long. Scape 8—10 feet high, 2½ inches thick at the base. Flowers in a deltoid panicle, of which the lower branches are 9—12 inches long, and bear a hundred flowers each; pedicels 3—12 lines long. Perianth, including the 15—18 lines ovary, 2—2½ inches long; tube greenish yellow, 2—4 lines; segments linear-oblong, bright yellow, ¾—1 inch long. Stamens inserted at the throat of the perianth tube, the filaments less than twice as long as the segments. Capsule ovoid-prismatic, cuspidate, 1½—1¾ inch long, 7—8 lines in diameter; seeds ¼ inch broad.

A native of the West Indies. I see no reason to doubt that, as stated by Salm-Dyck, this is the plant figured and described by Hermann in the year 1678, in his Catalogue of the Plants of the Botanic Garden at Leyden, under the name of "Aloe americana sobolifera." His plate (tab. 17) is one of the best of the old figures. He writes of it (page 16) "Ex crassa fibrosa pallescente radice prodeunt folia, facie vulgaris Aloes Americanæ junioris, carnosa, succulenta, modo plana et humi procumbentia, modo canaliculata et arcuatim sursum vergentia, læte viridia, in mucronem minus pungentem abeuntia et in ambitu crebrioribus exiguis fuscis rigidulis spinulis armata." All this applies to our present plant exceeding well. The synonym is mentioned by Linnæus as approaching to but not belonging to his vivipara, and by Lamarck is cited under that species. My notes upon it are taken in the Reigate and Kew collections, and of the inflorescence and flower from Dr. Engelmann, whose specimens were gathered in 1871 by Wright and Parry in San Domingo. In colour and habit the plant recalls Fourcroya cubensis, differing in its unrigid leaves, deeply channelled and often curved over at the tip, and small prickles and terminal spine. I cannot follow Dr. Engelmann in calling it *A. antillarum*, Desc., as the figure cited is an extremely bad one, and Descourtilitz does not give the name as one of his own, or characterise any species of Agave in particular. I am not aware that it has ever flowered in cultivation in Europe of late years. It is the only plant I have seen under the name vivi-

para in English gardens. It is excellently represented in the series of photographs made for Mr. Saunders. *A. vivipara*, Salm-Dyck; Kunth, Enum., vol. v., p. 822; Jacobi, Monogr., 121, seems, from the description, to resemble A. lurida.

Group XII. YUCCÆFOLIÆ.—Leaves sub-entire or obscurely serrulate. End-spine not at all pungent.

101. *A.* (*Littæa*) *yuccæfolia*, D C., in Red. Lil., tab. 328—329; Kunth, Enum., vol. v., p. 830; Hook., in Bot. Mag., t. 5213; Jacobi, Monogr., p. 146; *A. Cohniana*, Jacobi, Monogr. 264.—Shortly caulescent. Leaves 20—40 in a dense rosette, linear, much recurved, $1\frac{1}{2}$—$2\frac{1}{2}$ feet long, $\frac{3}{4}$—1 inch broad at the middle, dilated to $1\frac{1}{2}$ inch at the base, deeply channelled all down the face, the base not more than $\frac{1}{4}$ inch thick, the centre $\frac{1}{8}$ inch, dull, rather glaucous green, with a pale band down the centre, the tip not at all pungent, the back broadly rounded, the edge narrowly brown-scariose, entire or obscurely serrulate. Scape 12—20 feet high. Flowers in a dense spike 6—15 inches long, about 4 inches in diameter, sessile, solitary or in pairs. Perianth $1\frac{1}{4}$—$1\frac{1}{2}$ inch long, including the $\frac{1}{2}$ inch ovary; tube funnel-shaped, $\frac{1}{4}$—$\frac{1}{2}$ inch; segments greenish yellow, linear-oblong, spreading, $\frac{1}{2}$—$\frac{5}{8}$ inch. Filaments inserted at the throat of the tube, twice as long as the segments. Anthers $\frac{1}{2}$—$\frac{5}{8}$ inch. Style reaching to the top of the filaments.

A native of Mexico, introduced about the beginning of the century, and long ago widely spread in collections. There is a full account and coloured figure in the *Botanical Magazine* from a plant that flowered at Kew in 1860. It is a most distinct and unmistakable species.

102. *A.* (*Littæa*) *spicata*, Cavan, Descr., 454; Kunth, Enum., vol. v., p. 828; Jacobi, Monogr., p. 187 (excluding the synonym, *A. polyanthoides*, Cham. et Schlecht), but not of De Candolle.—Leaves spreading, lanceolate, acute, $2\frac{1}{4}$ feet long, nearly 3 inches broad at the base, where it is 4 lines thick, channelled, the margins serrulate. Scape 15 feet long, $1\frac{1}{2}$ inch thick at the base, pale green, terete, the bract-leaves lanceolate-subulate. Spike 6 feet long; pedicels about 1 inch long, 2—3-flowered, adpressed to the rachis; bracteoles ovate, acute, $\frac{1}{6}$ inch long. Perianth greenish; ovary oblong, 1 inch long; tube short; segments linear-oblong. Filaments twice as long as the segments.

Described by Cavanilles in 1802 from the Madrid botanic garden, and supposed to have been brought there from Havana. No one else seems to know anything about it. Judging from the description its alliance appears to be with A. yuccæfolia, whilst *A. polyanthoides*, C. and S., referred here by Kunth, is evidently a synonym of *A. spicata*, D C., which belongs to the section Manfreda, and is a synonym of *A. brachystachys*, Cav. *J. G. Baker.*

FIG. 151.—AGAVE LAXA.

The Villa Garden.

CHRISTMAS DECORATIONS.—The return of the Christmas season brings with it its quota of pleasurable labour, in the way of house decoration; for Christmas, without some such touches of festive home-embellishment of this character, would be as if deprived of one of its leading characteristics. The custom of decorating with evergreens at Christmas is, remarks a writer on the subject, far from being a modern one. The Romans 2,000 years ago did the same thing; indeed it is more than probable that the origin of adorning our houses with Ivy, Holly, and Bay, must be sought for in the Roman Saturnalia, held every year towards the end of December. "It is a symbol of our faith in the renewing power of the sun, that, as the seasons return, the earth will be once more clothed with green, the trees laden with fruit. According to an old poetical belief, the sylvan spirits flock to the evergreens in our houses, and remain unnipped by frost."

Holly and Mistleto are mostly used for Christmas decorations; but there are other evergreens equally effective for the purpose, though lacking the power of association belonging to the two just named. Of these may be mentioned the Ivy, Bay, Laurustinus, Portugal Laurel, Aucuba, Euonymus, the Fir tribe, and others too numerous to mention. The Holly is indispensable because of its clustering bright coral-red berries, which are fortunately more numerous than usual this year. Indeed, what could we put in the place of the coloured berries of the Holly? We should be thrown back on the berried Aucubas, but they are scarce and difficult to procure at this season of the year. Then there are the berried Solanums, just now in the height of their beauty as berry-bearing plants; the curious Iris fœtidissima, which is plentiful in many old gardens, and valuable, because when the seed pods expand in autumn, after drying off, they

present to view numbers of coral berries which have a charming effect when appropriately associated with evergreens; and, lastly, what can sometimes be obtained in plenty in country districts—bunches of the bright coloured berries of the Dog Rose. We have seen these employed in Christmas decorations with great taste and effect. Some bright patches and touches of colour are much needed to give life to the sombre hues of the evergreen; and bere herries can be made to play a most important part, supplemented by sprays of gold and silver Hollies, variegated Aucubas, and, if they can only be obtained from a neighbouring conservatory, the light and airy tresses of the variegated Cobæa scandens. When obtained from a cool house it will last a considerable time, fresh and pleasant to behold.

And for supplying acceptable glimpses of colour—and whatsoever is bright and cheerful seems to be in keeping with our Christmas festivities—we can highly commend the use of dyed Everlastings, such as Gnaphaliums, Acroclinium, Rhodanthe, Xeranthemum, Helichrysum, and also many grasses that are now charmingly coloured for this special work. A little taste will suggest how these may be made to render most effective service at many points of advantage. The Gnaphaliums are now dyed in many very effective hues, and if a few flowers of each colour, or of mixed colours, be bunched together, they give a tone and warmth to the sprays of green against which they are placed.

In some cases it may be difficult to obtain wreaths and tresses of Ivy, and indeed much evergreen, and that not that it is scarce, but because living away from centres where it is grown, it becomes an expensive article. Next to Nature's own living green comes the artificial tresses of evergreen now so much manufactured, and, it must be admitted, with considerable fidelity to Nature; and some elegant and effective metallic wreaths are also now constructed, that are very valuable for twining round chandeliers and gas jets, and any places exposed to heat. In such positions evergreens soon decay, and the leaves shrivel up; they are also apt to drop on the table on inconvenient occasions; while there is to be considered also the danger of their taking fire. We once sawsome blazing leaves suddenly fall in the midst of the supper table, and a most uncomfortable panic ensued! There is yet another article of manufacture that can be specially commended for Christmas decorations, namely wreaths of paper cut in the shape of the living green and decaying brownish yellow leaves of Fern. They are cut in long strips, the green and brown fronds alternating and hanging to a narrow riband of paper. They are most useful for covering pier glasses, large frames of pictures, &c., but as they are of a very inflammable character, they should not be brought near to lighted candles and gas jets.

In order to make effective and pretty designs from whatever materials, good taste, practice, skill, and a general knowledge of the various subjects is indispensable. According to the style of decoration determined on the foundation must be selected. For garlands, flexible galvanised wire or strong cord should be used; the latter is preferable, as it is not so liable to twist as wire; and for what are termed upright wreaths, mouldings, and panels, fine iron rods are best. For anything in the way of ornamental devices, perforated zinc or a piece of wire netting is of great service; a strip of such netting is sometimes used with great effect tied to the balusters of a staircase (when it surrounds in some part an entrance hall), and sprays of evergreen thrust into it, with here and there discs, diamonds, shields, crosses, &c., in coloured everlastings.

Having indicated the subjects that can be employed at the Christmas decorations, their arrangement must be left to the circumstances under which they are to be used, and to the taste and skill of the decorators. The female members of the household have here good scope for displaying any taste they may possess, and so array the days which form the Christmas season with such a garb of welcome and gladness as that it shall mock the surrounding gloom, and shut out from the home circle gathered round the family hearth, any borrowed tinge of sadness from the dreariness without.

Notices of Books.

State Forestry; *its Climatic and Financial Aspect.* By Captain Campbell-Walker.

Some time since we had occasion to notice a very clear *résumé*, by Captain Campbell-Walker, of the needs for a system of forest conservancy in India and the colonies, and the general principles to be followed in carrying it out. The paper in question was read before the New Zealand Institute, and has been followed by a second on the climatic and financial aspects of State forestry. In the present lecture Captain Walker briefly passes in review the aspect of the case as regards the influence of forests on rainfall and other climatic conditions, being careful not to run into exaggerations and misconceptions on the subject, as some of his predecessors have done. This portion of the subject, however, contains less novelty for the English reader than that relating to the financial part of the question. The question of direct financial gain should ever be subordinate, in the case of State forests, to their conservancy for climatic considerations and improvements to meet the demands of the future. "So long as this is borne in mind, and we are not tempted to overdraw and trench on the capital as well as the income of our forests in the shape of timber and minor produce there is no reason why they should not be dealt with like any other property, nor why the State, as proprietor in trust for the public, should not derive from them the maximum amount of revenue compatible with the general welfare of the people." Captain Walker recommends in the case of New Zealand that a small portion of the existing forests of the colony should be properly conserved and maintained, the cost of so doing being defrayed from the sale of surplus land, &c. The Government should claim and receive a fair share of the value of timber on the waste lands of the colony, and not allow it to be monopolised by individuals, or, worse still, be wasted and destroyed. Much of Captain Walker's address is applicable solely to New Zealand, but the following extracts are of more general interest:—

"Forest conservancy in India by a State or Government department dates from about twenty years ago. The department, from very small beginnings, originating in many provinces in the mere appointment of a few forest guards to protect certain trees, and the establishment of a few small nurseries and plantations, has gradually taken charge of a very large public estate, consisting of forests all more or less deteriorated to an extent of which you in New Zealand can have no idea, devastated yearly by fire, overrun by countless numbers of cattle and sheep, whose herds considered they had a right to cut down any tree from mere wantonness, or to allow their beasts to feed on the leaves, and encumbered with the rights and privileges of a native population of over 200,000,000. Not a promising property to tackle and improve, still less to exact an annual surplus from. Still it has been done, and by the last returns for the whole of India, which I have with me, viz., those for 1873—74, the forest revenue was £700,000, and expenditure £414,000 odd, leaving a surplus of upwards of £285,000, or 41 per cent. on the total revenue. Both revenue and expenditure are about double what they were ten years previously, in 1864-65."

Speaking of the Eucalyptus plantations in India, Captain Walker says:—

"The yield of the Eucalyptus plantations on the Nilgheri Hills is far exceeding the most sanguine expectations. The conservator and a trained forest assistant, having made a careful estimate and a series of actual experiments, the former officially reports the yield at 1450 cubic feet, or 25 tons (58 cubic feet to the ton) of dry weight per acre per annum, whilst the indigenous forests on the Nilgheris, which have not been conserved, yield only half a ton per acre per annum. This speaks volumes for the financial benefit likely to be derived from planting the Eucalypti in some parts of this country, where the climate closely resembles that of the Nilgheris. I may mention that the average out-turn of indigenous New Zealand forests, as stated by sawmillers, does not exceed 15,000 superficial feet—1250 cubic feet—per acre, and then it is presumed to be exhausted for ever. Mr. Kirk and I estimated the proper out-turn in timber, in a portion of the Seaward Bush, Invercargill, at close on 31,000 superficial feet—say 2500 cubic feet; but it must be remembered that under the present system much timber which would be utilised elsewhere is discarded as worthless, and all small stuff is considered utterly valueless. I am in correspondence with the chief engineer on the subject of making use of it for the railway locomotives wherever practicable; and if we can thus find a market for it even at very little over price of actual haulage and sawing into billets, I consider that a great boon will be conferred on the saw-mill industry and the colony.

"Leaving India, and turning to the continent of Europe, I find that the annual revenue of the Forest Department in Prussia is £2,100,000, disbursements rather more than half, leaving a nett profit of £1,000,000, the disbursements including an item of £75,000 for commutation of forest rights and servitudes. The nett profit in Saxony is £249,000; Bavaria, £596,000; Austria, £90,000; Hanover, £162,000; whilst that of some of the smaller States, for which I have not returns in money, must be much greater in proportion, if we take their yield in timber as a guide. I may mention that, in Bavaria, the proportion of forest to total area is 34·4 per cent., or upwards of 1 acre per head of population. This is the largest area, in proportion to total extent or head of population, of any State in the German Empire."

Natural History.

Wood Pigeons.—We have in this locality a fine crop of Beech mast, and have in consequence been visited by incredible flocks of wood-pigeons; their numbers are really in thousands. In the morning they may be seen flying off to their feeding grounds, and at night return to a large Pine wood to roost, when the flapping of their wings makes an extraordinary noise. Can any of your readers tell us where they all come from? Have they come from some northern country and travelled south, where the climate is better and the food more plentiful? Their colour is blue. *J. Rust, Eridge Castle.*

Garden Operations.

PLANT HOUSES.

Cephalotus follicularis.—This most singular little plant would no doubt be much more generally cultivated than it is were it not for the fact of its disposition to dwindle away slowly. This is often attributable to its being grown in too much warmth, a condition under which it will exist sometimes for years, if kept near the glass, which to a certain extent helps it to bear up against the adverse condition of too much heat. So treated it frequently attains a size such as seldom results from a more natural temperature, but which is really nothing more than a spasmodic effort consequent upon over excitement. If the plant is kept from this time through the winter in a temperature of 45° with a bell-glass over it, a little tilted so as to preserve a more equably humid atmosphere around it than would exist if fully exposed to the house, this will suit it; but such a temperature, although conducive to continuous health, would not answer for plants that have been kept through the summer and autumn in a stove, and have consequently made their growth under conditions not calculated to impart a sturdy vigorous state. Dionæa muscipula, an equally interesting and suitable companion to the above, is best wintered in a similar temperature, unless previously kept in too hot quarters, in which case I should advise both these plants being gradually inured to cooler treatment all the year round. Where greenhouse plants have been temporarily stood in vineries, if their foliage is of a nature susceptible to injury from mould, it may be well to caution beginners in their cultivation to keep a good look-out, that they do not suffer from the effects of the leaf-stalks of the Vines falling off and lodging in them. I have seen fine plants of such things as Phœnocoma prolifera so far destroyed as to be of little further use, right through where they had attained the thickness of a person's finger, by contact with these stalks, which naturally were in a damp, mouldy condition. Large specimens of Dasylirion, Beaucarnea, and Cordyline indivisa, will suffer by the stalks lodging in their centres—if only allowed to remain for a few days in contact with the young leaves—so as to destroy the symmetry of the plants for a year or two afterwards, and if overlooked for a considerable time will lose their crowns altogether. The Cordyline is a difficult subject to bring safely through the winter, as most who have essayed its culture are aware; under the best conditions a certain portion of the roots die annually; they are as impatient of too much moisture in the soil at this season as those of a Pineapple, and to winter the plant successfully, the best means is to keep it in a similar dry condition to Pines through this its season of rest. *T. Baines.*

FRUIT HOUSES.

Vines.—In all-the-year-round Grape establishments a well-appointed Grape-room is now considered as important as the house in which the late fruit is grown. To ensure the preservation of the Grapes over a period of five months the room must be dry, well ventilated, and secure from the ingress of frost. The Grape-room at this place is built with hollow walls, over the men's mess-room, in one corner of which I have a small slow combustion boiler, with a flow and return pipe passing through the floor and along one side of the room. This arrangement enables me to maintain a steady temperature of 50°, does away with all dust or disturbance, and the Grapes keep fresh and plump till June. Racks for holding the bottles are fixed to the walls, and now the wood is ripe we are preparing to move our Muscats and Lady Downes to their winter quarters. The Vines will then be pruned, dressed, and made ready for a fresh start. Where Gros Colman, Gros Guillaume, and Alicantes are grown, the long-rod system of pruning should be followed, but Lady Downes succeeds well if closely spurred to a good eye. After pruning, all the wounds will require dressing with Thompson's Styptic to prevent bleeding. All glass, wood-work, and pipes must be carefully washed, and,

to insure the removal of the larvæ of insects, loose soil and mulching may be cleared off the inside borders preparatory to top-dressing with fresh turf and bone dust. Where the inside border of the earliest house was well soaked with water at a temperature of 90° at the time it was closed, and the economical system of obtaining heat from fermenting material placed within the structure has been followed, forcing through the past mild weather will have been carried on with a minimum of fire-heat. If a portion of this material is turned over two or three times a week to set at liberty steam and moisture, a strong and even break may be depended upon, and the young shoots will luxuriate in this genial system of heating. Another powerful aid to the production of dense bunches of early Grapes is the judicious use of mild fermenting materials placed on the outside borders. The mistake which often leads to failure and condemnation of the practice may be traced to its too early application before the Vines break, and its entire removal before the wood is ripe. By an experiment tried here last spring with fermenting Oak leaves alone, covered with shutters, the temperature of an outside border was raised from 46° to 60° in six weeks, and when the last layer was taken off, and the border raked and swept in October, thousands of bright healthy roots were found running along the surface; these were shortened back, and received their annual dressing of fresh turf and bones, followed by a good mulching of short stable-dung. This will remain undisturbed until the Vines begin to break. *W. Coleman.*

PEACHES AND NECTARINES.—In the Calendarial remarks under this heading for the week ending November 10, reference was made as to the time for starting these trees for giving an early crop of fruit, and directions were also recorded concerning the mode of treatment to be applied during the earliest stage of forcing operations. At that time we put into practice what we preached, and now Nature in the trees "here" is quickened so far that the flowering process has already commenced. This degree of forwardness may, however, not yet be attained with trees which have not "annually" been accustomed to forcing operations. Therefore it will not be wise to endeavour to push them forward too harshly, but to let the same conditions continue in force "as were before recommended," until such time as Nature is animated, and the flowers begin to expand. At this stage we prefer 50° as a mean "under ordinary conditions" at night, and allow a few degrees fall under extreme pressure from the effect of cold wind or severe frost, and to have it stand at 55° by the time it is daylight, and 60° throughout the day, until daylight disappears again. We continue to moisten the surfaces about the house as heretofore and syringe the trees lightly once or twice daily according to circumstances, that is to say if they become dry. At this advanced season the setting period is undoubtedly the most important of all throughout the whole process, and therefore it should have the utmost diligence and care given to the requirements during this period. Circulation of the air in the house is an essential and important element in connection with gaining a free set of fruit; open the ventilators a little way constantly at 57°, and at 70° give it freely both at the top and front of the house; of course this degree is not intended to be attained by means of fire heat alone; 60° should be the maximum from this source, and 57° for finally closing up for the day. Lose no favourable opportunity "when the house is well ventilated," to go over the flowers with a camel-hair pencil. I should not like to forego this operation at this season. In March, when Nature has the assistance of the bees and other naturally favourable conditions, it is a common thing to hear of wonderful sets of these fruits, but they do not often appear in the month of January, and therefore let not the artificial means at command be neglected. *George Thomas Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

Much has been said from time to time as to the desirability or otherwise of protecting Figs during the winter, some averring that it is a useless proceeding and others as stoutly advocating the practice. As to whether protection is necessary or not, a great deal depends on the soil and situations in which they are grown, for if cold and wet, and far inland, the wood they form is of such a soft, pithy nature as to be totally unable to endure sharp frosts. With a chalk subsoil and near the sea coast or in other favoured localities, the growth they make is altogether different, being shorter jointed and more woody and therefore of a better texture throughout. That some shelter is requisite the past season has afforded proof, as owing to the mildness of the previous winter Figs bore with more freedom than they have done for many years, thus showing that the injury is generally done when the fruit is in an embryo state, as it cannot be said that the spring was at all in their favour. In the majority of cases when Figs are covered, the thing is generally overdone by putting them under thick layers of straw, which by keeping them close and warm brings them on too fast, and thus being in a half-bleached tender state when first exposed they are sure to be destroyed. The best way of protecting them is to tie them as closely together as can conveniently be done, and then place a layer of Spruce Fir branches over them in an inverted position, which if close to the wall and made secure against wind will answer every purpose without being an eyesore or presenting an untidy appearance. To be uniformly successful with Figs, however, it is necessary to restrict them at the root, for however skilful the top management may be, they are such gross feeders and ramble so far beneath the soil as to grow rampant and out of all control, even though they may be well attended to by way of pruning and stopping. If before planting the bottom is concreted at about 2 feet 6 inches deep, and a barrier of the same formed round a hole 3 or 4 feet across, there will be no difficulty in getting hard, short, stubby wood, with a fruit at every joint.

On looking over the Strawberry plantations I find that, although the crowns are plump and well developed, the plants are not in that mature condition which will fit them to withstand sharp frosts and cold cutting winds. This condition arises from the late growth they made and the heavy rainfall that has since taken place, which has kept the roots in a state of activity and the foliage almost as green as at any time during the year. To remove any of this now, as is sometimes done, is a most unwise proceeding, as it is their natural protection and affords more shelter from cold blasts than most people imagine. Strawberries being shallow-rooted plants and forming fresh feeders around their crowns with the advent of their spring growth, a heavy mulching of half-rotten manure is of great assistance, and answers the double purpose of enriching the ground and rendering them safe during the vicissitudes of winter. As the weather may soon set in severe, no time should be lost in getting it on, and if dung is scarce it may be eked out by the addition of loam or fresh soil, as anything of that kind acts beneficially if applied with an unsparing hand. Seeing the great value of the alpine kind for carrying on a supply when the more choice sorts are over, it is deserving of much more attention than is at present accorded to it, for if well treated there is no end to its bearing, and if not showy the fruit are exceedingly palatable and refreshing, and of great use for ices and sweetmeats. A cool half-sunny border is the best place to grow these on, and if seed is sown in pans in heat any time during March and the plants pricked out when strong enough they will come into bearing during the autumn, and be found a most useful addition to the dessert at that season.

The double-bearing Raspberry is most valuable, but in the planting of this a well-sheltered open spot should be chosen, and the soil made rich and deep by double digging or trenching, and heavy manuring. Many fail in fruiting this in October through allowing it to bear in the summer, to prevent which all the canes should now be cut away level with the ground, and in spring the young shrubs thinned out to eight or ten of the strongest. Among the summer fruiting varieties there are none equal to Fastolf, either for size, free-bearing habits, or other good qualities. The present is a good time for forming plantations of these, the canes in which should be placed a yard apart, quincunx fashion, so as to admit plenty of light and air amongst them, and afford room for free access in gathering the crop. The best way after planting is to cut the canes down, or to do so in the spring just before they start, after which what fresh ones they make during the summer will be sturdy and strong. A mulching around them is very desirable to repel frost, and the spare space between will come in admirably for Cauliflower or any other vegetable that is cleared off early. *J. Sheppard.*

KITCHEN GARDEN.

We are now approaching the end of another year, and, on taking a retrospect, I cannot but think that we have abundant cause for thankfulness, that, on the whole, it has been a very plentiful season in this department. It is true that during the spring months we had a considerable portion of unkind weather, which, in many parts of the country, proved very destructive to the fruit crops, but was not sufficiently severe to interfere materially with the kitchen garden supply. It is seldom that we have had so good a year for the different varieties of spring Broccoli, which kept on bearing so well that Cauliflowers were fairly well-established before the crop of Cattell's Eclipse Broccoli was exhausted, thus proving that with a favourable spring for the hardy sorts, and a judicious and liberal cultivation of the various valuable autumn varieties, there need be no difficulty in placing a dish of either Cauliflowers or Broccoli on the table all the year. With regard to the Brassica tribe generally, the supply has been both good in quality and abundant in quantity, with a slight exception during the worst of the spring months, when greens were rather scarce, but with space at command, Buda Kale, old English Coleworts, and the dwarf varieties of Borecole will always supply a void of that kind. In the salading department the produce has been both abundant and good. There was a slight blank during the ungenial spring months, owing more to the want of proper appliances for its preservation than to the actual effects of severe weather, and I do not ever remember a more abundant or finer produce than that of the present autumn; care should therefore be continued to store up as much as possible, secure from frost, for supply in severe weather, and to help this out another batch of Whitloof and Chicory may be started. The Turnip Radishes sown on heat last month will now be coming on for use, and should be well ventilated or they will damp off. The early stores of Lettuce and Endive must also be frequently examined, and decayed matter removed; during favourable weather no opportunity must be omitted to ventilate freely, but in very severe frost cover them up securely and keep them dark as long as extreme severity continues. Cauliflower plants in frames must be looked over frequently for the removal of decaying foliage, also to dress and stir the surface; the same remarks apply to the plants under hand lights. Fermenting materials for the various forcing purposes required in this department are so necessary, that as much as can be got together should be constantly under a state of preparation for use, and as a larger bulk than usual is generally required for the next two or three months, it will be found very advantageous to mix an equal proportion of fresh tree leaves with the stable manure, by which the bulk will be doubled, and the heat, although not so powerful as in stable manure alone, will be more constant and lasting, and better adapted for forcing purposes. At this season there is generally a considerable space of ground left vacant after the lifting of root crops; with the trenching up of these the plots occupied by the various sorts of Autumn Broccoli will require to be attended to as early as possible. Hitherto the continued downfall of rain has been against the possibility of wheeling out the necessary dressings of manure and decayed vegetable composts, so that the first favourable opportunity which occurs of a frost sufficient to harden the surface must not be lost, as the sooner such ground is trenched up roughly, and exposed to the air, the better it will be for the future crops. This is more absolutely necessary in the case of heavy soils, which require a considerable amount of knocking about during dry weather, in winter and early spring, to bring them into a sufficient state of pulverisation to receive the crops. Light soils, on the contrary, may be brought into a state fit for cropping with less than half the labour required for heavy ones, but these likewise will be much benefitted by the frequent exposure of fresh surfaces to the influence of the atmosphere. It is important also to observe that success in all the cultural operations in this department may be very much facilitated or obstructed by the efficiency or otherwise of the drainage. In heavy soils especially, if the water cannot percolate away freely, the ground will be water-logged and cold; consequently, early crops in spring are reduced to a minimum, whilst the amount of labour required for cultivation is greatly increased. If, therefore, there is any reason to fear that the drainage is in any way imperfect, the present is the best season to attend to it, and in those cases in which proper drains have been laid down, to see that the outlets are all clear, and the action perfect. *John Cox, Redleaf.*

SOMETHING ABOUT MISTLETO. — The old and pleasant custom of dressing our houses with evergreens has come to us from very early heathen times. Wherever Druidism existed evergreens were wreathed about the houses, that the sylvan spirits might fly to them till a milder season should recall them to the woods. All northern countries seem to have held the Mistleto in the greatest veneration; and in Virgil we read that it was not unknown in the religious ceremonies of the ancients, particularly the Greeks. The cutting of the Mistleto was a ceremony of great solemnity. The people went in procession; the bards walked first, singing hymns, while a herald preceded the Druids. Then came their prince, followed by the people. The Mistleto being found on an Oak, the Prince of the Druids cut it with a golden sickle, giving it to the other Druids, who received it with the greatest marks of respect, and on the first day of the year distributed it among the people as a sacred plant. Mistleto speaks more to us of cheery Christmas as a holy and happy time than of grim Druid days; and we do not trouble to go to the Oak to find the rare bough, as the old Druids did, but content ourselves with cutting it from the old Apple trees it delights in, or the Thorn, Poplar, &c., it not less often chooses to grow on. In the orchards of Worcestershire and Herefordshire many an old tree is green and beautiful in winter, when its own boughs are bare, with the golden-green leaves of the stranger who has quartered himself there, and whose pearly berries are ripe just when they are wanted to add to Christmas festivities. —*From "The Story of the Month," in "Little Folks."*

THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 22, 1877.

THE further proceedings under the SEED ADULTERATION ACT, which took place at the Southwark Police Court before Mr. PARTRIDGE, on Saturday last, more than ever proves the necessity for such a repressive measure. It would appear that it is in connection with the Clover trade especially that mal-practices are resorted to, and possibly no seedsman in the market would be prepared to give a guarantee for the growth of any sample of Clover seed passing through his hands.

The practice of making white Clover into Alsike just now, when the latter is commanding a high price, is one of the worst features of the adulterating process. It is a deliberate attempt to swindle; for it is the substitution of one article for another of a different character, and much lower in price, but which is sold at a greater value. The seeds of white Clover are of a whitish yellow colour, while those of Alsike are of an olive-green, and the two seeds being of much the same form, it is difficult to detect the fraud, especially so if the sample be free of weeds. If mixed with weeds, the character of the weeds, being different to some extent in the white Clover and in the Alsike, is noticed by any one conversant with samples of Clover. But these are few; and the buyer for sowing purposes purchases and puts into his ground something altogether different to what he expects. A preparation of indigo changes the colour of the Clover seeds to the olive-green characteristic of the Alsike.

Another fraudulent practice is that of doctoring Trefoil seeds so as to pass for red Clover. This is done when the latter is scarce, and commands a high price. Just now red Clover is too low in price for necessity to arise for the change, and the expense of colouring could not be advantageously borne. Here, again, those who are conversant with the character of the seeds can detect the substitution by their shape, the seeds of red Clover being kidney-shaped, tapering at one end, and with the kidney-mark in the middle. But the consumer who pays the highest price for the seeds does not even suspect, much less examine, the sample. He buys in the full belief that he is purchasing a *bona-fide* article; and by-and-by, to his sorrow discovers the imposition.

There are two instances of the character of the adulteration practiced, or, shall we not say, the nefarious substitution of one thing for another. But the question arises, are these practices confined to this country alone? Clover seeds are largely imported from France, Germany, Holland, and America. Do our English seed dealers suspect that any adulterating processes are carried out before the seeds are shipped to this country? The Clover trade is a peculiar one in many respects, and it is a rule of the trade to give but short periods of credit, consequently payment has to be made before a great deal of time is allowed for a thorough examination of the samples. Probably a large portion of the trade are not particularly anxious to make this examination. These practices have so grown with the development of the trade that they must have been known to many, and connived at as the easiest method of facing the difficulty. Now that they have been brought to light and made to carry penal responsibilities, there is a desire to discountenance these practices.

But as human nature is essentially human, and one class of the community is regarded as the lawful prey of another, it may be asked—Is it not likely that the prosecutions now taking place may tend to change the place at which these practices are resorted to, and not materially to prevent them? Is there not a reasonable danger that these tampering processes may be carried across the sea, and performed there?

Judging from the samples that came under our notice some few years ago, the German seed doctors are much more clever than our own. A little care, and specially a little—very little—botanical knowledge will help one to detect dyed seeds; but some of the German Clover seeds were so cleverly imitated, that even a practised eye might have failed to detect the admixture.

It is certain, moreover, that doctoring is done in London to a large degree. But if the scene is simply changed, what guarantee will there be that fraudulent seed will not reach this country and be as rife as ever? It will then rest with the trade to stem the practice, and remembering the clause in the Act, which enacts that every person who "sells or causes to be sold any killed or dyed seeds, shall be punished, &c.," they will not find it difficult to eliminate this plague-spot. Let the more honourable of the dealers—and we would fain believe these are to be found among those having the largest transactions—steadily refuse to connive in any way at these mal-practices; their custom is indispensable to the importers, and the latter cannot afford to lose their trade with them. In this manner something might be done in the way of isolating the evil doers, and so give indirect publicity to their questionable business character.

Of the two cases lately tried, the one failed from the interpretation put by the magistrate on the word "kind;" in the case in question the seed was "improved," which reminds us of JACK FALSTAFF'S "conveyed the wise it call," but apparently, in the magistrate's opinion, the "improvement" did not alter the kind of seed, which remained white Clover still. It is not for us to question magisterial decisions, but if the Act is to be construed according to the intention of its framers, then assuredly any freshening up, either of old seed or of dead seed to imitate new seed, is fraudulent. But here arises a difficulty: old seed is not necessarily bad seed, it may be better than new seed in some seasons, and the dealer who, in a bad year, mixes old seed of good growth with the new seed of the year renders a service to the consumer, and should not be considered an adulterator. Nevertheless, even in this case it is better to be straightforward, and acknowledge the fact publicly. If the thing be done secretly, and suspicion arise, the dealer gets discredit at once in an unmerited manner.

In the last case, reported in another column, evidence was given that the seeds had been made to assume the appearance of seeds of another kind. The trial is of considerable importance, as showing that for colouring or dyeing a conviction can be obtained under the present Act. Seeds which are used for colouring are not clean as a rule, and consequently, even allowing Mr. BENSON to be right in his interpretation of the word "kind," when seeds of Timothy, Thistles, Rib-grass, Trefoil, &c., are made to resemble Alsike, it cannot be denied that they are assuming the appearance of seeds of another kind; and in low qualities of seeds which are coloured, these mixtures are almost always present in large quantities.

A letter appeared in the *Times* on Monday last which set forth in a very open manner that sulphur-smoking and dyeing are very innocent operations, like cleaning or winnowing seed, and are not done so much for the purpose of gain as to benefit the agriculturist. Now seeds, if good, need no doctoring, and are only submitted to this process because the purchaser would not buy them if he saw them in their natural state. This manipulation is, therefore, simply a fraud, intended to deceive the purchaser; and such attempts to throw dust in the eyes of the public may be dismissed without further comment. It was intended by every one who had anything to do with the passing of the Act, to do away with such practices as sulphur-smoking and dyeing; and it was not until recently that the discovery was made that, taking the interpretation-clause to construe that referring to colouring seed, there was an ambiguity as to the intention of the Act.

There is a large quantity of white Clover, Alsike, and Trefoil, being prepared in readiness for the coming season; and, as is the usual case, the lowest qualities of seeds are those that (to use the adulterators' term) are "improved." If fit for use, they would need none of this "improvement;" and there is no doubt that any one selling these seeds can be prosecuted to conviction under the Act; therefore, we must congratulate those who wish to sell a good article, that they have it in their own power to free themselves from the unfair competition caused by these detestable practices, and it is to be hoped that every assistance will be given by reporting any cases where adulterated seeds are attempted to be sold.

In connection with this we may say that the Royal Agricultural Society will publish the names of any person or persons offering these seeds for sale, running the risk of libel, which risk, however, will be very small indeed.

It is satisfactory to find the public and the trade awakening to the fact that the revelations at our police courts are a reproach and a scandal to honest English trading, and that the sooner they are wiped out the better will it be for the interests of traders and the public generally.

—— The veracious author who compiled for the children of all time the fairy story of JACK AND THE BEANSTALK unfortunately omitted to tell his readers in what clime was situated the *locale* of the remarkable growth which he chronicles, or what kind of Bean it was that thus enabled JACK, by its remarkable vegetable development in a single night, to ascend to a new and unknown world. Modern artists, in their efforts to adorn the tale, have invariably accepted the Runner Bean as their ideal, for do we not see illustrations of enormous winding growth ascending heavenward with its top lost in the clouds. Enquiring children will sometimes ask awkward questions, and as they are fairly familiar with the habit of the Runner Bean in gardens, and of its dependence upon some perpendicular support for its elevation, they may be excused for asking up what support did JACK'S famous beanstalk climb. As this is rather a hard nut to crack, and the aforesaid artists have so far given no clue to its solution, perhaps it will be easiest to throw over the Bean theory altogether and adopt one more in consonance with simple fact. What plant is there that combines marvellous rapidity of growth, direct ascension, and strength of wood so fully as does the Bamboo of India, the land of tradition and of fable; certainly not ascending to the clouds in a single night, but producing an upward development that is truly astonishing in its rapidity. If the fabled JACK had the skill in climbing that most modern JACKS possess, he would have found it comparatively easy to have worked his way to the summit of that wonderful Bamboo mast now to be seen in the tropical-house at Syon, which is as big round as a good-sized scaffold-pole, and about 70 feet in height. This superb shoot has developed a growth of over 60 feet in three months, and having reached the top of the glass dome has now been forced to bend its point downwards, as though, like WOLSEY, it had reached the highest point of its career long ere its course was done. This wonderful stem is at least twice the size of any other shoot from the same plant, and deserves to rank amongst one of the marvels of vegetation in our exceedingly ungenial and eccentric clime.

—— Messrs. HARRISON, of Leicester, have introduced a NEW PATENT GRADUATING MEASURE, the purpose of which is to facilitate the packing of seeds in various quantities and of various sizes. It is simple in construction, and evidently reliable in its work. An iron stand supports two polished uprights of about 16 inches in height, and these at the top hold in position a funnel-shaped reservoir, which will contain about a quart; from the bottom of this projects a bright brass tube, some 6 inches in length, having marked upon it gradations of measures in a descending scale. Over this tube is a chimney-glass, at the bottom of which is fixed a spring and contracted spout. This is fixed by means of a cross bar that slides up and down the upright supports, and this

again is kept in its required place by means of small thumb-screws. The position of the top of the chimney-glass in regard to the scale-marks on the tube marks the exact quantity to be measured. The paper packet is held in one hand, whilst with the other the spring is forced back, and this movement allows the seed to fall into the former; the return of the spring to its place again releasing the required quantity of the seed in the tube above; in this way packets might be filled with great rapidity. It is found that once the slide is set to the required quantity there is not the slightest variation in the successive quantities, and that so far its work is perfect. It is evidently inexpensive, as its construction is simple, and it is probable that the Messrs. HARRISON will shortly place it in the hands of some suitable agent to offer it to the trade.

—— There is at present a large number of bushes of ERICA CODONODES in flower in Mr. KNIGHT's nursery at Hailsham. This species, a figure of which is given in vol. vii. n. s., p. 463, is a native of the South of Europe, and is quite hardy in favourable situations; some of the bushes are 3 and 4 feet high and as much across; they are now in full flower, and the spikes, about 6 or 8 inches in length, are thickly studded with pale rose and white flowers. They are very useful for cutting, and have a very pretty effect in the garden. The superiority of Mr. KNIGHT's variety of the LAURUSTINUS is also very marked, the flowers are larger, of a purer white, and the footstalks of the flowers are also much paler. This variety has been named PYRAMIDALIS.

—— Mr. MEEHAN states, in his American *Gardeners' Monthly*, that while a frost on August 24 destroyed Dahlias and similar things in England, Dahlias, Honeysuckles, Scarlet Sage, and Pelargoniums were in bloom, and bright-leaved Coleuses, and other things were still giving a charm to his garden at Philadelphia on November 5. Says Mr. MEEHAN—"There are many beautiful features in English gardening which make an American's heart pine with envy, and our object in making this comparison is to show that we have some good things also. There are few more enjoyable things in the world than an American garden in autumn."

—— On looking about Covent Garden Market one cannot but be struck with small plants of THUJA ORIENTALIS SEMPERAUREA in pots, richly coloured, which have taken on a sheen not to be had in this country at this particular time of the year. They have been imported from Normandy, and probably owe their bright colouring to the brighter skies and clearer atmosphere of that district of France.

—— At the last meeting of the Linnean Society, Mr. THESELTON DYER exhibited a seed of Entada scandens, and one possibly belonging to Cyathocalyx Maingayi, an Anonaceous plant, found in the intestinal appendage of a Rhinoceros sumatrensis from Chittagong, which died in the Zoological Society's Gardens, Regent's Park. He likwise showed fruits of Oncocarpus vitiensis obtained from the crop of a Fruit-Pigeon (Carpophaga latrans) from Fiji. The curious circumstance is that these should have been so perfect after having been retained within the alimentary canal for doubtless a considerable period.

—— Mr. J. SAUL, of Washington, U.S.A., states, in the *Gardeners' Monthly*, that the beautiful IDESIA POLYCARPA has proved to be quite hardy during the past three winters. The tree, says Mr. SAUL, will be largely planted when better known. It is of rapid

FIG. 152.—THE LARGE WALNUT TREE AT MENTMORE.

growth, with clean, shining, green foliage, which stands the hot American summers without burning or being in the least injured—of great importance in foreign trees—and so far no insect has touched its foliage.

—— Mr. EDMOND DRAGE, 59, Borough, London, S.E., has sent us the following communication with reference to the SEED-DOCTORING case reported in our last issue :—

"I observe that my name was introduced into your report of a case decided last Monday before Mr. Benson at the Southwark court, and as it may cause some misconception to my prejudice, I shall be glad if you will allow me to state that the seed in question, purchased from me, was quite genuine and unadulterated at the time of sale, and that I had no connection with the case in question, neither had I the slightest idea for what purpose the seed was purchased."

—— With reference to the RHEA FIBRE, mention of which has been made from time to time in our columns, we have the pleasure to publish the following particulars, as to the growth of the plant (Böhmeria nivea) in this country, from Mr. ARKWRIGHT, of Leominster, who has obligingly furnished us with them :—

"In 1873 I received from the India Office, Product Department, some seed upon which to experiment, in order to see if it was hardy in England, and to supply fibre in the green state for the machine inventors. The prize of £5000 for a machine which would properly separate the fibre was first offered by the Government of India in 1872, at Saharunpore, and at that time lapsed owing to no competition. It has, I am told now, been renewed for trials in England. I raised the seeds in pans in heat, and planted them in rows about 2 feet apart. Here they have been ever since almost forgotten. I have not even tried how many crops I can get in a year. In India I believe they cut four times. The appearance of the plants is that of a giant Raspberry, throwing up about twelve canes from each plant to the height of 8 feet. Why it is called 'grass' I cannot imagine. The roots resemble those of a Dock or a bunch of long Parsnips joined together at the heads. Each of my three-year-old plants will divide not more than four or five times, so that, unless seed can be grown in England or imported from India, the reproducing powers are very limited. My plants have never blossomed. I am now going to try the effect of sewage and of more exposed situations than any yet tried, and shall probably have plenty of canes to send to experimenting machinists next summer. I enclose a sample of the fibre, as they want to get it. *John H. Arkwright.*"

—— A race of dwarf JAPANESE CHRYSANTHEMUMS has been spoken of, but it is not difficult to so manage the tall-growing varieties as to have flowers on quite small plants. Cuttings taken in July, if struck quickly and grown on well, will flower in October and November on plants from 20 to 30 inches in height, and produce good flowers too. It is sometimes convenient to take off the suckers from a choice variety during the summer, in order to throw as much strength as possible into the production of flowers; another advantage is gained by doing this, the stock is materially increased also, for the summer-struck cuttings, by being grown on vigorously, in due time give forth suckers also. It also suggests how a succession of flowers can be had up to a much later period than usual.

—— According to the *Revue Horticole*, two JAPANESE GARDENERS have already arrived in PARIS with a stock of Japanese plants, in readiness for the International Horticultural Exhibition of next year.

—— The PRIMROSE family appears to be in a considerable state of uncertainty as to its seasonable duties. It is stated that in Kent, as in other parts of the country, Primroses in the hedgerows are in full blossom; and in gardens they are putting up autumn trusses in plenty. Especially is this true of seedling plants put out in the summer to bloom in spring. Owing to the wet season they got well-established in the soil; then came a spell of dry weather, which ripened the growth, and this, followed by mild and open weather and genial rain, has induced a kind of unseasonable floriferousness. If some of the most promising varieties were lifted and put into small pots, taking care to break away as little soil as possible from the roots, they would flower in a cold house or frame all the winter, as they require protection only from frost and rain.

—— The *Scientific American* says that the plan of turning the tops of houses in cities into gardens has been carried out at the Palmer House in Chicago, and a portion of the roof of that hotel is now covered with a large conservatory. The structure is entirely of glass and iron, and it is built on an extension; its location is such that it opens directly out of the fifth-floor corridor of the main edifice, which rises some two stories above. A fine collection of tropical and rare plants has been provided, and the regular heating apparatus of the house supplies ample warmth. The conservatory is open to guests of the hotel, and furnishes a delightful resort.

—— DRACÆNA AMABILIS is about one of the most beautiful of this large group for decorative effect in mid-winter and early spring. In one of the houses at the Ealing Dean Nursery, Mr. H. B. SMITH has a number of exceedingly handsome specimens, from 2½ to 4 feet in height, that are now exquisitely coloured; and shortly the plants will be sent to market, where they command a very high figure. This variety will not colour in a small state, like terminalis does, and so it requires to be grown to a good size to see it in all its beauty. The plants began to colour in September, and in another month or so will be at their very best. It is considered to be rather hardier than terminalis.

—— The tree represented in the accompanying illustration (fig. 152), is the finest old specimen of a WALNUT TREE that we are acquainted with. It grows near one of the drives at Mentmore Towers, Bucks, the palatial residence of the late Baron MAYER DE ROTHSCHILD, and now of Miss ROTHSCHILD. It has a spread of branches of about 300 feet in circumference, and measures some 50 feet in height. Its exact dimensions are not known to us, but we should be glad if Mr. SMITH would enable us to put them on record.

—— CHRYSANTHEMUM MRS. GEORGE RUNDLE is undoubtedly the best and purest white kind for market use as a cut flower, and the best habited kind for pot culture. A lot of about thirty plants, strong and full of buds, lifted with large balls of soil from the open ground at the end of October, and planted up in a soil bed in a span-roof house, have produced trusses of bloom literally by bushels, and which have proved most valuable for all the purposes to which flowers at this time of the year can be applied. Even the smallest side-shoot produced its flower, the entire cutting extending over a month. Had it been desirable the time might have been considerably extended.

—— Mr. MEEHAN continues his interesting European notes in the current number of the *Gardeners' Monthly*. The subject of his present remarks are the nurseries of Messrs. MITCHELL & SON, Piltdown; Messrs. CUTBUSH & SON, Barnet; Mr. B. S. WILLIAMS, Holloway; Mr. WARE, Tottenham; Mr. BULL, and Messrs. VEITCH & SONS, Chelsea.

—— At Mr. KNIGHT'S nursery, Hailsham, and also in the nurseries of Messrs. SCOTT, at Eastbourne, the only PERPETUAL FLOWERING CARNATIONS grown in quantity are LA BELLE, and a pale rose-coloured sort named ANNIE WILLIAMS. The last-named variety grows with great freedom, and produces its pretty, fringed flowers abundantly.

—— The Covent Garden FLOWER MARKET will be opened at 5 A.M. on the morning of Monday next.

—— Mr. TURNER, of Slough, had the honour of supplying the floral decorations which made HUGHENDEN MANOR so gay on the occasion of HER MAJESTY'S visit to the Prime Minister on Saturday last. To commemorate this special mark of royal favour, trees were planted on the lawns by the QUEEN and the Princess BEATRICE, the subjects selected being Pinus nobilis and P. Nordmanniana, which were also furnished by the Slough nursery.

—— A continuously wet AUTUMN AND WINTER is much more injurious to hardy plants than severe frost. Last winter, owing to the excessive rainfall, Pinks, Antirrhinums, &c., died in large numbers on wet lands; and this autumn, from the same cause, old-established plants of the COMMON PINKS, grown for market purposes, are having a bad time of it; as they are generally grown under tall fruit trees, there is the addition of drip from the trees as well as wet at the roots to contend with. We can understand from this why it is the cultivators of the florists' Pinks always advocate a rather raised and well-drained bed for the plants, so that they may pass through the winter in safety.

—— Some TEA ROSES that now entirely fill a lean-to house at Syon show Mr. PRINCE'S SEEDLING BRIARS as stocks in a most meritorious aspect. The growth produced has been remarkable, the main stems are of great size, and shoots have broken out from these of the most robust kind, and their branches have gone to the top of the house. These plants were put in a year ago last February, being then of the usual nursery size. Maréchal Niel has made a growth that is simply marvellous for a Rose. The main stem, where it is brought into the house from the outside border, has attained to the diameter of a man's wrist, and it is evident, if allowed, that the plant would entirely fill the house in another year. The growth is trained direct to the top of the house, and is full of buds that are now, under the influence of a gentle warmth, fast plumping up. It is needless to say that with such results Mr. WOODBRIDGE holds the seedling Briar as a stock in the highest estimation.

—— Among the rarer products at this season of the year in COVENT GARDEN, we notice there are GREEN PEAS and NEW POTATOS, &c., among vegetables. Under an arch of fine Pines, Mr. WEBBER has two large bunches of Grapes, "Barbarossa," weighing some 15 lb., and we were favoured by Mr. GARCIA with a sight of some 5000 or so of splendid fruits of Easter Beurré Pears, as also of some variegated Pines from St. Michael's, immense Shaddocks from Nassau, fine spikes of Bananas from the Canary Isles, and some Brazilian Oranges, which are about the size of Pomelloes, and are of fine flavour.

—— The fine old climber, BIGNONIA VENUSTA, is now in bloom in one of the cool houses of the crescent range at Syon, and finely displays its fitness for roof decoration of conservatories during the winter months. Trained with a due regard to its habit when in bloom, the floral branches hang down to a length of from 2 to 3 feet. One branch at the time we saw it was of the latter length, and covered with large bunches of bright trumpet-shaped orange red flowers throughout. Although the old flowers of each bunch soon drop, yet there are so many of them that a succession is long continued. Gorgeous as many greenhouse climbers are in the summer, there are few that could eclipse this Bignonia, but when its beauties are found in the highest perfection in midwinter, its value as a decorative plant can hardly be over estimated.

—— A few years ago, a First-class Certificate was awarded at one of the spring meetings of the Royal Botanic Society to a bright BRONZY-LEAVED SWEET WILLIAM that is much grown round London for spring sale. It was by no means new, but it was novel to the judges on that occasion, hence the award. In West Middlesex there can now be seen patches of it that are most effective in appearance, with a peculiar bronzy sheen spread over the leaves unlike that seen on any other plant. As long as it retains this fresh and bright appearance it is highly effective, and it appears to possess good staying powers. Very early in spring, when growth sets in, it loses its striking character, and ceases to be so valuable from a decorative point of view. The flowers are small and insignificant, the plant being grown wholly for its foliage.

—— We have received the following communication relating to CARLUDOVICA DRUDEI from Mr. W. BULL. It will be remembered that M. LINDEN claims to have introduced the plant previous to Mr. BULL, and to have catalogued it under the name of C. speciosa. But if this be so, and M. LINDEN'S plant proves identical with that of Mr. BULL, which seems doubtful, the name we gave will still stand, as a catalogue name, without any description, is useless for purposes of determination :—

"King's Road, Chelsea, London, S.W.

"CARLUDOVICA DRUDEI.—Referring to a paragraph respecting this plant at p. 753 of your last week's issue, it is quite possible that M. LINDEN may have imported this plant; it does curiously happen, however, that last September I received an order from the South Australian botanic garden for (among other plants) Cardulovica speciosa. I have no such plant, and do not catalogue

it, but seeing the name in M. Linden's catalogue, I wrote to him for a plant. He replied that he could not then supply it. Being anxious to obtain it to complete the order, I then wrote M. Van Houtte for Carludovica speciosa, and received a plant from him with bipartite-acuminate leaves, a totally different thing to my Carludovica Drudei, and also different to any of the other Carludovicas in my collection, for I have three or four Carludovicas from my collectors in the United States of Columbia, and, therefore, particularly noticed the plant sent me from Belgium. Since reading M. Linden's remark, I have written to M. Van Houtte, asking if he is sure he supplied me with the right plant. His reply is, that he obtained it from M. Linden. If, however, M. Linden will send you, by post, a leaf or two of the plant he refers to, its nomenclature could perhaps be correctly determined.

"William Bull, F.L.S."

—— The Annual General Meeting of the Gardeners' Royal Benevolent Institution will be held at the Bedford Hotel, Covent Garden, on Friday, the 18th of January next.

—— Mr. James Graham, late gardener at Garscube, near Glasgow, and for some time nursery foreman with Messrs. James Dickson & Sons, Edinburgh, was entertained by a number of friends on the 12th inst., and presented with a purse of sovereigns as a token of their respect and goodwill on the occasion of his leaving the service of Lady Campbell to begin business as a nurseryman in Glasgow, in company with Mr. Galloway, the famous Scotch Gladiolus grower.—Mr. Robert Fleming, lately gardener to, J. C. Wakefield, Esq., Eastwood Park, Glasgow has succeeded Mr. James Graham, as gardener to Lady Campbell, of Succoth, at Garscube.

Home Correspondence.

Copings for Garden Walls.—As the coping of garden walls seems to occupy attention in your columns of late, I have thought it might not be amiss to give my experience in the matter. When I entered on my present situation a portion of the walls was coped with stone and a portion with wood, in both cases projecting 8 inches, but, as Mr. Cale observes (p. 725), "excluding the light, and having at the top of the wall a bare unsightly appearance," besides losing a portion of the best of the wall. About eight years ago I recommended my employer to try a part of the wall coped with glass, which he at once agreed to do. Having procured about 50 yards of glass, 4 feet long, 12 inches broad, ¼ inch thick, the stone cope was put back perpendicular to the face of the wall, a groove taken out underneath it, and the glass put in 4 inches under the cope and filled with cement, thus leaving 8 inches of the glass for protecting the trees. This, with a screw cover, keeps the blossom safe from 10° of frost, and, so far, was successful; but still it did not obviate the objection I had all along held against a permanent coping as a means of harbouring and encouraging insects, such as white and brown scale, green-fly, &c. In winter it protected them from harm, as they had nice dry quarters when they might have been encased in a coat of ice after a shower or snowstorm; and in summer, instead of the foliage getting the benefit of the rains, the coping threw it completely over them. There are few places where the wall trees get the amount of attention desirable in the matter of syringing. Why, then, prevent Nature's syringing from doing its beneficial work? With the hope of obviating these objections, I proposed to my employer to have the coping so constructed that it could be put off or on at pleasure. I was desirous to have a portion done, as I wished to see how it would succeed. Last summer we had about 100 yards done in wood frames, 10 feet long and 9 inches broad, the back and front frame-work occupying 4 inches, thus leaving 5 inches for glass, so as to let in light to the trees at the top of the wall. The frames are held together by iron, so that there are no astragals. The glass is laid end to end, in any lengths most convenient. At each end of the frames the iron which keeps the frames together is bent up the thickness of the stone cope (which projects 1 inch, so as to allow the glass frames to drop in underneath it, to carry the drip from the stone cope over the foliage), so as to allow a joint to be formed with a piece of iron bolted into the cope of the wall, and projecting so far as to meet between two of the frames. A bolt put through the hole formed in each, enables them to be turned on to the top of the wall when not wanted on the trees. At present they are all laid over on the top of the wall, exposing the trees to the winter's cold and rains. In spring they can be turned over on the trees in a few minutes, and left there till the end of May, or beginning of June; then put back on the top of the wall to let the trees get the benefit of the summer showers; put on again in autumn to protect and keep dry the ripening fruit. As soon as the ripened wood indicates maturity, they can have the benefit of full exposure, which also helps to retard the trees in spring, a matter of great importance in these northern regions. *D. Doig, The Gardens, Rossie Priory, Inchture.*

Veitch's New Protecting Broccoli.—I am highly pleased that the Fruit Committee of the Royal Horticultural Society has awarded a First-class Certificate to this most excellent variety. I have this season grown it largely, and find it most useful in filling up the gap between the Autumn Giant and the good old Snow's Broccoli. I find in growing all kinds of Broccoli that land highly manured is most objectionable. I always plant on land that was manured well for the previous crop, for the reasons that they grow too rank, and, instead of eating marrow like, they are particularly strong in flavour, and inferior generally. Another reason is that rank vegetation is of course sappy, and the frost takes hold of them in a far greater degree than on good hardy shrub plants. *R. Gilbert.*

Gilbert's Selected Snow's Broccoli.—Last January Mr. Gilbert kindly sent me a pinch of his Selected Broccoli, and for which I now beg to return him many thanks. The worst I can conscientiously say of it is that it is a decided acquisition, and ranks A 1 amongst early Broccoli. This year I sowed and planted out at the same time some of Snow's Early Winter White, Veitch's Autumn Self-protecting, and Gilbert's Selected Snow's Broccoli, but notwithstanding the high reputations of the two former the latter came in first. I shall not attempt to describe it (but leave Mr. Gilbert to do so) further than saying that I consider it "something" between that excellent Cauliflower (when it behaves well, which it has done this year) Veitch's Autumn Giant and Snow's Early Winter White Broccoli. Gardeners will know of what use the "something"—shall I say Gilbert's "Nonsuch?"—is likely to prove when it is stated that it comes in between such sorts as Veitch's Autumn Giant Cauliflower and Snow's Broccoli. I do not think that this excellent variety is in commerce yet, but if not I hope Mr. Gilbert will soon supply the trade with it, thereby conferring a great boon on gardeners, who would have just cause to thank him for doing so. *J. W. W.*

The Gravenstein Apple.—Is it not strange that this Apple is not more planted? I fancy it must be on account of its not being known sufficiently. I would, therefore, beg to call attention to it, as the most delicious autumn Apple I know, sugary and pleasant to a degree; and indeed, in some seasons, and in good situations, it eats more like a Pear. In sounding its praises, I am not running against the Ribstone, nor its offspring, the Sturmer Pippin; and I know the value of the Golden Knob in April; and the "Wise Apple," Court-Pend Plat, Cox's Orange Pippin, and a host of good winter and spring kinds; but what I say is, that if the soil is suitable, and the climate tolerable, the Gravenstein will come to table as a dessert Apple, in the autumn, second to none. *J. Rust, Eridge Castle.*

Desfontainea spinosa.—It is here, in the north of Ireland, quite hardy, but so slow in growth as to be quite unfit for planting largely for any effect, and, for hedges, I would say "don't." The healthiest plant I think I know of is on a wall, in a very favourable situation. I have known it about seven years, and it is now only about 3 feet high; it is bushy, though, and flowers beautifully every year. It also grows in the open border about an inch annually, but flowers withal, and is pretty. Certainly there would not be much labour required to keep it in order by clipping. Some of the handsomest hedges in this neighbourhood are formed of Berberis Darwinii, and they are very charming. *T. Smith, Newry.*

—— I have seen Desfontainea spinosa grow and flourish in the west of Argyllshire, without any protection, but I can't say whether it blooms there or not, as it is generally in the winter that I visit the Highlands. *D. B., Woolwich.*

—— In answer to "W. A." (p. 695) I beg to say that I am in earnest with regard to the Desfontainea either as a hedge or bank plant, and as a proof I will plant a bank of rockwork with ten dozen plants put in as cuttings last February. I prefer this position for the simple reason that I have such a bank to plant next spring. "W. A." will see at a glance that such a position is not the best for quick growth, and to define our position I may say we are nearly 600 feet above the sea-level, with another 350 feet added to the south-west, on the top of which Rhododendrons are growing beautifully, and I hope to have Desfontainea growing next year at 930 feet above the sea. The plant that has flowered so well here this year measures 3 feet 9 inches in height and 4 feet in diameter, and the longest annual growth 9 inches. It is not the most robust plants which flower the best. There ought to be a fine specimen of this plant at Hewell Grange, in Worcestershire. I left a fine healthy plant in a No. 8 pot twenty years ago, and the late Mr. Markham promised to have it planted out. If he did so, and this should catch the eye of the present gardener, will he please state the size, &c. The plant in question was sent out by the Royal Horticultural Society. *G. Dodd, Woodstock Park, Kilkenny.*

Aponogeton distachyon.—This is, no doubt, quite hardy in most parts of Britain, but there is a special reason why it can never become common, at least in moving water. It seeds freely, the seeds sink to the bottom, there germinate, and as soon as they have formed two leaves rise to the surface, and, if there is any current, float away. The young plants do not appear to possess the power of attaching themselves firmly below, so as to resist the floating tendency of the growing leaves. *T. Smith.*

Seaforthia elegans fruiting at Endcliffe Hall.—A noble specimen of this elegant Palm is flowering and producing seed in Sir John Brown's garden at Endcliffe Hall, Sheffield. Five beautiful drooping clusters at the foot of the leaf-stalk adorn the stem. The bright red seed pods have a grand effect. *A. O.*

Laurustinus and Arbutus Unedo as Seaside Plants.—These shrubs are really unsurpassed in the neighbourhood of Colwyn Bay, Llandudno, &c. The Arbutus here has a beautiful crop of fruit in all stages of growth, but the late flowers are now fast losing their beauty. The old plants of Laurustinus, which are very large at this place, are charming to behold, as, although many feet above the sea, they are one mass of bloom. Holly berries are so thick on old trees that the foliage is scarcely visible. Of the yellow-berried variety there are many bushes here from 10 to 20 feet high, heavily laden with fruit, and forming a beautiful contrast intermixed with the scarlet. Fuchsias, of which there are many large bushes in the shrubberies here, are still blooming, Pelargoniums, Calceolarias, Stocks, Salvias, &c., are blooming freely. The Myrtle seems to enjoy this locality. It grows grandly at this place. There has been snow on the distant mountains more or less for the past three weeks. *T. Capers, Bodysgallen, Conway, North Wales.*

The Gros Colman Grape.—I, like "Grape Grower," was for giving this noble Grape a bad name last year, and was about to cut it out of one house of Vines, mostly Muscat of Alexandria, but my employer thought it best to try it once more, as the berries were large, the colour good, and the bunch a noble-looking one altogether, though not much in flavour. So we gave it another chance, and this year on the same Vine we had six bunches, small in size, though the berries were large, and, to my employer's taste, first-class in flavour. I have canes of Gros Colman, Alicante, Lady Downes, and Black Hamburgh, which were planted on May 3, 1876, and cut back and started in the last week in March, 1877, and produced a bunch or two on each rod. I find that, although the Black Hamburgh is at the coolest end, Lady Downes next, Alicante next, and then Gros Colman, the Hamburghs were ripe about ten days before the Lady Downes, the latter fourteen days before Alicante, and the Alicante twelve or fourteen days before Gros Colman, so that to do Gros Colman well it wants a long time and plenty of heat; and to my mind it should be grown in a house by itself, as there is something about the foliage which seems to want different treatment to the others, although I now believe it to be a good Grape; but of the three I like Alicante the best, and should plant it in preference to the others. *J. Lane, Pyrgo Park, Romford.*

Strawberries all the Year Round.—There is little doubt but that Strawberries by proper management can be made to fruit all the year round, but as to their flavour in the winter months it is totally wanting. By keeping the earliest forced plants of Vicomtesse Héricart de Thury under protection until the end of May or June, and then planting them out in well-prepared soil, they will produce good dishes of fruit in August and September. Some of the best and strongest forced plants might likewise be kept in pots, and after giving them a shift and keeping them in the open air in a shaded situation, they will ripen fruit in October and November by keeping them in a frame or forcing-pit. In the months of December, January, February, and March, I have never found Strawberries of any of the sorts to have any flavour in the fruit, and it is only in April when they begin to give out the aroma peculiar to them. Perhaps the old Keens' Seedling, when forced so early, is as good in flavour as any Vicomtesse Héricart de Thury, Eclipse and President coming next; and I am likewise forcing La Grosse Sucrée this year as an early kind.

For forcing the main crops to ripen in May, June, and July, I find Lucas, La Constante, Sir Joseph Paxton, Dr. Hogg, and British Queen, the best; in fact, British Queen is still the best-flavoured and noblest of all Strawberries when grown well. *William Tillery.*

The National Rose Society.—I read with regret the Rev. Mr. Camm's remarks in your impression of the 15th inst., and with some surprise your supplementary note. At the inaugural meeting of this Society, on December 7, 1876, rules were drawn up, and agreed upon; and by rule 6, it was decided that "the annual meetings of the Society should take place on the first Thursday in December," and circulars containing the rules were forwarded to the members. The very existence of the Society is so dependent on thorough unanimity existing amongst its members, that any importation of personalities or private differences is greatly to be deplored. Having the conduct of an anxious and arduous business, I was compelled to resign my position as co-secretary with the Rev. Mr. D'ombrain, finding it was impossible for me to devote the amount of time and attention which the interests of the Society demanded. I am happy to add that the Society is to be congratulated on having secured the services of Mr. Edward Mawley, to whose ability and energy during this, the first year of its existence, it is in no small measure indebted. *Horace K. Mayor, Winchmore Hill.*

Stacking Strawberries and Storing them in Bottom Heat.—Recently a controverted point has arisen in relation to the utility of bottom heat for early forced Vines, and, while the subject is being discussed, I think it might with advantage be extended to the Strawberry. The practice of stacking, or storing away Strawberry-pots in winter, is an old one, and, like many other old principles, is hard to shake off. Those who advocate the system have no doubt practised it with some measure of success, and perhaps may have commended it to others through the columns of the horticultural press, although in a somewhat modified form. The system is either beneficial, or it is not. There is cause and effect in the most minute point that can be raised on any question, whether it relates to gardening in its scientific or most simple form; and no one cares to admit that certain principles are put in practice on no better grounds than that other people do the same thing. On the assumption that science and research requires every man to think and act for himself, I proceed to inquire for what reason Strawberry-pots are stacked, and what is the benefit to be derived thereby? I assume the plants to be well grown and well ripened, and the pots thoroughly drained, and standing on a porous bottom. Do these conditions not render them frost-proof? They have crowns plump and hard, with a tinge of perfect maturity about them that is never seen in the open ground; their leaves are of that leathery texture which indicates early growth under favourable influences. Their pots are bursting with healthy roots that were fed and cherished with the utmost care and patience, and set apart at such distances that no obstruction was possible to impede the healthy influence of sun and light, and yet these plants are supposed to require protection, when those in open quarters are left to take care of themselves. These two principles are hardly consistent, except on the plea that pots require protection from severe frosts, which is admitted; or where the autumn rainfall is known to be so excessive as to interfere with a free course of drainage, amounting to something like saturation. These are, however, contingencies that must always be left to the judgment of the cultivator. Severe frost before New Year's day is now a thing of the past, and no amount of wet will ever unripen a ripe crown or otherwise disturb a healthy intercourse between root and leaf. There is the probability of growing showers between autumn and winter; but the remedy is simple. Take the opposite view, and judge by comparison on natural principles from facts as they present themselves in actual practice, and see how far the situation will tally with the natural order of things already referred to. Let the pots be stacked in frames or against walls—which is a more common practice—or suppose them to be set in the ordinary way on the ground, or on shelves in orchard or other cool houses. Can any one doubt, that with open ventilators day and night, the effect of those sweeping dry currents on porous pots bursting with roots can be other than detrimental? I have unstacked Strawberry pots over and over again, and always found the roots of an irony-brown instead of a fleshy white; but some one may say this is the result of artificial cultivation! Yes; it is exactly the same as irregular organic action in the human system, it means that want of proper sustenance for a time—though there is unobserved internal sympathy—is not transparent to the naked eye; or it may mean that temporary paralysis of unity between root and leaf is not observable when the latter is hard and leathery, and from the influence of any trying element, such as solar heat. But can any one doubt, if my argument be correct, that the plant suffers in a proportionate degree to the loss of its roots, and is so much feeding power lost on the plea of preservation or rest, the latter a perfectly natural condition and perfectly consistent with an abundant supply of water at the root and breathing the natural atmosphere of winter. Proceeding to discuss the question of bottom-heat, it must be admitted to be a powerful exciting agent in making roots, and is the only safe course to pursue when root-action is found to be deficient; but assuming a healthy supply of active roots, the application of bottom-heat is only a premature disorganisation of sap, which is wasted in making what Nature had already supplied herself with in adequate quantity, or, in other words, the latent power of the plant, which should go to develope a crop, is prematurely wasted in making roots. *W. Hinds.*

Mitchell's Convertible Garden Ladder.—The season has now arrived when the pruning and training of fruit trees of all kinds demand attention. In all gardens, but more particularly in gardens of considerable extent, the performance of these necessary operations requires considerable time, as well as patience, at a season of the year, too, when the state of the weather is often such as to seriously interfere with the personal comfort of the operator. It follows therefore that the invention or contrivance of any implement or requisite, which may be likely to facilitate or expedite the performance of those operations, will be sure to meet with a hearty welcome, when their merits become fairly known. My attention has been

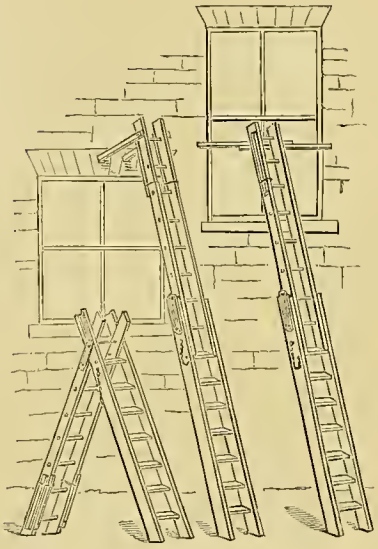

FIG. 152.—MITCHELL'S CONVERTIBLE LADDER.

directed to this new form of ladder, invented by Mr. Mitchell, Brandon, Suffolk, which promises, I think, to be an exceedingly useful piece of garden furniture. It may be called a *multum in parvo.* It is at least a combination of a set of steps, and garden wall ladders of various lengths. When used as an ordinary wall ladder it can instantly be increased to double its length, and being in sections, can be further increased in length to any desired extent by adding section to section, or stave to stave. It is provided with a receptacle for the purpose of containing nails, shreds, &c., and thus dispensing with the use of the nail-bag. As a set of steps it is also very useful, being so constructed that it cannot give out at the foot, and is consequently quite safe to use for the purpose of pruning standard and pyramidal fruit trees, and for gathering fruit, &c. It has also the advantage of being light as well as strong, and is easily unconnected when not required for use, and it can be readily stowed away in a very small space. *P. Grieve, Culford.*

Winter-Flowering Decorative Plants.—When recently visiting Hatfield, the seat of the Marquis of Salisbury, I was much struck with the numbers and quality of the plants grown for decorative purposes. They are grand examples of cultivation, most of them being grown in 4½-inch pots. The subjects are Begonia Ingramii, nitida, semperflorens, and Euphorbia jacquiniflora, very fine, feathered with foliage quite to the soil, and with spikes of flowers over 18 inches long; Poinsettias, with foliage down to the pots and grand heads of scarlet bracts; Rivina humilis and tinctoria, their bright scarlet berries being very showy; Thyrsacanthus rutilans, with its beautiful drooping racemes of scarlet flowers, very effective; Justicia speciosa, also as useful; Calanthes in variety, and some very fine spikes; a grand batch of seedling Gloxinias in 48-pots, some with a dozen beautiful flowers—at this dull season they will prove very useful. Calla æthiopica is grown by the hundred, and some will be just in for Christmas. A succession of all these useful plants is kept up for a considerable time, for they are grown by the hundred. In the conservatory a fine plant of Luculia gratissima is producing and has expanded several trusses of its beautiful sweet-scented delicate pink flowers. What a pity we do not see this grand old plant more generally grown. In passing through the kitchen garden I noticed that it was well stocked with a good succession of vegetables; and I am glad to state that Hatfield gardens are greatly improved under the practical superintendence of Mr. Norman, the gardener. *A. O.*

Lapageria alba.—Through the kindness of Mr. McInlay, gardener and steward to Mrs. Hanbury, Bedwell Park, Hertford, I enclose you a leaf of Lapageria alba, which I consider something extraordinary. The plant was planted out three years ago. This year it has made a shoot, the growth of which is upwards of 12 feet long. The leaf enclosed is a sample of the majority of the foliage developed in the shoot. The plant is producing a fine crop of flowers. *A. Outram.* [The leaf measured 5 inches in length and 4⅜ inches in width at the widest part. EDS.]

Covering Early Vine Borders.—Permit me to ask those of your correspondents who record the success of uncovered Vine borders for early forcing, to state the age of the Vines, how many years forced, at what time the fruit is ripe, and the nature of the soil—whether light or heavy. My own experience of several years, so as to have ripe Grapes in May, is decidedly in favour of a moderate covering with fermenting materials, both on inside and outside borders. But as I am (like many other gardeners) desirous of doing away with all unnecessary labour in the gardens under my care, I wait with some impatience your correspondents' views on this subject. At the same time those who advocate the plan of uncovered borders should have practised it for say five years with the same Vines, and in the same garden, before they can expect practical men to receive their views with any respect. I also think that Grapes which are ripe during the months of April, May, and the first week in June, should only be considered as early Grapes in this matter. Will *Scotia*, see p. 757, kindly give us the name of the Grape that he starts the second week in January in a temperature of 50°, and cuts ripe fruit from in May? that is in eighteen weeks from starting, which I think most of your forcing correspondents will agree with me in thinking is very quick work. *H. J. C. Grimston.*

Pronunciation of Latin Plant Names.—May I suggest that sounding the *t* in Latin names as *sh* or *ch* is a bit of slipshod pronunciation, which probably took its rise in the George IV. period, when it was fashionable to pronounce "beauteous" or "courteous" as "beauchus" and "curchus," a fashion which, both in Latin and English, is now happily in rapid process of extermination. It may be true that the *p* in such naturalised words as "pseudonym" and "psychology" is by most Englishmen (who of all nations are the most inarticulate) dropped in pronunciation, but such practice is not necessarily right, still less does it follow that it is right to drop it in botanical names, which are not naturalised words. There will always be a dispute over Glad'iolus and Gladi'olus, but I think that in all countries except England the first prevails entirely. *R.*

Hybrid Ivy-leaf Pelargoniums.—I have sent you some flowers of my hybrid Ivy-leaf Pelargoniums to show you how continuous they are in flowering, as the same plants have been in flower from the early part of May, and are likely to continue for some weeks longer in a cool greenhouse. I think Gem would be very nice for bouquet-making. [Yes.] I have not had a flower on the true Ivy-leaved varieties for four months past. *J. George, Putney Heath.* [The varieties received were Gem and Nemesis, and both are very beautiful. EDS.]

New Flowers of the Year.—A thoroughly complete and trustworthy descriptive list of the new flowers of the year is badly wanted. The *Gardeners' Year-Book* professes to give this, but the list is so loosely compiled, the inaccuracies so manifest, and the omissions so noticeable, that it cannot be accepted as authoritative. Besides, many things that have not appeared in public are given with only the raiser's descriptions appended to them. Take the list of bedding Violas for instance. It is doubtful if one of those given in the *Year-Book* was included in the trial carried out at the Chiswick Gardens during the past summer, and not one of the varieties certificated at Chiswick by the Floral Committee appears in the list. Long lists of show and fancy Pansies are given

on the authority of the raisers. Fuchsias, Gloxinias, Pentstemons, Pyrethrums, and Roses, are similarly served up. Six of the show Pelargoniums certificated by the Royal Horticultural Society find no place in the *Year-Book*, nor do some sixteen certificated varieties of the Zonal section, while double-flowered varieties are omitted altogether. *X.*

Chamæcladon oblongifolium.—There is no plant published under this name, but we had a plant at Kew grown under that title, which I have considered to be Chamæcladon lanceolatum, Mig., described and figured in his *Pl. Ned. Ind.*, iii., p. 212, t. 40, a native of Java. It is a very curious little Aroid, and produces its small green inflorescences freely, but I have never observed the spathe to open, nor have the gardeners who have charge of the Aroids at Kew, and it does not appear to produce fruit, so it is probable that it requires a different treatment to enable it to perfect its flowers. *N. E. Brown, Herbarium, Kew.*

Flooring for Glasshouses.—Those who have anything to do with forcing and plant-houses in which much water has to be sprinkled on the pathways and other surfaces for the purpose of causing a moist state of the atmosphere, well know what a source of discomfort it is to visitors and others not so much engaged in the work, and what an endless labour it causes in keeping the floors clean and free from green slimy growth after they once become thoroughly saturated. This was the case here till I happened to meet with some highly glazed slate-coloured Staffordshire bricks which are made with an impressed diamond pattern on the upper surface and into the channels so formed what water is used immediately runs, so that any one may at once pass over them without so much as scarcely damping the soles of their boots. There are many things, such as slate slabs and paving-tiles, that look clean and nice for a time, but all are objectionable on account of the sloppy state they are generally in and the labour and trouble they cause in scrubbing and washing them down, whereas with these hard bricks, that are so polished and impervious to moisture, a rinse with a few pots of water is all they require; while as to wearing them out or causing depressions in them though traffic is simply impossible, as I find that although we have had them in use here for fourteen or fifteen years they are now in just the same new-looking condition they were at the time they were laid down. Although I have never seen them in use in hothouses elsewhere, I notice that many of the platforms in and around London are paved with them, thus showing how well adapted they are to stand any amount of traffic; and besides possessing this good quality, their nice neat appearance is a great recommendation to them. Those who may be erecting glass structures, and wish to have real serviceable floors that will entail no further trouble or expense, cannot possibly do better than use these bricks, and if they are laid on a good solid bottom with a bed of mortar under them they will remain firm and immovable. We have them here both with and without edgings at the side, but I prefer them without, as when placed down the centre of the pathway with a 6-inch margin of bright shingle, Derbyshire spar or white shell, it forms a nice setting from the contrast it affords to the bluish-black colour of the bricks, and not only this, but the water drains gradually off and always leaves a clean surface. If edgings are used there must be a slight fall allowed and drains provided, so that the shingle or spar is desirable in every way, and as the bricks are almost as hard as iron there is no fear of the sides becoming chipped or disfigured, as it is a difficult matter to break or cut them when desired for the purpose of finishing off at the ends. In laying them they should be placed for the diamond pattern to work regular, which it does by breaking the joints in the ordinary way. Unfortunately I do not know who are the makers of these bricks, as it is so long since we obtained them, and it is to be hoped therefore that they will be advertised by those interested in their sale, as they are really the best things for floors I ever met with. Of course for Peach-houses or vineries, where it is necessary for the air and light to get at the border, there is nothing equal to a trellis of iron or wood, but for permanent pathways these glazed Staffordshire bricks are quite unsurpassed. *J. S.*

Tuberoses.—In reply to Mr. P. Barr (p. 691), allow me to state that it is not a very difficult matter to have Tuberoses in flower at this season of the year, and though I consider them tractable subjects at any time, some may do them with less trouble than others. I am so satisfied with my success in a small way that I send you the details of my method of treatment. The bulbs at no time should be exposed to a temperature lower than 45°, and with me they protest against being kept out of the soil any longer than the early part of June. The months of May and June, as a rule, bring some warm days, and the temperature of most sheds and such places naturally rises. I use 4-inch pots, one bulb in a pot, pressed moderately firm. They are not fastidious as to soil; such a soil as is used for the Tulip or the Hyacinth suits well. I potted some of mine this year in what many would not use for the bulb named. For the earlier flowering I use the same as I do for Pelargoniums, stiffer, and not quite so rich and sandy. Of these I shall say a word further on. Presuming the soil to be in a proper state of moisture—if not so make it—they will then not require water immediately after they are potted, as is the case with some things. I may also add that the bulb is only inserted an inch or so in the soil. Potting completed, they should be placed in the most sunless spot in the garden on ashes, and be covered over with the same or Cocoa-nut fibre, or some such like material. Place a light over them, or something else that will throw off the wet, and when they are through the 3 or 4 inches of covering material that was placed over them, they should be taken out into a pit, greenhouse, or frame, the object being to have command over the amount of water they are to have, which must be cautiously given, until they show signs of throwing up their spikes; more plants become blind by injudicious watering than from any other cause. My loss has been chiefly through keeping them in too low a temperature after they have even showed their buds. In October, and even the latter part of September, they require something between the cold greenhouse and the stove; 50° to 55° is safe. After they start they must be gradually moved on. This with me they do not get until the last of the Melons is out. To bring them on, the forwardest are selected and placed amongst the Pines, the Melons, or Cucumbers, elevating them so that their tops are through the trellis and well above the foliage. Our last lot were put in the Cucumber-house a fortnight ago, with a night temperature from 50° to 55°. They will commence to open in a week. To get them early I plunge them in a bottom-heat of 70° to 75°, top heat 50° to 55°, and when they show signs of growth they should be placed as near to the glass as possible; this may be accomplished by placing more fermenting material on the top of the old. Tan is the best where it is cheap, on account of the regularity of the temperature. As soon as they show signs of throwing up their flower stems, they may be removed from the bottom-heat to make room for others. The early started Tuberoses are more liable to the attacks of red spider, and are therefore benefitted by the daily use of the syringe, and any other means that are likely to counteract the ravages of this pest should be taken advantage of, such as standing the pot on ashes and keeping the same moist. Those showing flower stems in May June, July, and August may be stood or plunged out-of-doors. I think that by due attention to two or three points in the above remarks, and good sound bulbs from a respectable dealer, success is sure. Avoid by all means the refuse sent to sale rooms, for with this root you will be more disappointed than with anything else. Hyacinths or Tulips may throw some kind of flower, even after being grown in pots the previous year, but not so the Tuberose, which, after having been grown once in pots, I am not aware that any one has found of further use. Ours seldom fail. I would not call one or two in a dozen a failure, especially when some throw two and three stems, as I had them do in 1876. *W. P. R.*

Reports of Societies.

Massachusetts Horticultural: *Boston, Dec.* 1.—An adjourned meeting of the Society was holden at 11 o'clock, President Parkman in the chair. The President announced as the first business before the meeting resolutions in memory of THOMAS RIVERS, of Sawbridgeworth, England, one of the most eminent European horticulturists and pomologists, which would be appropriately presented by Hon. Marshall P. Wilder, the foremost American pomologist.

Mr. Wilder said—Mr. President, I thank you for suspending the usual order of business, that we may render proper honour to the memory of one of the oldest and most respectable corresponding members of the Society. I am advised by the memorial card, which I hold in my hand, that Thomas Rivers died at his residence, Sawbridgeworth, England, October 17, 1877, aged seventy-nine years. It has been my privilege to have had a personal acquaintance and correspondence with Mr. Rivers for nearly fifty years. He was one of the most eminent horticulturists of the age. As a nurseryman, pomologist, tree and Rose grower—especially as a hybridiser, in the production and dissemination of new and choice varieties—his name will long be remembered with veneration, gratitude, and respect. For nearly sixty years he was actively engaged in the nursery business, and it can be said with truth that no man in all Europe ever maintained a higher character for fidelity and integrity. As a pomologist he will be remembered for generations to come, especially for the production of new and valuable fruits from seed, which exercised a fascination over him; as he said, "growing with his growth and strengthening with his decline." As a raiser and introducer of new fruits the Editor of the London *Gardeners' Chronicle* (than which there is no higher authority) said of him, "The name of Thomas Rivers stands pre-eminent. We have had no English pomologist to compare with him in this department, if we except Thomas Andrew Knight."

The same paper gives a list of more than seventy new varieties of fruit raised and sent out by him. Mr. Rivers considered as one of his greatest triumphs the production of early Peaches, by which the season is extended for several weeks, and which are now distributed throughout the fruit-growing world.

As a lover of the Rose, and the great leader in its improvement in England, his name will be embalmed in the hearts of grateful millions, while the Rose shall unfold its petals to the morning light, or shed its fragrance on the passing breeze. Of his love and devotion to the Rose, an author remarks, "Age cannot wither his loyalty, and beneath a hundred medals, orders, and clasps, his brave heart is still with the Rose." His catalogue of Roses, published forty-four years ago, was pronounced by Mr. Loudon "the most useful catalogue of Roses in the English language." Besides writing many excellent practical works on horticulture, Mr. Rivers has been for many years a large contributor to the periodical press, and his various books and papers on the Rose, the Pear, root-pruning, double grafting, the construction of orchard houses and other cheap protections against the uncertainties of an English climate, and other subjects, are among the most valuable contributions to horticultural literature. But, Mr. President, time would fail me were I to enumerate the various ways in which Mr. Rivers' name has been associated with the progress of rural economy and the horticulture of the world. Truly it may be said of him "His works do follow him." His books are the best record of his life.

In view of what I have said, I beg the privilege of presenting the following resolutions:—

Resolved, That in the death of Thomas Rivers, one of the oldest and most respected corresponding members of this society, we recognise, in common with the horticultural world, the loss of a friend of horticultural science, rural improvement, and ornamental culture, and a benefactor of our race.

Resolved, That while we deplore the loss of so useful a man, we desire to thank the Supreme Disposer of all events that he was spared to us for so long a course of years, and was at last gathered to his fathers "like a shock of corn fully ripe in its season."

Resolved, That the members of this society sympathise sincerely with the bereaved family in their affliction.

President Parkman said that his first introduction to a knowledge of the Rose was due to Mr. Rivers's book, in which he recorded his ample experience in the culture of that flower. The book is full of the honest enthusiasm of his character, which here found expression in regard to the Rose. At the time this book was written Mr. Rivers was more prominent in Rose culture than any other Englishman, and, with its progress, he stood equal to any one who has written on the subject. He afterwards wrote on orchard houses, and a passage in the preface to his book on this subject, in which he dedicated the profits resulting from it to the repair of the parish church in which his family had worshipped for generations, showed the quality of the man.

The resolutions were unanimously passed.

Law Notes.

At the Southwark Police Court, before Mr. Partridge, William George Harley, of Guy's Granaries, Mermaid Court, Borough, appeared to answer a summons under the Seed Adulteration Act, at the instance of Mr. John Charles Ostler, in respect of 1 cwt. of Alsike Clover seed purchased of the defendant.

Mr. Besley appeared for the prosecution; Mr. Washington defended, and Mr. Simpson watched the case on behalf of Messrs. Frith & Maas, who were defendants in a case under the Act heard at this court on the 8th inst.

Opening the case, Mr. BESLEY stated that the admixture of killed seed was formerly a practice not limited to fraudulent persons at all. It was a practice adopted by many under the guise of competition. The fact is, I believe it was a competition which, not being stigmatised as being fraudulent by Act of Parliament, was used for the purpose of getting customers from the unfortunate agriculturists, who would not know of these practices until the season was passed, and their crops affected. Now it is very desirable that this Act should be obeyed, and I am, I believe, correct in saying that all respectable merchants have obeyed the Act of Parliament; and the best proof of it is that it has only recently been

discovered that, as often happens, there are two or three persons exceptionally open to the love of gain, and who do not care about an Act of Parliament prohibiting a thing, so long as they can make gain by their frauds. And in this case we have summoned the defendant that he did, with intent to defraud, sell to the prosecutor, Mr. John Charles Ostler, certain dyed seed, to wit 1 cwt. of Alsike Clover. On the previous occasion, in the case before your colleague, no evidence was called to prove that the seeds were of different kinds, and that the process of "doctoring" was merely for the purpose of passing off as new seed that which was old, merely for "improving" the seed—that was the way the effect was understood by the trade, "improving" the seed—that although in that case it was shown that they were coloured or "dyed" seeds, they were Clover seeds when they were sold, they were Clover seeds when sent to be improved, and after they had been "improved" they were still white Clover seeds. The only change by the sulphur smoke was to give the appearance of new to old seed, and so to improve it. Now I am going to tell you the facts in this case. First of all I may say that it is impossible to a certain extent to give you affirmative evidence what 40 or 50 per cent. of this seed was before it was dyed. Although the colouring matter can be extracted to a certain extent, it cannot be so wholly extracted as to show the nature of that 40 or 50 per cent. of the foreign seeds. I am only using the figures for the purpose of showing the meaning clearly. I can show you with regard to 10 per cent. that that 10 per cent. was seed of another kind dyed so as to resemble Alsike Clover. I shall be able to show you that that 10 per cent. was a mixture of seeds of weeds, and not Alsike Clover. Of course that will be very material in the proof of this case. I think I ought to tell you that Alsike seed is an introduction of modern times. I mean it was discovered and brought from Sweden into this country. It is, of course, one of the numerous grass seeds; and, of course, when you classify seeds you get under the term grass a vast number of different seeds. For instance, Clover is a grass seed, Trefoil is a grass seed, and there are other seeds that are grass seeds producing different qualities of grass, and producing different coloured flowers. Of course this is only as an illustration in passing, you may have Strawberries although producing the same flower they produce very different kinds of fruit, as every one who knows the British Queen, the Devonshire. But with regard to these grass seeds the flower is different. I may tell you that, with regard to this particular Alsike seed, it comes from Sweden, and it is a peculiarity of it that it produces a flower partly red and party white. White Clover produces only a white flower, red Clover produces only a red flower, but this Alsike Clover produces a flower partially white and partially red. Now, as the flower is different, with regard to the kind I think I should satisfy you that the kind is different. It has been introduced from Sweden because of this quality: that it grows when sown in the Wheat field, and remains longer before flowering, and it does not die away or lose plant because of the winter or the choking effect of other crops; so that you have the farmer giving 105*s*., and more, per cwt. for it, against 70*s*. or 80*s*. for the other kinds. So that, I say, although of the same class, it is the growth of Sweden, it has a different flower, it has different qualities, and in consequence of those qualities it commands a higher price. The price really is accounted for by the different qualities. The qualities it possesses for the purposes of pasturage are certainly more valuable than the qualities of white Clover.

On November 14 the defendant was seen by Mr. Ostler at Law's public-house, and then he was asked about some Alsike, and the defendent said he had 8 cwt, and a sample would be given to Mr. Ostler by his man at Guy's Granaries. Accordingly, Mr. Ostler went and got a sample, which will be produced. On the 16th (Friday) the sample was shown by Mr. Ostler to the defendant, and he said, "Yes, that is the seed. What can you get for it? Can you get 90*s*.?" Mr. Ostler said he would do what he could. A conversation occurred about sending the sample into the country, and awaiting reply. On the 20th defendant was seen at Law's public-house, and Mr. Ostler said he would take 1 cwt.; he could get it for 84*s*. In consequence, defendant sold 1 bag at 84*s*.; took an order to deliver the bag at Trig Wharf, and wrote a receipt in a pocket-book—"1 cwt. Alsike, 84*s*., £4 4*s*., W. G. Harley." Then we come to the sample having been taken subsequently. I think it will be sufficient for me to state to you that between 25 and 40 per cent. appears to be Alsike dyed, but it is still Alsike. There is a larger proportion that we cannot get at, that we cannot ascertain what seed it is, because the colouring matter will not come out; and with respect to the remainder, 10 per cent. was foreign seeds and comprised red Clover, Trefoil, Rib-grass, Timothy, and Thistles, and of course these facts must be proved by persons competent to prove that these seeds thus found were dyed. I shall also prove to you that to the eye of a country seed merchant the dyed seed could not be detected because the colouring matter was the deep green of Alsike Clover seed. If I prove that, I shall submit to you that we are entitled to a conviction against the defendant. In Frith's case no evidence was called to prove that the seeds were of a different kind, but here you see 10 per cent. of these seeds are dyed foreign dyed seeds of a different kind. In that case they were seeds, but still of the same kind; here they are of a different kind.

Mr. Besley then called Mr. JOHN CHARLES OSTLER, who stated that: He lived at Walthamstow and is a commission agent. On Wednesday, November 14, witness saw Mr. Harley, the defendant, at Sam's public house in the High Street, in the Borough. In reply to a question from witness if he had anything to offer, he said a little parcel of Alsike.

Witness continuing: Gave the sample to the solicitor. Is employed by the Society for the purpose of enforcing this Act of Parliament. On Friday, the 16th, saw the defendant in the seed market at Mark Lane and spoke to him about the sample. Told him he could not get that price, 90*s*., for the sample. He said, Say what you can get. Defendant replied, Very well, I am hard up. I book you 1 cwt. at 84*s*. Witness felt in his pocket for a piece of paper and wrote on that piece of paper a receiving order addressed to Trig Wharf as an authority to them to receive delivery of the seed from the defendant. (Receiving note produced by Mr. Scott, the manager of Trig Wharf, Chaplin & Horne's). Wrote it on the counter of the public-house. Witness also wrote down a receipt in his pocket-book for the 84*s*., which defendant signed, witness having paid the 84*s*. (Pocket-book produced). The entry was, Received in settlement of 1 cwt. Alsike, £4 4*s*., say 84*s*. W. G. Harley. On the 22d witness gave a sampling order to Mr. Francis.

Mr. BESLEY: You did not say anything to him about its being doctored?

Witness: I ordered pure seed of him.

Magistrate: The order was for pure seed.

Mr. WASHINGTON: We shall see what the order says.

Mr. BESLEY: On the 22d did you give to Mr. Francis the sampling order?

Witness: I did.

Sampling order was produced by Mr. Scott and identified by the witness.

Witness continued in reply to Mr. Besley: On December 10 a sample was drawn from the bag at Trig Wharf. Witness was present with Mr. Scott. Mr. Scott's man drew the sample, and afterwards brought it to this court. Witness had not touched that sample. It was brought to the court on the occasion of Frith's summons, and witness had not seen it since he handed it over to the solicitor at this court. In reply to Mr. Partridge witness added the sample was about 2 lb.

Cross-examined by Mr. WASHINGTON: Deals in seeds and Hops, and flour. In employ by the Association to look after "doctored" seeds — as inspector. The sample was about 1½ oz. or 2 oz.; might have been 3 oz. It all had the appearance of Alsike. There was Alsike in it; could tell part was not Alsike, because on examination he could detect some Nettle or Thistle. Did not note the extent in the whole sample. Took it to a chemist himself and had it analysed there before buying the 1 cwt. That was to a chemist — Walter, of Walthamstow. Had taken it to him before seeing Mr. Harley again. It did not undergo, to witness's knowledge, any other examination before he saw defendant again. Gave half the sample to Mr. Francis, and it was shown to the Society and then returned to witness. It was returned to witness the same day; kept it in his pocket some time after that until giving it to the solicitor. It went through no other operations. The part given to the chemist underwent analysis, the other part did not, but witness found by examination some of it was not Alsike. Took it from the granaries. It was not all Clover seed; some of it was Thistle seed, some Trefoil. When witness said he wanted the seed for mixing defendant did not reply that he did not know anything about mixing, but sold it according to sample.

WILLIAM NAPIER SCOTT, examined by Mr. Besley: Received the order now produced for the delivery of the seed at Trig Wharf, of which he is manager, and with it one bag of seed. Could not say the date, but it was as per receiving note. Looking at the office-copy of the housing account, witness said it was November 20. Also received the order produced, called a sampling order, authorising the delivery of a sample to Mr. Francis, and upon that sampling order delivered a sample from the same bag that had been received under the first order.

ALEXANDER FRANCIS, examined by Mr. Besley: On November 22 went to Trig Wharf with Mr. Maclellan with a sampling order from Mr. Ostler. Mr. Scott instructed one of his men to draw the sample, which was handed to witness. On the 23d witness handed the sample to Mr. Bernard Dyer, chemist. Had since seen the samples, both of December 10 and of November 22d, and had examined the one drawn for him, that is November 22 (sample produced by Mr. Dyer). Gave the whole of the sample to Mr. Dyer, about half-a-pound or a pound. Examined the samples in Mr. Dyer's office on two or three occasions, Mr. Dyer being present. There are several dyed seeds of different kinds in the sample.

Mr. FRANCIS, in reply to Mr. Besley, continued: Some portion of the seeds he examined on those two or three occasions in the presence of Mr. Dyer were dyed, not the whole. (This referred to sample of November 22.) The effect of the dyeing is to give them a greenish colour. The normal colour of Alsike is greenish; some of it was rather bluish, but it had not been done very well. Witness found seeds other than Alsike—Trefoil, Rib-grass, Timothy—that had been dyed. Rib-grass was a grass used principally for sheep-feeding. Also found some Thistles. Trefoil seed is of a yellow colour, but in that sample it had been dyed. Rib-grass is of a brown colour; that had been dyed. The natural colour of Timothy is white, and it had been dyed a bluish green. Had had several years' experience with regard to seeds. Alsike was an introduction of comparatively recent date. Its value would be from 100*s*. to 110*s*. per cwt., perhaps Rib-grass would not be worth more than 16*s*. to 20*s*. at the outside. Low Trefoil would be worth 30*s*. to 45*s*., and red Clover 45*s*. to 70*s*. per cwt. Did not know the present value of Timothy, but thought about 30*s*. Was not aware that Thistles possessed any value. Would say there was quite 10 per cent. of foreign seeds other than Alsike in the sample. Had seen Alsike growing many times. The flower is partly red and partly white, and in colour it quite differed from red Clover, which is a bright red, or white Clover, which is quite white.

Witness: Alsike possessed other qualities differing from the ordinary Clover, and giving it a higher value. It is sometimes sown on "Clover-sick" land, where the common Clover would not grow. It is more productive and seeds later than the ordinary white Clover, and also stands longer. And these differences give it its extra value.

Cross-examined by Mr. WASHINGTON: Could see there was about 10 per cent. of foreign seeds. Had seen Rib-grass sold separately on many occasions. Had not known it sown separately. Had known Timothy sold separately and sown separately. Trefoil is quite distinct from Alsike. Botanically one is called Medicago and the other Trifolium. Could not tell the per centage of rib-grass or Timothy separately, nor what proportion of the one-tenth was Clover-seed. Rib-grass and Timothy were not always found with Clover. Had seen samples of Alsike where there were no Thistles whatever, both English and foreign grown samples. Such instances were not rare in samples of good seed. There are a great many samples of white Clover-seed in which there is no Rib-grass found.

Mr. WASHINGTON: And is not Timothy found also with Clover-seed?

Witness: You won't say with what Clover-seed.

Magistrate: Is it your contention that it is impossible to sell it thoroughly pure?

Mr. WASHINGTON: Yes.

Witness: Had never seen Timothy or any other

kind in samples where they have a bluish-green colour; not in genuine Alsike.

Mr. PARTRIDGE: Were they of a bluish-colour?

Witness: Some were, and some were of the proper colour.

In reply to Mr. Washington: Should say one-tenth of the seeds were foreign seeds. Could not exactly say what proportion of that one-tenth were dyed: perhaps one-half. There were other seeds in the sample that witness believed to have been dyed, but there is no chemical means of removing the dye. The dyeing was perceptible to any one who had been dealing in these seeds.

Mr. BERNARD DYER, examined by Mr. Besley: Is an analytical chemist. Received a sample of Alsike Clover on November 23 from Mr. Francis. Witness produced remainder of the sample in a bottle. The sample was marked "1 cwt. Alsike Clover, Harley, 20/11/77." There was about half a pound. On submitting it to analysis witness discovered a considerable quantity of indigo dye present. About 8 or 10 per cent. approximately of the seeds in the sample were so dyed. The effect of indigo is to give to some seeds a bluish colour and to some a greenish colour, so that seeds of a light or brown colour would resemble Alsike. The colour would depend upon the nature of the husk of the seed. The dyeing would make it present the appearance of Alsike, which it would not otherwise have. Witness produced a couple of bottles containing some indigo extracted in two experiments upon this seed. If the seeds had been undyed, the difference of colour would enable an ordinary observer to distinguish them from Alsike at once.

Cross-examined by Mr. Washington: The sample was a sample of low-price Alsike, but could not say it would be a market sample—a sample of ordinary Alsike. Indigo is a vegetable product, but could not be extracted from Alsike. Alsike would not give off indigo. Had tried to produce a blue colour from Alsike, but had been unable to do so. Was unable to extract from pure Alsike any blue colouring matter without entirely destroying the seed. In the sample submitted for analysis there were dyed Thistle, Timothy, and Rib-grass seeds.

Magistrate: How is the dyeing done?

Witness: They are soaked in a solution of indigo.

Magistrate: And how is the killing done?

Witness: I believe the seeds are usually killed by heat.

Magistrate: And the object of that is to prevent it growing, and when the harvest comes to prevent its being known, so that the farmer may think his ground has failed, or that an insect has destroyed it?

Witness: Yes.

SAMUEL BURNELL DICKS, examined by Mr. Besley: Is in the employment of Messrs. Burnell & Co., seed merchants, as manager. Is acquainted with the value of seeds. Alsike is worth from 105*s.* to 120*s.* Colouring by indigo is only for the purpose of preventing a practical man from discovering that what he is buying is an impure sample. It does no good to the seed. The value of red Clover ranges from about 50*s.* to 75*s.*, or for a very fine clean sample a little more. Trefoil at the present time is worth 30*s.* to 35*s.* for very fine value. Rib-grass would be worth 20*s.*, and Timothy from 30*s.* to 32*s.*, and for sowing purposes the Thistles are rather a disadvantage. If foreign seeds coloured with indigo were mixed with Alsike it would be possible, of course, for the dealer to sell a hundredweight much above its intrinsic value, and certainly it would be to the damage of the purchaser.

Mr. BESLEY: I understand it is the dyeing you object to?

Witness: I object to it because it passes off a weed as a fair sample.

This concluded the case for the prosecution, and Mr. Washington addressed the magistrate on behalf of the defendant. In the course of his remarks he said, I will ask you to say upon the evidence that this is not an infringement of the Act of Parliament at all. The Act lays it down very plainly by the interpretation clause what it shall be. The term to dye means to dye by any process of dyeing, sulphur smoking, or other means, to give the seeds the appearance of seeds of another kind. We have the word "kind" laid down in many of our English dictionaries as meaning race or genus. And that is very plain, because even the Latin word we have for kind is genus, which comes from *gignere* to beget; and you show that kind means race, not different descriptions of one plant but different plants, different races from different stocks. All the component parts of this seed sold to the plaintiff are, with the exception of a very small amount, indeed different kinds of Clover.

Magistrate: Of an inferior quality.

Mr. WASHINGTON: Of an inferior description it may be, I do not at all deny that. For Trefoil is one, and the witness said in answer to my question, a very good kind too, not an inferior kind at all. Then there were some Rib-grass and Timothy which, as the last witness very candidly said, are to be found in all these sales that are made of this kind of Clover. If that is so, we have not infringed the Act of Parliament at all in any way whatever, because you must give that meaning to the word kind which is given in a dictionary. And the intention of this clause is clearly that it was to be so, that you should not give to Clover-seed by dyeing, or sulphur-smoking, the appearance of seed of a different genus or class; that you should not, for instance, give to Rye-grass, by any foreign introduction, the appearance of, say Clover, if it were possible; that you should not thereby defraud; but it does not extend to giving one description of Clover the appearance of another description of the same class or race; that it means race or genus, a different description in every way whatever, and that so long as it is only Clover that is introduced, there is no offence against the Act of Parliament.

Magistrate: Your argument comes to this, that if an agriculturist buys this, the most expensive kind, it is sufficient if the vendor supplies him with an inferior kind.

Mr. WASHINGTON: No, sir. It is not intended to do away with the civil remedy. And it would be present here.

Magistrate: But in addition to the civil remedy, if the other dyes one kind to make it resemble another, or he kills the seed, then the Act applies.

Mr. WASHINGTON: Yes, if we dye it according to the Act. But you must give the interpretation to the word kind, as in the interpretation clause, and that was argued by the prosecution the other day, and decided by your learned colleague that it was kind or race, as in the example which Mr. Besley gave of Strawberries.

Magistrate: It seems to me the farmer is entitled to whatever species of Clover he chooses, and if he does not get the right one, and the vendor does not bring himself under this Act, then the farmer would have a right of action. But if he brings himself under this Act, he has not only a right of action, but is also protected under this Act. He may order whatever kind of seed he likes. If it is adulterated, and he finds the seed, by adulteration, is made to resemble some other kind of seed, then it is an offence under this Act.

Mr. WASHINGTON: I say by ordering one description of Clover seed it is not an offence so long as it is Clover seed.

Magistrate: If your view is right, the Act is nugatory. I do not see a single word in the Act to bear out your view.

Mr. WASHINGTON: I can only point to the usual meaning of the word "kind" held by all dictionaries, and which we have all been taught to know as the meaning of the word "kind."

Magistrate: The Act says "any seeds whatever." Those are words as large as can be.

Mr. WASHINGTON: But all these Acts are guided by the interpretation clause and the whole Act must be governed by that clause.

Magistrate: Well, I consider the farmer entitled to order any species of seed he pleases. You bind him to the genus. I say he can go beyond that and order any species of the genus he pleases. You see in this case, as was said by one of the witnesses, the dyeing has enabled the vendor to palm off a bad seed as genuine seed.

Mr. WASHINGTON: Only Mr. Dicks would not say 80*s.* or 84*s.* was a fair price for this.

Magistrate: Competition shows what a price should be, and the offence is not that it is an admixture, but that some of the seeds are dyed, so as to make the inferior seed resemble pure Alsike; but the question is, whether it has been killed or dyed. Here it has been dyed. I think I had better say this case is quite different from the case my colleague decided upon. In that case there was no proof, as required in the Act, that the seed had been dyed to resemble another kind. My colleague in my judgment very properly dismissed that case; but here, according to my view, the requirements are fulfilled, and it is clearly proved that the defendant sold as pure Alsike an admixture of other and inferior seeds.

Mr. WASHINGTON: I will take that as your ruling for the present. Then comes a very serious question again. What is the meaning of this—"With intent to defraud, or with the intention to enable other persons to defraud"? Now, we have it proved—even taking the whole of the evidence by the plaintiff as borne out by his witnesses—that the part dyed at all would not be beyond one-eighth or one-tenth of the whole lot; therefore, out of 100 seeds only ten at the outside would be dyed, and that the price of very good Alsike is 105*s.* to 120*s.*, that a person buying this by sample would not give more than what he thought to be the right price, and that 84*s.* or 90*s.* would not be an outside price for seeds of this kind. Now, we have it from this very man, who is employed by this Association, that he has the sample in his own care on November 14, that it is not sold to him in any other way than by sample, and I shall ask you to say, as one of the questions in this case that will have to be decided, that a sale by sample does away with the intention to defraud; that where there is a sample, and that sample is in the hands of the purchaser to do as he likes with, and, as he does in this case, six days before he comes again, there is no intention to defraud, that a sale by sample takes it out of the meaning of intention to defraud.

Magistrate: Then your argument is this: if two fraudulent dealers conspire to defraud the public, all they have to do is to buy and sell by sample.

Mr. WASHINGTON: When he gives him the sample there can be no intention to defraud. He has the sample a reasonable time, he has it tested, and yet after that he goes and buys from that sample that has been shown to him six days before. I shall submit that where there is a sale by sample there is no intention to defraud applicable to this Act. And it would be monstrous in a case of this kind, that there should be a conviction upon the evidence that we have heard in this case to-day, when 10 per cent. only is proved to be dyed even by the analyst; when the foreign substances are those which may even, and do come in the natural growth of the seed itself, that they are a common mixture, and sold every day with the seed itself, and there is no proof whatever—not a scintilla of proof—to show that Mr. Harley knew there was a single dyed seed in it—not an atom of proof to show that Mr. Harley knew it was not pure Alsike, and the very conduct of the informer shows that. When asked why he had not told Mr. Harley, he would not swear that he had told him a single word about it. There is not a single atom of proof whatever, or that he had any fraudulent intention whatever.

Magistrate: The defendant is a dealer in seeds, and the smallest possible precaution whatever would have enabled him to detect the presence of the dyed seeds.

Mr. BESLEY: Upon this point, sir, the fifth section says, "or with the intention of enabling any other person to defraud."

Mr. WASHINGTON: But then, sir, they must prove; there must be some proof that he knew he was selling fraudulent seed. Why, the matter would have been very easily tested, to do right. They would have gone to him and asked him if there was any dyed seed in it. But that did not suit; so they have it six days, do as they like with it—I do not know what they have done with it—and then they say we will have some more because we have not a sufficient sample. I say the whole circumstances show the greatest neglect on the part of the prosecution, that the sample does away with the intention to defraud, and that he has not committed an offence within the Act.

Magistrate: I am against you upon that point also, but of course your witness may alter my decision.

Mr. WASHINGTON then called George William Whitworth, who stated: He is a seed merchant at Mark Lane. Has been in the seed trade twenty years. His skill is so well known in the Borough that he can by manipulating tell what kind of seed it is.

Mr. BESLEY: Which has been done.

Witness continuing: Was not present when the sale to Mr. Ostler was made, was only present at the subsequent interview on the 20th, Tuesday, in the public house. Mr. Ostler was very busy. Mr. Harley came in with the seed. There was a question about the price (88*s.*) Mr. Harley wanted. Ostler

offered 82*s*. He told Mr. Harley, "If this was settled, if this goes down, George, I shall be able to take the remainder of it." Mr. Harley said "All right." He did not read over his entry to Mr. Harley.

Cross-examined by Mr. BESLEY: Did not mean to represent that he was a subscriber to Mark Lane, or had a stand there. Did not call the sample in question a genuine article. Had sold, and does now, dyed seeds, but had not sold Alsike. Does not profess to sell the dyed or doctored seeds.

Magistrate: This witness's evidence does not alter my view at all. I convict defendant in the penalty of £5 and costs.

Mr. BESLEY: I shall ask you to make a liberal certificate for costs, as he has already had £4 4*s*. for these seeds. I may ask you to mention the amount of costs you will allow.

Mr. WASHINGTON: I do not think there ought to be any costs in a matter of this kind, in which the defendant has dealt fairly, has sold at a fair price, and therefore I consider—

Magistrate: What is in the interests of the public. I should rather the costs should be as usual. I give 2*s*. costs—£5 penalty and 2*s*. costs.

Notice of appeal was given.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DEC. 19, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°				In.
Dec. 13	29.75	−0.05	45.0	34.0	11.0	39.3	− 1.3	35.6	87	WSW: W.	0.18
14	30.13	+0.32	42.0	31.0	11.0	36.7	− 4.0	31.3	82	W.: N.W.	0.00
15	30.27	+0.46	45.4	29.9	15.5	37.8	− 2.9	34.0	86	W.	0.00
16	30.15	+0.34	48.0	40.0	8.0	44.8	+ 4.1	40.9	86	WNW	0.00
17	30.20	+0.38	47.5	43.0	4.5	45.3	+ 4.8	40.8	85	WSW: WNW	0.00
18	30.34	+0.51	45.3	33.1	12.2	39.0	− 1.2	35.6	88	NNW: N.W.	0.00
19	30.44	+0.61	39.2	28.8	10.4	33.4	− 6.6	32.3	96	S.W.	0.02
Mean	30.18	+0.37	44.6	34.3	10.4	39.5	− 1.0	35.8	87	W.: N.W.	sum 0.10

Dec. 13.—A fine bright day. Cold. Rain fell in early morning.
— 14.—Fine, but cold and gloomy. Hoar-frost at night. Slight fog in morning.
— 15.—Fine, but dull and cloudy. Cold day, Hoar-frost in morning.
— 16.—A dull, cloudy day. Slight rain at 6.30 P.M. Mild.
— 17.—A very dull day. Mild. Clear at night.
— 18.—A fine day, partially cloudy. Cold. Thick fog at night.
— 19.—A miserably dull day. Cold and raw. Thin rain fell after 6 P.M. Fog.

LONDON: *Barometer.*—During the week ending Saturday, December 15, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.18 inches at the beginning of the week to 29.98 inches by the afternoon of the 10th, increased to 30.11 inches by noon on the 11th, decreased to 29.75 inches by the morning of the 12th, increased to 29.99 inches by the evening of the same day, decreased to 29.90 inches by the afternoon of the 13th, increased to 30.52 inches by the morning of the 15th, and was 30.41 inches at the end of the week. The mean reading for the week at sea level was 30.11 inches, being 0.14 inch above that of the preceding week, and 0.13 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 52¼° on the 12th to 40½° on the 10th; the mean value for the week was 45½°. The lowest temperatures of the air observed by night varied from 29½° on the 11th to 39½° on the 9th; the mean for the week was 33½°. The mean daily range of temperature in the week was 12°, the least range in the day being 8¾° on the 10th, and the greatest 15½° on the 15th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—December 9, 44°.8, +3°.6; 10th, 36°.5, −4°.5; 11th, 36°.2, −4°.6; 12th, 45°.3, +4°.6; 13th, 39°.3, −1°.3; 14th, 36°.7, −4°; 15th, 37°.8, −2°.9. The mean temperature of the air for the week was 39°.5, being 1°.3 below the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 77° on the 9th, 70° on the 13th, and 65¾° on the 12th; on the 11th the reading did not rise above 44°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 24¾° on the 10th, 25½° on the 11th, and 26½° on the 15th; the mean value for the week was 28¼°.

Wind.—The direction of the wind was S.W., and its strength gentle. The weather during the week was fine but cold, and the sky cloudy. The mornings were generally frosty. Slight fog prevailed on the 14th.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day varied from 54° at Truro, 53½° at Plymouth, and 53° at Liverpool and Leeds; the highest temperature of the air at Brighton, Hull, and Sunderland was 49°; the mean value from all stations was 51°. The lowest temperatures of the air observed by night were 25¾° at Cambridge, 28¼° at Bristol, 28¾° at Wolverhampton, and 29° at both Truro and Nottingham; the lowest temperatures of the air at Leeds was 35°, and at Bradford was 34½°; the mean from all stations was 31°. The range of temperature in the week was the greatest at Truro and Cambridge both 25°, and the least at Liverpool, 15¾°. The mean range from all stations was 20°.

The mean of the seven high day temperatures was the highest at Truro, 51°, and Plymouth, 49°, and the lowest at Norwich, 43¼, and Hull, 43°; the mean value from all stations was 45½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 31½°, and Cambridge, 32°, and the highest at Liverpool, 38½°, and Portsmouth, 38°; the general mean from all stations was 35°. The mean daily range of temperature in the week was the greatest at Truro, 13¾, and the least at Sunderland, 6½°; the mean daily range from all stations was 10½°.

The mean temperature of the air for the week from all stations was 40¼°, being 3° lower than the value for the corresponding week in 1876. The highest were 44° at Truro, 42½° at Portsmouth, Plymouth, and Liverpool; and the lowest, 38°, at both Cambridge and Wolverhampton, and 38½° at Hull.

Rain.—The amounts of rain measured at the several places varied from ¾ of an inch at Liverpool and Eccles to one-tenth of an inch at Leicester, Cambridge, and Wolverhampton. The average fall over the country was four-tenths of an inch.

The weather during the week was fine, but cold, and the sky generally cloudy.

Snow fell at Bradford on the 13th inst., and a lunar halo was seen at Liverpool on the 15th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 53° at Leith and Perth, to 48¼° at Aberdeen; the mean value from all stations was 51°. The lowest temperatures of the air varied from 32° at Dundee, to 35° at Glasgow; the mean from all stations was 33¼°. The mean range of temperature in the week from all stations was 17¾°.

The mean temperature of the air for the week from all stations was 41½°, being ¾° lower than the value for the corresponding week in 1876. The highest was 42½° at both Glasgow and Leith, and the lowest 40¼°, at Dundee and Aberdeen.

Rain.—Rain fell at Greenock to the amount of 5½ inches, whilst at no other place did the fall exceed 1¾ inch, at Edinburgh only half an inch fell. The average fall over the country was 1¾ inch.

DUBLIN.—The highest temperature was 54¼°, the lowest 28¾°, the range 25½°, the mean 42°, and the fall of rain half an inch.

JAMES GLAISHER.

Variorum.

CYCLAMENS.—The display of Cyclamens made this season by Mr. H. B. Smith at the Ealing Dean Nursery exceeds in extent and excellence anything that has preceded it. Something like 14,000 plants can now be seen in various stages of growth, from those now in full bloom to others that will not blossom till April. What strikes us is the evidence on every hand that the very utmost is got out of a plant without loss of vigour, and there is an admirable balance of flowers and foliage. Not less than five houses are filled with these beautiful subjects, but there are frames full to overflowing that will by-and-by furnish a market supply. The most forward plants, numbering several hundreds, are in full bloom, heads of large flowers, fine in shape and charmingly varied in colour, surmount large, vigorous leaves, in many instances handsomely marked. One is more impressed than ever with the fact that the Cyclamen, when well managed is a foremost autumn and winter flowering plant, almost unrivalled for decorative effect. So well are the plants managed throughout, that Ealing Dean may be regarded as the head quarters of Cyclamen culture. Just now, as the production of flowers for the Christmas season is all important, the plants are kept rather close, but sprinkled overhead every morning with a fine rose; a little heat is applied, and sufficient air to keep the plants from drawing. The pure white varieties are particularly conspicuous, and they are generally associated with finely marked foliage; they are also more vigorous in growth than the deeper coloured types. Mr. Smith has a wonderfully fine strain, selected from the grandiflora section, in which the flowers are of enormous size, the foliage correspondingly bold. There are something like 500 or 600 plants, in 48 and 32-sized pots, just coming into flower. The seedling house is an object of considerable interest just now. It contains 14,500 plants, twelve in a 48-pot, and the fertilising power of the seed is shown by the fact that there is scarcely a failure to be detected. Later on, these plants will all be potted off singly into small 60-pots, and grown on into size to flower next autumn and winter.

Answers to Correspondents.

ASPARAGUS: *T. Kelly.* Under the circumstances we should risk removing the plants. If raised and planted with care they would probably do fairly well if the season is not too continuously wet to rot the roots while dormant.

CHRYSANTHEMUM: *H. Cannell.* Your bronzy sport from George Glenny is a very neat and pretty flower, but very much in the way of E. Sanderson, mentioned by us last week.

CUCUMBERS: *H. J. C.* The roots of your Cucumber plants have been attacked by a minute Vibrio, of which an illustration has more than once been given in the *Gardeners' Chronicle.* It will be absolutely necessary to have entirely fresh soil and to lime wash the walls burning the diseased plants. *M. J. B.*

CYCLAMEN: *J. A.* Not common, though we have seen similar instances before, and figured a more perfect specimen in our number for December 16 last year (p. 785).

CAMELLIAS: *R. G. S.* The grafting has nothing to do with it. The want of success with foreign-grown plants is no doubt owing to the practice of shifting them too suddenly into soil of a different character.

DEODARS: *D. Belfast.* You may cut them in spring, just before they make fresh growth.

FRUIT STAINS: *A. G. S.* Try chlorinated soda.

GRAPES, IMPERFECT SWELLING OF: *G. W.* Your Grapes appear to show a case of defective storing.

HOLLY LEAVES DROPPING OFF: *Cor.* We can only suggest that the Hollies have suffered from the vapours of some chemical works.

LICHEN ON FRUIT TREES: *J. F. D.* The presence of Lichens indicates either a damp soil or a close situation, which should be remedied. Then scrape the stems with some blunt instrument, and dust them with wood-ashes when damp.

NAMES OF FRUITS: *J. E.* 1, Small's Admirable; 2, Dutch Mignonne; 5, Lemon Pippin; 4, Golden Noble, others not known.—*L. Bryan.* 1, Scarlet Nonpareil; 2, Formosa Nonpareil; 3, rotten; 4, Baxter's Pearmain.—*J. F.* 1, Dumelow's Seedling; 2, Fearn's Pippin, others not known.

NAMES OF PLANTS: *R. H. V.* The proper name of the plant, known in gardens as Eucharis candida, is Calliphruria subedentata. It was figured and described in the *Botanical Magazine* for April last, tab. 6289. We believe it flowers freely at the Pine-apple Nursery, and will ask Mr. O'Brien to tell us how he manages it. —*Philomathes.* 1, Calanthe vestita; 2, Maxillaria picta; 3, Zygopetalum crinitum; 4, Begonia Dregei; 5, B. Saundersii; 6, B. incarnata; 7, Pentas carnea. —*Wood & Ingram.* Phacelia Menziesii.—*Dublin Subscriber.* A. Casuarina, but impossible to say which species.—*F. Jones.* We cannot name plants from leaves only.

OAK: *C. B. S.* The leaves appear to be those of the Fulham Oak, but they are very large. We will compare them and let you know the result.

PARAFFIN: *G. W.* We have never tried it on the leaves of stove plants, nor should we care to do so while there are plenty of insecticides that we know to be safe. It is impossible for us to say to what extent paraffin should be diluted to render it safe, and at the same time efficacious, because it is not always sold of the same strength.

PRIMULAS: *W. Heath & Son.* Three solitary flowers are not enough to enable us to say anything in favour of a strain of Primulas. What we have received may be included amongst the good ones.

VINES: *C. D.* Prune now at any time, keeping the house cool afterwards till you require to start forcing.

WELLINGTONIA: *T. S. P.* Sequoia gigantea is the proper name of the tree, popularly called Wellingtonia. The Red-Cedar still retains the name of Taxodium sempervirens.

WINTER FLOWERS: *C. D.* Consult the articles on winter flowers published by us last week. You might also have Pelargoniums, Centropogons, Justicias, Libonias; and by a little forcing Astilbe (Spiræa japonica), Roman Hyacinths, Eucharis, Lily of the Valley, &c.

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CATALOGUES RECEIVED.—Ernest Benary (Erfurt, Germany), General Catalogue of Vegetable, Agricultural, Flower and Tree Seeds, &c.—G. Hock's (Gumpen-

dorferstrasse, 35, Wien), Catalogue of Decorative Objects.—Sutton's Amateurs' Guide in Horticulture for 1878. — Howden & Co. (Inverness Nurseries), Catalogue of Nursery Stock.

COMMUNICATIONS RECEIVED.—H. K.—G. T. M.—W. H.—W. C.—J. S.—O.—J. C.—W. B.—W. P.—W. H.—W. D. P.—G. C.—R. M.—B. B.—F. P.—M. W.—E. Fengi (enclosures with thanks).—J. S.—R. H.—J. H. B.—E. C.—W. P.—N. E. B.—C. S.—J. Decaisne.—E. M.—J. M.—J. A.—H. G. C.—W. W. R.—Haage & Schmidt.—L. T. D.

Markets.

COVENT GARDEN, December 20.

This being Christmas week, our market naturally wears a more lively aspect, but business is not what it ought to be, buyers holding aloof till Saturday's market. The supply of vegetables has been above the average, and prices have ruled low. Amongst Apples the commoner sorts have been in excess of the demand, while first-rate varieties, though making only average prices, have been short. Pears have been mainly supplied from the Continent, prices averaging higher than for several years past, but owing to the forward season, they are nearly over. A very short supply of Cobs lately has temporarily enhanced their value. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6– 6 0	Oranges, per 100	2 6–12 0
Grapes, per lb.	1 6– 6 0	Pears, per doz.	2 0–10 0
Lemons, per 100	4 0–12 0	Pine-apples, per lb.	1 6– 6 0
Nuts, Cobs, per lb.	0 4– 0 6		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 6– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per packet	1 0– ..	Lettuces, per score	2 0– ..
Beet, per doz.	1 0– 2 0	Mint, green, bunch	0 6– ..
Brussels Sprouts, p. bush.	6 0– ..	Mushrooms, per pott.	1 0– 3
Cabbages, per doz.	1 0– 2 0	Onions, per bushel	3 6– ..
Carrots, per bunch	0 4– 0 6	— young, per bun.	0 6– ..
— new, Fr., bunch	1 6– ..	Parsley, per bunch	0 4– ..
Cauliflowers, per doz.	1 6– 4 0	Peas (green), per qt.	1 0– ..
Celery, per bundle	1 6– 2 0	Potatos (new), pun.	1 0– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	1 0– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Batavian, p. doz.	1 6– ..	Rhubarb, per bun.	1 0– ..
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Herbs, per bunch	0 2– 0 4	Seakale, per punnet	2 0– ..
		Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 6 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90s. to 110s.; Kent Regents, 100s. to 140s.; Kent Kidneys, 140s. to 160s.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Arum Lily, per doz.	9 0–18 0	Lily of Val., 12 spr.	4 0–12 0
Azalea, 12 sprays	1 0– 3 0	Mignonette, 12 bun.	6 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, various, per doz.	2 0– 4 0
Camellia blms., doz.	9 0–24 0	Pelargoniums, 12 spr.	1 0– 3 0
Carnations, 12 blooms	1 6– 4 0	— zonal, 12 sprays	0 6– 1 6
Christmas Roses, 12 blooms	0 9– 2 6	Poinsettias, per doz.	4 0–12 0
Chrysanth., 12 blms.	2 0– 6 0	Primula, double, per bunch	1 0– 2 0
Epiphyllum, 12 blms.	1 0– 3 0	Roses (indoor), doz.	2 0–12 0
Eucharis, per doz.	8 0–12 0	Stephanotis, 12 spr.	9 0–18 0
Euphorbia jacquiniæfolia, 12 sprays	2 6– 6 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz.	9 0–18 0	Tuberoses, 12 blms.	2 0– 4 0
Heliotropes, 12 spr.	0 6– 1 0	Tulips, per doz.	2 0– 3 0
Hyacinths, Rom. doz.	2 0– 4 0	Violets, 12 bunches	1 0– 3 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azalea, per dozen	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–12 0	Fuchsias, per dozen	6 0–12 0
Bouvardias, do.	12 0–24 0	Hyacinths, per doz.	10–0–18 0
Camellia, var., doz.	30 0–60 0	Mignonette, per doz.	6 0– 9 0
Chrysanth., per doz.	9 0–12 0	Myrtles, do.	6 0–12 0
Clematis	12 0–24 0	Narcissus, per doz.	15 0–24 0
Coleus, per dozen	6 0– 9 0	Palms in variety, each	3 6–21 0
Cyclamen, per doz.	12 0–24 0	Pelargon., scarlet, p. dozen	6 0–12 0
Cyperus, do.	6 0–12 0	Poinsettias, per doz.	12 0–24 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Scilla, per dozen	6 0–12 0
Erica Hyemalis, doz.	12 0–42 0	Tulips, per dozen	10 0–18 0
— gracilis, per doz.	6 0–18 0	Valotta purpur., doz.	9 0–18 0
Euonymus, var., doz.	6 0–24 0		
Ferns, in var., p. doz.	4 0–18 0		
Ficus elastica, each	2 6–15 0		

*** The demand for flowers being much increased for Christmas decorations, &c., the above prices must only be taken as a guide, and must not be fully relied on.

SEEDS.

WEDNESDAY: *Dec.* 19.—The close of the year being so near at hand, the seed market has assumed its usual holiday appearance, and the actual business doing has shrunk into very narrow proportions. Notwithstanding, however, this present inactivity, which will probably continue for two or three weeks longer, there is a firm healthy feeling in the trade, values for all descriptions being well maintained. French Cloverseed continues in abundant supply, and the quality this year is satisfactory. In America, the cable reports red seed to be £1 per ton cheaper; but, even at this concession, there is no temptation to English buyers to import from that country. In fact, before the United States can obtain an European outlet for their surplus stock, either prices in France must advance, or prices in America decline. Taking quality into account, Western seed does not compete with French by some 2s. to 3s. per cwt. As regards English red Clover and Cow-grass, a few more samples are now appearing on Mark Lane, but the transactions have as yet been too small to definitely establish values. White Clovers keep very steady; but in Alsike, the tendency favours the buyer. In spite o the neglect with which Trefoil has for some time been treated, quotations exhibit continued strength, owing, no doubt, to the great scarcity here of the article, and also to the absence of the usual Continental offers. Good black Rape seed is 1s. to 2s. per qr. dearer; but, in Mustard, there is no alteration. Canary seed finds occasional buyers at full rates, but dealings are naturally contracted by the approach of Christmas. For feeding Linseed the trade is inactive, the supply having lately been in excess of the demand. There is a quiet sale for blue Peas at last Monday's figures. Haricot Beans are now obtainable on very moderate terms. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was very quiet. There was no appreciable change in prices; but the tone as regards Wheat was distinctly easier, and, though holders were not anxious to force sales, it was necessary to make some concession to conclude business. Barley was cheaper to sell; and in the value of Oats a slight reduction was reported for the week. Malt was dull, but without quotable change. Maize, too, supported previous figures; while Beans and Peas were without alteratioo. Flour was heavy, without being decidedly cheaper.—Wednesday's market was very dull, but with Christmas close at hand any activity in the market is not expected. Holders, as before, were not over anxious sellers, and, though prices were in favour of buyers, no actual change was reported from Monday. —Average prices of corn for the week ending December 15:—Wheat, 51s. 7d.; Barley, 44s.; Oats, 24s. For the corresponding week last year:—Wheat, 50s. 4d.; Barley, 38s. 10d.; Oats, 25s. 4d.

CATTLE.

The annual market for the sale of fat stock for Christmas was held at Copenhagen Fields on Monday. Taken altogether the show must be classed as a fair success. The number of beasts was in excess of last year, and there was a greater proportion of choice breeds. At the same time second-rate animals were far from scarce. The chief point of interest was the large supply from Scotland, about 2300 head having been received. This was a marked increase over last year, whilst the quality and condition were fully as good. In fact, seldom has such a fine display of choice kinds been seen. Crossbred stock was well represented, and there was also a good show of Herefords and Devons. Ireland contributed a good supply, and it was satisfactory to observe that there was some amelioration in their condition. There was a very thin representation of foreign stock. It may here be noted that there were shown in 1847, of beasts, 4282, selling at prices ranging between 3s. 4d. and 4s. 8d.; in 1857 there were 6856, at the same figures; in 1867 there were shown 8110, selling at from 3s. 4d. to 5s.; and this year the number on show was 7510, those sold fetching from 4s. 6d. to 6s. — last year's prices being 4s. 4d. to 6s. 4d. per 8 lb. As regards sheep the supply tell considerably short of last year. There were some fine specimens exhibited, including an occasional prize taker from the Agricultural Hall. The general appearance of the stock in some measure compensated for the shortness of the supply—the numbers being, home, 11,960; foreign, 200. Prices ranged between 5s. 6d. and 6s. for coarse and inferior, and 6s. 8d. to 7s. for prime sorts. Calves and pigs were quiet, the former at from 5s. to 6s. 6d., the latter at from 3s. 6d. to 4s. 6d. —The cattle trade on Thursday was decidedly dull. Beasts were in excess of the average for a Thursday, most butchers being already supplied. The demand ruled heavy, and quotations were lower than on Monday. Sheep were not plentiful, but they sold slowly at drooping prices. Calves and pigs were quiet.

HAY.

From Tuesday's Whitechapel report we learn that there was a good trade for fodder, with a rather large supply. The quotations were:—Prime Clover, 100s. to 138s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 105s.; inferior, 70s. to 85s.; and straw, 44s. to 55s. per load.—Cumberland Market quotations:—Superior meadow hay, 100s. to 112s.; inferior, 80s. to 90s.; superior Clover, 126s. to 135s.; inferior, 95s. to 110s.; and straw, 54s. to 60s. per load.

POTATOS.

From the Borough and Spitalfields markets reports we glean that the arrivals continue upon a moderate scale, and trade remains quiet. Quotations are as follows:—Kent Regents, 150s. to 165s.; Essex ditto, 140s. to 155s.; rocks, 100s. to 120s.; kidneys, 120s. to 140s.; flukes, 160s. to 180s.; Victorias, 150s. to 180s. per ton.—The Potatos received at the port of London during the past week comprised 39,659 bags from Hamburg, 12,910 Stettin, 3129 Ghent, 2854 Antwerp, 1410 Rotterdam, 1123 Boulogne, 1434 Dunkirk, 164 tons Dantzig, 214 sacks Caen, 99 tons Rouen, and 93 Groningen.

COALS.

The prices current at market on Monday were as follows:—Bedside West Hartley, 16s. 3d.; Walls End—Hetton, 18s. 6d.; Hetton Lyons, 16s. 3d.; Hawthorns, 16s. 3d.; Lambton, 18s.; Original Hartlepool, 18s. 6d.; South Hetton, 18s. 6d.; East Hartlepool, 18s. 3d.; Tees, 18s. 6d. Wednesday's transactions were at the following figures:—Springwell Hartley, 16s. 3d.; Walls End—Hetton, 18s. 6d.; Hetton Lyons, 16s. 3d.; Lambton, 18s.; Original Hartlepool, 18s. 6d.; Tunstall, 16s. 3d.; Vanes, 16s. 3d.; Hartlepool, 17s. 6d.; East Hartlepool, 18s. 3d.; Tees, 18s. 3d.

Estd. 1844.

THE

Royal Norfolk Seed Establishment.

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THE

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AMATEUR GARDENERS,

Spring, 1878.

Containing 116 pages of beautifully illustrated Letterpress, complete Directions for the successful Management of the Kitchen Garden and Flower Garden throughout the year, with Original Articles on the Cultivation of various Flowers and Vegetables, a Select List of Choice Kitchen Garden and Flower Seeds, Lilies, Gladioli, Seed Potatos, &c. Also a superbly finished Coloured Plate, the whole enclosed in a charmingly beautiful Cover of a new and elegant design.

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THE QUEEN'S SEEDSMEN,

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LARGE EVERGREEN and DECIDUOUS TREES, for immediate effect :—
ACACIA, White Flowered, 9 to 10 feet high, 24*s.* per dozen.
ASH, Mountain, Scarlet Berried, 8 to 9 feet, 12*s.* per dozen ; 10 to 12 feet, 18*s.* per dozen.
BIRCH, Silver Barked, 8 to 10 feet, 18*s.* per dozen.
SYCAMORES, Common, 10 to 12 feet, 18*s.* per dozen.
CHESTNUT, Spanish, 8 to 10 feet, 18*s.* per dozen ; 10 to 12 feet, 24*s.* per dozen.
,, Horse, 8 to 10 feet, 12*s.* per dozen ; 10 to 12 feet, 24*s.* per dozen.
ELMS, Common, 8 to 10 feet, 12*s.* per dozen.
LABURNUMS, English, 8 to 10 feet, 30*s.* per dozen.
LIMES, Red-twigged, 9 to 10 feet, 42*s.* per dozen.
POPLARS, Aspen, 12 to 14 feet, 24*s.* per dozen ; 16 to 20 feet. 36*s.* per dozen.
,, Black Italian, 10 to 12 feet, 18*s.* per dozen ; 16 to 20 feet, 36*s.* per dozen.
,, Lombardy, large leaf, 12 to 14 feet, 24*s.* per dozen ; 16 to 20 feet, 36*s.* per dozen.
THORNS, Paul's Double Crimson, 8 to 10 feet, 30*s.* per dozen.
The above are all well grown, straight as rods, and have been frequently transplanted.

Evergreen Trees.

ARBOR-VITÆ, Siberian, 7 to 8 feet, 30*s.* per dozen.
ABIES DOUGLASII, 7 to 8 feet, 42*s.* per dozen.
CUPRESSUS LAWSONIANA, 5 to 6 feet, 24*s.* per dozen ; 6 to 7 feet, 42*s.* per dozen.
LAURELS, Common, 6 to 7 feet, 10*s.* per dozen, 75*s.* per 100.
,, caucasicum, 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100.
,, Portugal, 8 to 9 feet, pyramids, 60*s.* per dozen.
PINUS AUSTRIACA, 8 to 10 feet, 60*s.* per dozen.
YEWS, English, 5 to 6 feet, pyramids, 24*s.* per dozen, £7 10*s.* per 100.

FREDERICK PERKINS can with confidence recommend the above Evergreens to remove any distance, being all transplanted spring, 1877.
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WILLS' ELIXIR.—This Manure produces the most marvellous and enduring effects on all kinds of Fruits grown under glass, such as Vines, Pines, Peaches, Strawberries, Melons, Cucumbers, and all kinds of Flowering and Foliage Plants. It is equally effective when applied to Fruits and Flowers growing in the open air. It is very light, 1 cwt. being equal to 6 cwt. of any other manure ; it is also free from all objectionable smells.

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"MR. J. WILLS. "A. F. BARRON."

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Boiler Number.	Length.	Width.	Height.	No. of Top Sections.	Surface Exposed to the Flame.	Calculated Heating Power. 4-in. pipe.	Recommended for 4-in. pipe.	Price.		
	ft. in.	ft. in.	ft. in.		ft.	ft.	ft.	£	s.	d.
1 A	2 0	1 6	1 10	2	13	520	400	10	0	0
2 A	2 0	1 6	2 2	3	17½	700	500	11	10	0
3 A	2 0	1 6	2 6	4	22	880	600	13	0	0
4 A	2 0	1 6	2 10	5	26½	1,060	700	14	10	0
5 A	2 0	1 6	3 2	6	31	1,240	..	16	0	0
6 A	2 0	1 6	3 6	7	35½	1,420	..	17	10	0
1 B	2 6	2 0	2 4	2	20	800	650	14	10	0
2 B	2 6	2 0	2 9	3	27½	1,100	750	17	0	0
3 B	2 6	2 0	3 2	4	35	1,400	850	19	10	0
4 B	2 6	2 0	3 7	5	42½	1,700	950	22	0	0
5 B	2 6	2 0	4 0	6	50	2,000	..	24	10	0
6 B	2 6	2 0	4 5	7	57½	2,300	..	27	0	0
0 C	3 0	2 0	1 11	1	18	720	700	16	10	0
1 C	3 0	2 0	2 4	2	27	1,080	1,000	20	0	0
2 C	3 0	2 0	2 9	3	36	1,440	1,300	23	10	0
3 C	3 0	2 0	3 2	4	45	1,800	1,600	27	0	0
4 C	3 0	2 0	3 7	5	54	2,160	1,900	30	10	0
5 C	3 0	2 0	4 0	6	63	2,620	..	34	0	0
6 C	3 0	2 0	4 5	7	72	2,880	..	37	10	0
0 D	3 6	2 6	1 11	1	24½	980	850	20	0	0
1 D	3 6	2 6	2 4	2	37½	1,500	1,500	25	0	0
2 D	3 6	2 6	2 9	3	50½	2,200	2,200	30	0	0
3 D	3 6	2 6	3 2	4	63½	2,540	2,540	35	0	0
4 D	3 6	2 6	3 7	5	76½	3,000	3,000	40	0	0
5 D	3 6	2 6	4 0	6	89½	3,580	..	45	0	0
6 D	3 6	2 6	4 5	7	102½	4,100	..	50	0	0
0 E	4 0	3 0	1 11	1	30	1,200	1,100	27	10	0
1 E	4 0	3 0	2 4	2	48	1,920	1,900	35	0	0
2 E	4 0	3 0	2 9	3	66	2,640	2,600	42	10	0
3 E	4 0	3 0	3 2	4	83½	3,340	3,300	50	0	0
4 E	4 0	3 0	3 7	5	101½	4,060	4,000	57	10	0
5 E	4 0	3 0	4 0	6	119½	4,780	..	65	0	0
6 E	4 0	3 0	4 5	7	137	5,480	..	72	10	0

We can supply Foundation Plates—which form Ash-pit—and Smokestacks, if wanted, thereby doing away with the necessity for even a single brick in their erection.

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Foundation Plate	35	0	45	0	60	0	75	0	90	0
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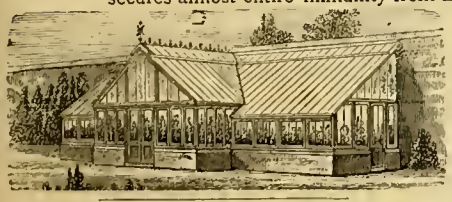
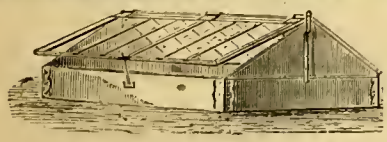
secures almost entire immunity from Breakage of Glass, extreme facility for Repairs, and absolute freedom from Drip.





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With "Truss" Hinge, and no Principals.
The Ridge always fits close, the interior is free from all obstruction, the corners are secured in iron angle plates: 21-oz. glass.

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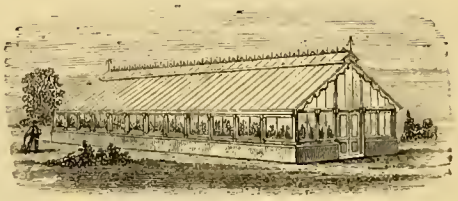

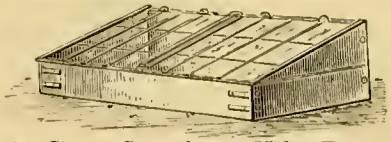

Extra Strong Cucumber or Melon Frames,
With 2-inch sashes and 1½-inch red deal frames, secured at each corner with two wrought-iron strap bolts. Glazed, without putty, with 21-oz. glass.

Horticultural Pottery, Bristol.

W. MAULE AND SONS are now Manufacturing for Spring Delivery, a cheap and useful size POT, for Bedding and other Plants.

LONG and SHORT TOMS, 2s. 9d. and 2s. 1d. per 100.

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Can be obtained in all sizes and qualities, of

BETHAM & SON,

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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

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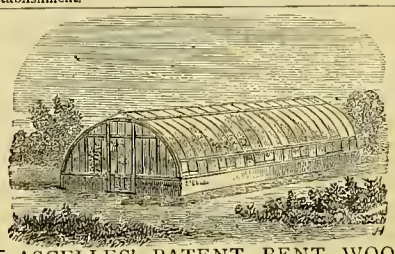

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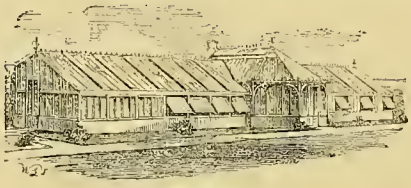

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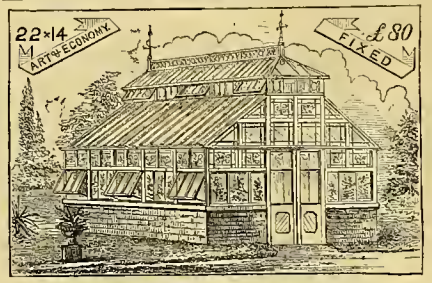

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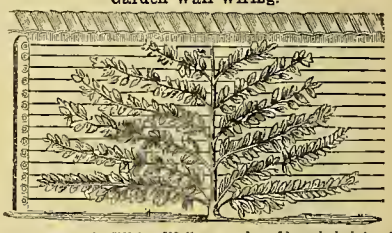

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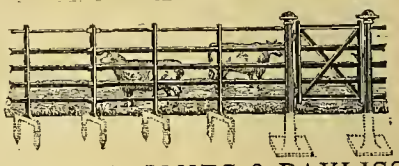

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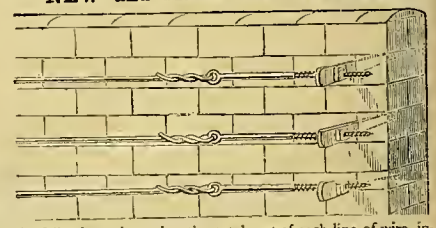

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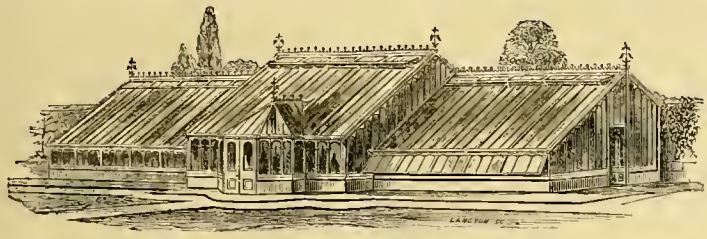

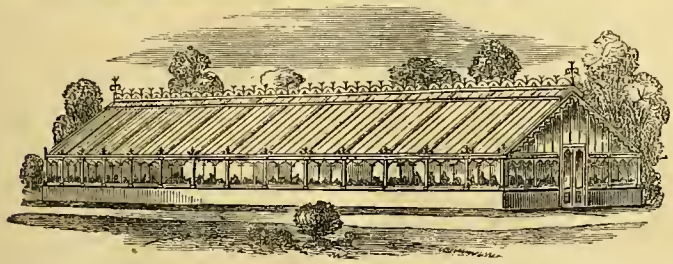

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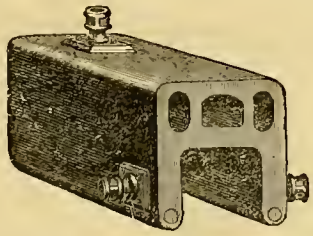

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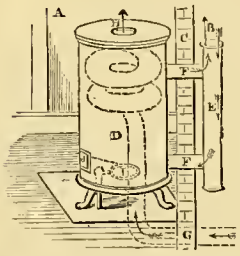

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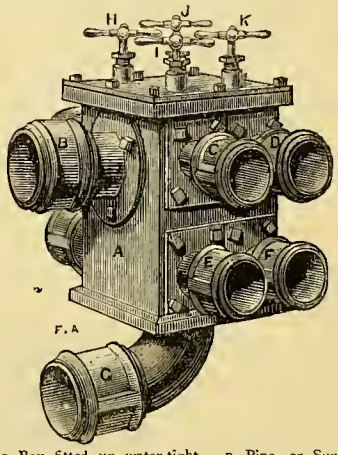

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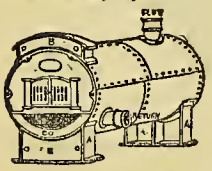

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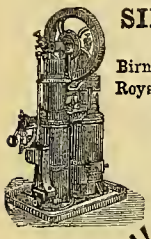

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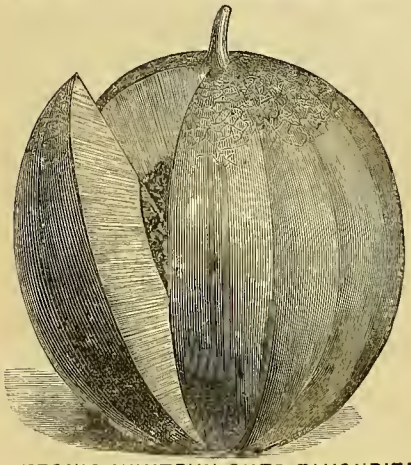

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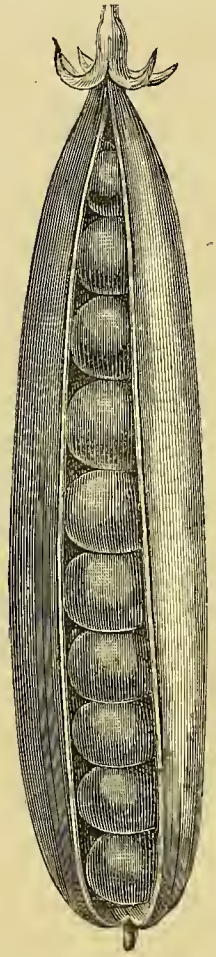

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RODGER, McCLELLAND AND CO., Nurserymen, &c., Newry.

DWARF ROSES, on the cultivated Seedling Brier, of the leading Exhibition varieties, 9*s.* per dozen, package free. Cash to accompany order.
JOHN HOUSE, F.R.H.S., Eastgate Nurseries, Peterborough.

SPECIMEN and FINE FOLIAGED TREES and SHRUBS for immediate effect, FRUIT TREES, ROSES, &c. An inspection solicited.
CATALOGUES on application.
H. LANE AND SON, The Nurseries, Berkhamsted, Herts.

Roses, Fruit Trees, &c.

WILLIAM FLETCHER'S CATALOGUE for the present season is now ready, and may be had on application. The stock is very large and most healthy.
The Ottershaw Nursery, Chertsey.

ORCHARD-HOUSE TREES, Fruiting in Pots :—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

SUPERB NEW BEGONIAS.—Hybrids of the finest new named sorts. Some of these Seedlings have this year been valued by the best English authority at Ten Guineas each. Will prove most magnificent Bedding as well as House Plants. Per packet, 2*s.* 6*d.* and 5*s.*
AUSTIN AND McASLAN, 16, Buchanan Street, Glasgow.

LARGE TREE BOX.—Handsome, bushy, and well rooted, 5, 6, 7 and 8 feet high. Tree Box live under trees better than any other evergreen tree. Prices on application. An inspection invited.
T. JACKSON AND SON, Nurseries, Kingston, Surrey.

BULBOUS BEGONIAS.—Seed saved from the newest varieties, including Acme, Diamant, Emperor, Excelsior, Paul Masurel, White Queen, &c., in separate or mixed packets, with Cultural Directions. Bulb Orders for spring delivery booked.
JOHN LAING AND CO., Stanstead Park, Forest Hill, S.E.

FRUITING PLANTS of ORANGES, St. Michael's, Blood and Tangierine, can be supplied by THOMAS RIVERS AND SON, Nurseries, Sawbridgworth, Herts. Price and List of sorts on application.

ASPARAGUS.—Many thousand fine selected 4-yr. old Roots, at 2*s.* per 100. Packages for quantities of 400 and under, 1*s.* 6*d.* each. Terms, Cash with order. R. BATH, Crayford.

ASPARAGUS, for Forcing or Planting.—A large quantity for Sale for cash. For samples and prices, apply to
H. McMILLAN, Nurseryman, Kingston-on-Thames.

ASPARAGUS ROOTS.—Very superior lot of Connover's Colossal, 1, 2, and 3-yr. Also very fine CLUMPS for forcing.
C. R. FREEMAN, Seed Grower, Norwich.

RHUBARB, SEAKALE and ASPARAGUS, Extra Strong for Forcing. Price on application to
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

JOHNSTONE'S ST. MARTIN'S RHUBARB.—Earliest and best in cultivation, strong roots, 9*s.* per dozen. Trade price on application.
GENERAL NURSERY TRADE LIST now ready.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

Choice Potatos for Planting.

OUR PRICE LIST of leading kinds, such as Myatt's Prolific, Victoria, Veitch's Ashleaf, Snowflake, Magnum Bonum, and the new American varieties, will be sent on application.
J. and G. McHATTIE, Seed Merchants, Chester.

420,000 Packets of

CHOICE FLOWER SEEDS are now in course of Preparation for Advertiser, who is introducing an unequalled 1*s.* Collection for 1878, comprising 100 varieties, in 24 separate packets; specimen, post-free, 1*s.* 2*d.* An Agent is wanted in every town.
E. ROVDS, High Wycombe, Bucks.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgworth, Herts.

NUTTING AND SONS' Wholesale Garden and Flower Seed CATALOGUE is now published. A copy has been posted to their Friends. Any one not having received it, upon application another shall be sent.
Seed Warehouses, 60, Barbican, London, E.C.

Covent Garden Seeds, Genuine Stocks.

HOOPER'S WHOLESALE SEED CATALOGUE is now ready. Apply to
HOOPER AND CO. Covent Garden, London, W.C.

AMERICAN TUBEROSES.—Magnificent Bulbs, the finest ever offered, 5*s.* 6*d.* and 7*s.* 6*d.* per dozen. Trade prices per 100 or 1000 on application.
HOOPER AND CO., Covent Garden, London, W.C.

SPIRÆA (HOTEIA) JAPONICA.—The above can be had, in fine clumps for forcing, at 16*s.* per 100, £7 per 1000, or £60 per 10,000.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

CHRISTMAS ROSES, 20,000. HEPATICA CŒRULEA, 8,000. May be had from
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

SPIGELIA MARYLANDICA.—Beautiful perennial, of gay appearance. Strong flowering plants, with many crowns, at 64*s.* per 100.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

PANDANUS UTILIS.—Extensive stock of this splendid ornamental plant, at 20*s.* per 100, 180*s.* per 1000. Extremely healthy, 6, 8 and 10 inches high and upwards.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.
N.B. English CATALOGUE post-free.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING

GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

WANTED, DRACÆNA TERMINALIS, in large and small quantities.
W. HOWARD, Avenue Road, Southgate, N.

WANTED, a large NECTARINE, to carry a crop next year, on a stem about 3 feet. Pine-apple or Violet Hâtive preferred. State price and dimensions.
FISHER, HOLMES AND CO., Handsworth Nurseries, Sheffield.

WANTED, strong Crown Bob GOOSEBERRIES. For Sale, trained Morello CHERRIES, by the dozen or hundred.
T. EVES, Gravesend Nurseries.

Early Coldstream Potatos.

WANTED, a quantity of the above; must be a good sample and true to name. State price to
JAMES VEITCH AND SONS, Royal Exotic Nursery, Chelsea, S.W.

Planting Season.

E. BURGESS begs to offer the following :—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet; Spruce FIRS.
Prices on application.
The Nurseries, London Road, Cheltenham.

To the Trade.

HEPATICAS, single blue, 12*s.* 6*d.* per 100, 100*s.* per 1000.
PRIMROSE, single crimson, fine, 10*s.* per 100, 90*s.* per 1000.
RODGER McCLELLAND AND CO, 64, Hill Street, Newry.

ORCHIDS.—For Sale, cheap, a quantity of CALANTHE VESTITA RUBRO-OCCULATA; also about 100 Bulbs PLEIONE WALLICHII. For price per dozen or 100, apply to
S. WOOLLEY, Cheshunt, Herts.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, intimates that his New General CATALOGUE of NURSERY STOCK, of fifty pages, will be forwarded on application for three stamps, free to Purchasers, consisting of one of the best grown stocks in Europe.
Specialties—Roses, Fruit Trees, and Rhododendrons.

First-class Nursery Stock.

WITTY AND SON have to offer dwarf-trained PEACHES and NECTARINES. Also pyramid and standard APPLES, PEARS, PLUMS, and CHERRIES. An immense stock of EVERGREEN SHRUBS of first-class quality.
The Nurseries, Cottingham, near Hull.

Pansy Seed.

DOWNIE AND LAIRD have much pleasure in offering Show and Fancy Pansy Seed, saved from the finest named Flowers. Price on application.
DOWNIE AND LAIRD, 17, South Frederick Street, Edinburgh.

Planting Season, 1877-78.

JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks, invite the attention of Intending Planters to their large and varied STOCK, which, having been recently transplanted, is in the finest possible condition for removal. Liberal terms to large buyers.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium, CATALOGUES free on application.
Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Forest and Ornamental Trees and Shrubs.

LITTLE AND BALLANTYNE, Nurserymen and Seedsmen to the Queen, Carlisle, have issued their Autumn Priced LIST, which will be sent free by post on application.

80,000 Ponticum Rhododendrons.

JOHN STANDISH AND CO. have an immense stock of PONTICUMS to offer, suitable for Cover Planting. Prices on application.
Royal Nurseries, Ascot, Berks.

A Specially Cheap Offer.

PICEA NORDMANNIANA, perfect symmetrical specimens, 3, 4, 5, to 6 feet, at 3*s.*, 4*s.*, 5*s.*, and 6*s.* each; less per dozen. Quotations to the Trade on application to
GEORGE JACKMAN AND SON, Woking Nursery, Surrey.

SPANISH CHESTNUT, LARCH, ASH, ALDER.—A large quantity, well rooted, transplanted. Trade liberally dealt with.
GEORGE CHORLEY, Midhurst, Sussex.

A Special Offer.

FIFTY THOUSAND OAKS, 5, 6, 7, 8, 9, to 10 feet; ELM, 8, 9, 10, 11, to 12 feet; SYCAMORE, SPRUCE, &c. Prices on application to
M. AND A. CUNNINGHAM AND CO., The Forge Nurseries, Burton-on-Trent.

English Yews, English Yews.

ENGLISH YEWS, 3½ to 4 feet, 12*s.* per doz., 80*s.* per 100; 4 to 4½ feet, 18*s.* per doz., 100*s.* per 100. All recently transplanted. Every plant a perfect specimen.
JOHN PERKINS AND SON, 52, Market Square Northampton.

YEWS, in splendid condition for making hedges, &c., well furnished and rooted. Gentlemen wishing to plant hedges can select as good ones as can be seen anywhere, 3½ to 4½ feet, 90*s.* per 100.
JOSEPH SPOONER, Goldworth, Woking.

HOLLIES and YEWS.—A large quantity of Green and Variegated, both new and old varieties, to be Disposed of, in large or small lots; all recently transplanted, and in good condition for removal. Many of the Hollies are beautifully berried and admirably adapted for Christmas Trees.
GARDENER, St. Peter's Vicarage, Coventry.

To the Trade.

POTATO ONION, medium size, sound and good. MYATT'S ASHLEAF KIDNEY POTATOS, pure selected stock and free from disease. Price per cwt. or ton on application.
W. TAIT AND CO., 45, Capel Street, Dublin.

SALES BY AUCTION.

Lilium auratum, Kramerii, &c.

SALE of 6000 magnificent bulbs of LILIUM AURATUM, 2000 L. KRAMERII, 1000 RUBRUM and ALBUM NOVUM, 500 PEPPO YUN, just arrived from Japan, in splendid condition; also a beautiful collection of English-grown LILIES, including giganteum, Szovitzianum, dalmaticum, neilgherrense, Maximowiczii, Brownii; CALOCHORTUS and CYCLOBOTHRA in variety; CYPRIPEDIUMS; 2500 French, Hybrid, and other GLADIOLI; CHRISTMAS ROSES, fine American TUBEROSES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION at the Mart, Tokenhouse Yard, E.C., on MONDAY, January 7, at half-past 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at 98, Gracechurch Street, E.C.

Lilium auratum Just Arrived From Japan.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 3, at half-past 12 o'Clock precisely, 10,000 splendid BULBS of LILIUM AURATUM, just arrived from Japan in the best possible condition; also a quantity of other LILIES and BULBS.

On view the morning of Sale, and Catalogues had.

Bristol (4338).—To Florists and Others.

FOR DISPOSAL, in a good neighbourhood, a small FLORIST'S BUSINESS. Comprises a nine-roomed Residence, also Shop, Show-house, and other Glass Erections belonging to Vendor, and standing on 1½ acre of land. Rent on lease, £41 10s. Price £230. Stock optional. For further particulars apply to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

To Gardeners with Capital and Fruit Growers.

TO BE LET on LEASE, with immediate possession, a GARDEN of several acres, laid out purposely for fruit-growing, and now in full production. Large Vineries, Forcing-houses, Pits, &c., and extensive Brick walls, Stabling, Sheds, &c, Capital required, about £1000. Address, by letter only,

M. L., *Gardeners' Chronicle* Office, W.C.

THE AYLESBURY DAIRY COMPANY (LIMITED), St. Petersburg Place, Bayswater, London, W.

The Company have recently opened large Provision Stores, and are now supplying, in addition to MILK and CREAM, all descriptions of DAIRY FARM PRODUCE:—Hams, Bacon, Lard, Bath Chaps, and every kind of Cheese, both English and Foreign; also smoked and rolled Tongues, Potted Meats, &c. Foreign and Country Orders receive every attention. Cash remittance or Banker's reference required with Country Orders. Full Price Lists sent on application to

Mr. HENRY WHELAN, Secretary.

Evening Lectures to Working Men.

ROYAL SCHOOL of MINES, Jermyn Street, London, S.W.

The SECOND COURSE of the SESSION, consisting of SIX LECTURES on PERIODS of PHYSICAL DISCOVERY, by Professor Guthrie, F.R.S., will be commenced on MONDAY, January 7, at 8 o'Clock. Tickets may be obtained by Working Men only on the evening of Monday the 31st inst., from 7 to 10 o'Clock, on payment of 6d. Each applicant is requested to bring his name, address, and occupation, written on a piece of paper for which the ticket will be exchanged.

TRENHAM REEKS, Registrar.

TO EFFECT A CLEARANCE the following little LOT is offered:—

5000 RHODODENDRONS, 3 to 4 ft., fine, 75s. per 100.

Free into railway truck.

CHARLES NOBLE, Bagshot.

Swede and Yellow Turnip Seed.

WILLIAM JACKSON AND CO., The Nurseries, Bedale, Yorkshire, can supply the Seed Trade with about Fifty Bushels, home-grown. Samples, &c., on application.

WATKINS AND SIMPSON'S Wholesale CATALOGUE of VEGETABLE and FLOWER SEEDS is now published, and will be forwarded on application. A copy has been posted to all their customers; any one not having received it will oblige by letting them know.

Seed Warehouse: 1, Savoy Hill, Strand, W.C.; Seed and Trial Grounds: Feltham, Middlesex.

Vines—Vines—Vines.

B. S. WILLIAMS begs to announce that his VINES this year are in unusually fine condition, and are now ready for distribution.

NEW LATE-KEEPING BLACK GRAPE, "ALNWICK SEEDLING," price 21s. and 42s. each. For Detailed List and Descriptions, see BULB CATALOGUE.

NEW FIG, "HARDY PROLIFIC," price 10s. 6d. each. Extra sized fruiting plants, 21s. each.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.—Azalea amœna Caldwellii.

W. G. CALDWELL AND SONS beg to offer strong bushes of this fine improved variety (which at this early season is blooming profusely), at 18s. per dozen, £5 per 100.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

POTATOS.—The finest Collection of New Varieties ever sent out, and all the standard sorts of value, both English and American. Wholesale and retail.

CATALOGUE of

HOOPER AND CO., Covent Garden, London, W.C.

HOOPER'S NOVELTIES IN POTATOS for 1878, a splendid collection, quite unequalled.

To the Trade.

SEED POTATOS.

H. AND F. SHARPE'S SPECIAL PRICED LIST of SEED POTATOS is now ready. It comprises all the best sorts, both English and American. They have all been grown from carefully selected stocks, are free from disease, and the prices will be found very reasonable.

Seed Growing Establishment, Wisbech.

MESSRS. CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, London, W., have much pleasure to offer the following very beautiful and interesting NEW FRUITS, now offered by them for the first time:—

RUSSIAN TRANSPARENT APPLE.—In the *Journal of Horticulture*, December 21, 1876, "J., Lincolnshire," describes this valuable Apple as giving a "never-failing crop," and as being "a rent-paying tree" for cottage gardens. Mr. BEULAH, an experienced Lincolnshire Orchardist, confirmed this evidence of the usefulness and profitableness of this much neglected but desirable Apple. A tree that bears a never-failing crop, of excellent quality, as stated below by Dr. HOGG, must be as near perfection as possible, and a desideratum that cannot fail to be appreciated by Orchardists in general. The Russian Transparent Apple was brought from Moscow during Napoleon's campaign in Russia, by General Boucheret, who, noticing its hardiness and free growth, and believing it would be suitable for English gardens, brought a quantity of grafts to his home in North Lincolnshire, round which it became and has remained up to this time localised; and now, through the kindness of Mr. Beulah, we have been enabled to purchase all the available grafts from the original stock.

The following is from Dr. HOGG's *description*:—"Fruit large, roundish, somewhat oblate, narrowing towards the crown, where it terminates in several prominent ridges, flat at base; skin smooth and shining, grass green, strewed with large russet dots. Eye closed. Flesh very tender and juicy, with a pleasant sub-acid flavour, and a peculiar and agreeable aroma. I am convinced that this is one of the most valuable culinary Apples in cultivation, and is worthy of more than local fame."

Messrs. Charles Lee & Son have much confidence in introducing this desirable and profitable Apple to more extended cultivation. Strong Maiden Plants now ready, price 7s. 6d each.

HENSON'S SEEDLING GOOSEBERRY.—This excellent variety was figured in the *Florist and Pomologist* for May, 1874, a First-class Certificate having been awarded to it by the Fruit Committee of the Royal Horticultural Society in 1873. It was described as "a new and distinct variety of exceedingly good quality, of the hairy red section, and a good dessert fruit of medium size."

Messrs. Charles Lee & Son having purchased the entire stock of this valuable Gooseberry, they are now prepared to distribute it to the Public. Price per Plant, 3s. 6d.

The usual discount to the Trade.

SPRING FLOWERING PLANTS.

ANEMONE FULGENS, strong plants, established in pots, 1s. each, 10s. per dozen, 75s. per 100. This is the most dazzling scarlet, and commences to open its flowers in January and continues until May. Most invaluable for the spring garden, and also for cutting, as it opens its flowers just as well under artificial as real light.

CARDAMINE PRATENSIS, fl. pl., Double Lilac, flowers most profuse, first-rate spring flower, 25s. per 100.

PRIMROSE, Double Crimson (true), 18s. per dozen, 140s. per 100.

" Double Crimson-Purple, fine variety, often throwing up its flowers in scapes, and continuing long in bloom, 6s. per dozen, 45s. per 100.

" Double Yellow, 4s. per dozen, 25s. per 100.

" Double Lilac, 3s. per dozen, 16s. per 100.

" Double White, 3s. per dozen, 20s. per 100.

" Single Yellow, flowering in scapes, most continuous, 6s. per dozen, 40s. per 100.

POLYANTHUS, strong fine strain, 3s. per dozen, 12s. 6d. per 100.

PHLOX, verna, 4s. per dozen, 20s. per 100.

" setacea, 4s. per dozen, 20s. per 100.

WALLFLOWERS, Single, Harbinger, Tom Thumb, yellow and early dark brown, 1s. 6d. per dozen, 8s. per 100.

" Double Germans, eight distinct colours, separate, very strong, 1s. 6d. per dozen, 8s. per dozen.

" Double, Golden Drop (pots), 3s. 6d. per doz., 25s. per 100.

" Double, black and striped (pots), 4s. per dozen.

DAISY, Double Crown, very large, 3s. 6d. per 100.

" Snowball, fine, 3s. 6d. per 100.

" Crimson, 5s. per 100.

" Aucubæfolia, 10s. per 100.

" Small White French and Carmine French, two very pretty sorts, 7s. 6d. per 100.

" Cœrulea (Blue Daisy), 4s. per dozen.

IRIS, pumila, 3s. per dozen.

MYOSOTIS, rupicola (pots), grows 3 inches high, a gem, 6s. per dozen.

RODGER, McCLELLAND AND CO., Nurserymen, &c., Newry.

To the Trade.

AGRICULTURAL and GARDEN SEED.

H. AND F. SHARPE'S WHOLESALE SPECIAL CATALOGUE of HOME-GROWN SEEDS is now ready, and will be forwarded on application. Every variety named in it is of the very finest quality in every respect. The prices are very low.

Seed Growing Establishment, Wisbech.

HYDRANGEA PANICULATA GRANDIFLORA.—We can offer extra strong, busby plants of this really fine, hardy shrub, 2 to 3 feet high, at 18s. and 24s. per dozen. It should be known that this is quite deciduous, and (unlike the commonly known Hydrangeas, which only bloom on the tops of the ripened shoots of the preceeding year), flowers on the young shoots of the current one, and so is sure to flower where the others do not.

RODGER, McCLELLAND AND CO., Nurserymen, Newry.

New and Choice Potato offered by

W. SMITH AND SON, Aberdeen.

GRAMPIAN (Robertson).—A very handsome and singularly distinct early round variety, raised by Mr. Robertson, Sunnyside, Blairs, Aberdeenshire. The tubers are large and flattish, having very shallow eyes, skin pinkish white, flaked with rich rosy pink round the eyes; flesh pure white, very dry, and floury when boiled, and of excellent quality. It is very early and a most abundant cropper, remarkable for its hardy constitution and vigorous growth, growing well in any soil. Grampian was to be seen in every prize collection of any importance at the leading competitions of the last two seasons. Price upon application.

Sole Wholesale Agents, NUTTING AND SONS, Seed Merchants, 60, Barbican, London, E.C.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their new CATALOGUE of BULBOUS PLANTS, ORCHIDS, &c., in which will be found many Novelties of sterling merit, including a new White Hardy CYPRIPEDIUM, &c.

CATALOGUES post-free on application.

Lion Walk, Colchester.

CHARLES SHARPE AND CO.'S Wholesale Priced LIST for 1878 is now ready, and will be forwarded, post free, on application.

Seed Growers and Merchants, Sleaford.

SPECIAL OFFER.

APPLES, Standards, fine, 65s. per 100.
PEARS, Standards, fine, 70s. per 100.
" Pyramids, fine, 12s. to 15s. per dozen.
APRICOTS, Dwarf-trained, fine, 28s. to 30s. per dozen.
APPLES, Dwarf-trained, fine, 18s. to 22s. per doz.
CHERRIES, Dwarf-trained Morello, very fine, 24s. per doz.
PEARS, Dwarf-trained, fine, 20s. to 25s. per dozen.

W. BALL AND CO., The Nurseries, Bedford Road, Northampton.

To the Trade.

VINES, VINES, VINES.—Strong Fruiting Canes of Black Hamburgh, Mrs. Pince, Foster's Seedling, Gros Colman, and Lady Downe's, 5s. 6d. each. Strong Planting Canes of Black Hamburgh, Foster's Seedling, Muscat of Alexandria, White Tokay, and Black Alicante, 3s. each. The above are well ripened, short-jointed stuff.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

Now Ready,

THE LAWSON COMPANY'S NURSERY CATALOGUE for 1878; will be forwarded free on application.

The LAWSON SEED and NURSERY COMPANY (Limited), Edinburgh and London.

Special Offer of large Standard Fruit-bearing PLUM TREES.

R. AND G. NEAL have the above to offer in extra large plants, well-rooted, and in fine condition for removal. Price, with List of Sorts, on application. Also, extra fine RHUBARB for Forcing, viz.: Early Albert, Victoria, Sovereign, and Myatt's Linnæus.

The Nurseries, Wandsworth Common, S.W.

A SPECIALLY CHEAP OFFER.

ASH, 2 to 3½ feet; BIRCH, 1½ to 2, and 2 to 3 feet; ALDER, 2½ to 3½, and 3½ to 5 feet; LARCH, 1½ to 2, and 2½ to 4½ feet; SPRUCE, 1½ to 2 feet; SCOTCH, 1½ to 2 feet; BIRCH, 8 to 10, and 10 to 12 feet; CHESTNUTS, Horse, 8 to 10, and 10 to 12 feet; LAUREL, Colchic, 4 to 5 feet; SYCAMORE, 4 to 5, and 5 to 6 feet; LABURNUM, English and Scotch, 2-yr.; ACER NEGUNDO, 2-yr.; AILANTUS GLANDULOSA, 2-yr.; BROOM, Common, 2-yr. seedlings; DECIDUOUS FLOWERING SHRUBS in variety, 30s. per 100.

Preston Nursery Company, Preston.

WILLIAM TROUGHTON, Manager.

WELLINGTONIA GIGANTEA, 50 fine plants, 5 to 6 feet, in large pots, 10s. 6d. each. Also 400 CEDRUS DEODARA, 10 to 15 feet, in pots, all safe to transplant, at 10s. 6d. each.

A large assortment of tall EVERGREEN TREES, 8 to 10 feet and upwards, grown expressly for Screens, Blinds, and Planting for Immediate Effect.

WM. MAULE AND SONS, The Nurseries, Bristol.

Cover Planting, &c.

SAMUEL AND JAMES SMITH (late J. Smith, Sen.), Tansley Nurseries, near Matlock, Derbyshire, have the following in large quantities, viz.:—RHODODENDRON PONTICUM, 1½ to 2 feet, 20s. per 100, 180s. per 1000; 2 to 3 feet, 20s. per 100, 180s. per 1000; 3 to 4 feet, 30s. per 100, 200s. per 1000; 5-yr. seedling, 12s. per 1000, £50 per 100,000.

BROOM, 1-yr. seedling, 2s. 6d. per 1000, 20s. per 10,000; 2-yr. do., 4s. per 1000, 30s. per 10,000.

GORSE, 1-yr., 2s. per 1000, 25s. per 20,000.

Nursery LIST on application.

To the Trade Only, for Cash on Delivery.

DIELYTRA SPECTABILIS, strong, 20s. per 100.

VESUVIUS GERANIUM, bloom splendid trusses, 10s. per gross.

THOMAS KITLEY, Oldfield Nursery, Bath.

Fruit and Forest Trees, Ornamental Shrubs, SEEDS, &c.

J. SCOTT, The Royal Nurseries, Merriott, Somerset, has to offer large and fine Collections of the above, in large and small quantities, and at moderate prices; all are in excellent health and well rooted.

The "ORCHARDIST," price 3s. 6d. The best work on Fruit Trees and their cultivation in the English language.

Vines—Vines—Vines.

J. COWAN, The Vineyard, Garston, near Liverpool, has still on hand several thousands of strong, well ripened VINES. Fruiting Canes, 10s. 6d. to 12s. 6d. each; Planting Canes, 5s. to 7s. 6d. each. Catalogues free. Trade supplied. Terms on application.

American Grown Tuberose Roots.

TUBEROSE ROOTS, of my own growing, finest quality Roots, £5 per 1000.

EULALIE JAPONICA VARIEGATA, £2 per 100.

FRANKLENIA PUBESCENS, 2 to 4 feet, 15s. per dozen.

All packed free; freight by steamer, Baltimore to Liverpool, low. JOHN SAUL, Washington, D.C., U. S. America.

ROSES, Dwarf Hybrid Perpetuals, very strong, of leading sorts, on Manetti Stock; these, being budded so low as to leave scarcely any of the stock, are admirably adapted for pots or beds; 9s. to 12s. per dozen, 70s. per 100.

YUCCA RECURVA, fine specimens, about 2 feet, 3s. 6d. each.

PYRACANTHA, Red-berried, hardy plants, 1-yr., in 4-inch pots, 4 to 6 inches, 3s. per dozen, 21s. per 100.

" 2-yr., in 5-inch pots, 9s. per dozen.

H. McMILLAN, St. James' Road Nursery, Kingston-on-Thames.

MYROBALAN, or CHERRY PLUM, is the best stuff for Mending Old Fences or Making New Ones. It grows vigorously in the poorest soils, even where Whitethorn will hardly exist, and bears clipping like Whitethorn. Its stiff hard branches, and dangerous spines or thorns, effectually prevent cattle or evil-disposed persons from getting through Fences made of it. Plant from four to six in a yard. Sizes and prices on application to

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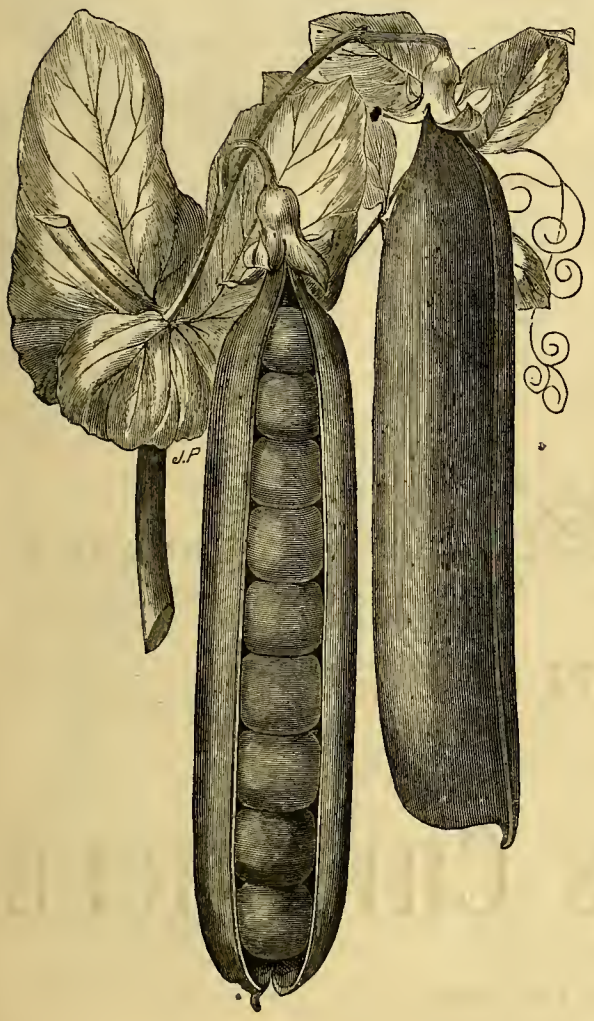
NEW PEA, "CRITERION" (Standish).

JAMES VEITCH & SONS

DESIRE TO DIRECT ATTENTION TO

THIS EXCEEDINGLY FINE NEW MAIN CROP PEA.



It is one of several seedlings raised by the late Mr. John Standish, who for some years devoted much attention to hybridising and improving the quality of this vegetable, and from whose Executors J. V. & Sons have purchased the whole stock of his Seedling Peas.

Criterion is supposed to be a cross between Advancer and Ne Plus Ultra, and was considered by the raiser to be one of the finest of his seedlings. In general appearance it partakes much of the character of the Ne Plus Ultra, while, as a second early, coming into use somewhat in advance of Champion of England, it is valuable on account of its fine quality and free cropping properties.

The plant is of a strong robust branching habit, and grows from 5 to 6 feet in height. The pods, which are produced in pairs, are of a deep olive-green shade and exceedingly well filled, generally containing from seven to nine Peas. These are of a fine deep green colour, and remain a long time fit for use. When boiled they are of a fine rich flavour, and retaining their beautiful deep green shade of colour, have a very attractive appearance on the table.

Mr. DRAPER, *The Gardens, Seaham Hall*, says:—"Your New Pea has proved to be a first-class sort, suitable for general crop. It has six to eight Peas in a pod, of large size, and it is also a good cropper, and the pods are well filled. I exhibited it at the Seaham Horticultural Show, and got First Prize, against seven others."

Mr. JONES, *The Gardens, Bentley Priory*, says:—"I have formed a very decided and favourable opinion of your New Pea, Criterion. With me it grew about 4½ feet high, with a mass of beautiful green pods, averaging eight Peas in each, with the look and flavour of Ne Plus Ultra, and being so early I think it just the Pea wanted."

From *The Florist*:—"Messrs. Standish & Co., of Ascot, who have raised a very promising batch of New Peas, have just adopted the name of 'The Criterion' for that which has been set apart as the best of the series. It is in every way an excellent Pea. Being one of the Wrinkled Marrows it has a fine sweet flavour. It is in use a fortnight earlier than Ne Plus Ultra, and is a good bearer, with well filled pods, resembling those of Laxton's Supreme, and having thick fleshy husks. When cooked it is of grass-green colour, and, being of a delicate texture, it will, it is said, keep longer in use than any other Pea, partaking, in this and in other respects, of the character of Ne Plus Ultra, which was one of its parents. We look upon the Criterion as one of the most valuable of the New Peas."

Mr. BREESE, *The Gardens, Petworth Park*, says:—"Criterion was sown under the same conditions and on the same day as British Queen and Ne Plus Ultra. I think it is a finer looking Pea than either of these, a heavier cropper and finer looking pod, and quite a week earlier. It is undoubtedly a good Pea."

Mr. MCINDOE, *The Gardens, Hutton Hall*, says:—"Criterion, when boiled, has a beautiful dark green colour and a most delicious flavour. I think it cannot fail to become a great favourite where high-class deep green Marrow Peas are esteemed."

Mr. GILBERT, *The Gardens, Burghley*, says:—"Through your kindoess I am enabled to give an opinion of Standish's New Pea, Criterion. My small packet was all sown in pots in one of the cool houses, planted out in April, withstood such a succession of cold, stormy, and frosty weather that I despaired of ever getting any Peas at all, nevertheless they braved it all and were ready for picking June 18. Criterion Pea grows from 5½ to 6 feet high; a Green Marrow of the most delicious flavour, bearing in pairs from sixteen to eighteen pods, with an average of eight Peas in each. It is the hardiest and best Pea of the British Queen type."

Mr. SPEED, *The Gardens, Chatsworth*, remarks:—"It is the finest of all late Peas that I know and is an excellent flavour and good colour when cooked."

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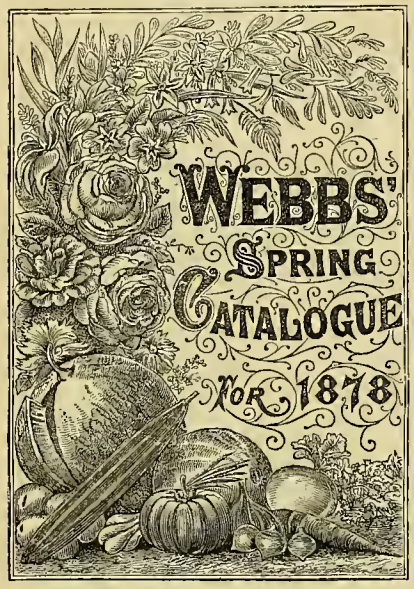

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From the Head Gardener to H.R.H. the Prince of Wales, K.G, to whom Messrs. Sutton are the specially appointed Seedsmen: "The Seeds supplied by you have always given the greatest satisfaction." CHARLES PENNEY.

Sandringham, January 17, 1877.

Extracts from the numerous favourable opinions of the Press on Sutton's Amateurs' Guide:—

"It would be difficult to find any work on gardening more essential to amateur gardeners, in fact, it may be defined as a plain and easy guide to all who want to know. The instructions are at once clear, sound, and complete; then there are the plants themselves rendered with a truthfulness to Nature that reflects the highest credit. It literally glows with beauty, and is a perfect work of high art."—*The Farmer.*

"We cannot speak too highly of the contents or of the artistic manner in which it has been got up. Messrs. Sutton are, we think, justified in regarding the Guide as the most practical and complete work of its kind yet published."—*Bell's Weekly Messenger.*

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

SATURDAY, DECEMBER 29, 1877.

GROWTH UNDER DIFFICULTIES.

PLANTS often set us mortals an example we should do well to follow. When adversity comes they are not, as some of us are, overwhelmed and reduced to the inaction of despair; they seem to act on the principle that a difficulty is a thing to be overcome, and if they cannot effect it in one way they will in another. This great pliability of plant-life—this adaptation to varied conditions and circumstances, strikes us every day, and never more forcibly perhaps than in reference to the various methods of treatment applied to the Grape Vine. It might have been thought that the main lines of practice were sufficiently laid down by this time, but experience shows how great is the conflict of opinion upon a point of everyday practice. Experience also shows that, disregarding extreme and exceptional cases, the general results are much the same. Skill and care go for much—for very much; but all the skill and all the care would avail nought if the plant did not lend itself to the practitioner, and meet his advances much more than half way.

The following communication, with which we have been favoured by Mr. Darwin, affords us another illustration of similar character:—

"The enclosed branch of Cotyledon (Echeveria stolonifera was cut from a plant growing in my greenhouse, and was suspended on August 10 in my study, which is a dry room, and in which a fire burns most of the year. It has sent out the two fine flowering stems which, from the position in which the branch was hung, have beot upwards [as may be seen in the figure]. They have now (December 6) begun to flower. You will see that the plant has sent out a number of small roots. I may add that the specimen weighed on September 1 45.46 grammes, on December 6 36.94 grammes, so that its growth has continued in spite of a considerable loss from evaporation. *Charles Darwin, Down, Beckenham.*"

Mr. Darwin was kind enough to furnish us with the specimen from which the accompanying figure, was taken (fig. 159) It is of interest for several reasons—first, as showing how long life may be manifested with only a scanty supply of food from the air and the water therein. Growth in the form of the addition of new matter can hardly be expected to any extent, so that it is not surprising that a loss of weight of about 10 grammes (a gramme=15 grains, about) took place between September 1 and December 6—a loss which would probably have been greater but for the leathery rind of the leaves. But while actual growth, in the sense of increased bulk, has been checked, the course of progressive development has advanced to such a degree that two flowering shoots with their appropriate form of leaf, and with their still more widely different floral leaves, have been formed. The mysterious tendency for the stem to ascend is manifested here as markedly as it usually is. Bromeliads manage to exist in a rootless state when hung up in our stoves, but they are more liberally treated in the way of moisture than Mr. Darwin's Echeveria was. M. Duchartre submitted some plants of this character to experiment with a view to determine what part of the rootless plant absorbed the water, and he ascertained that it was the butt end of the stem which fulfilled the function in question under those peculiar circumstances, and he, moreover, showed that watery vapour was not absorbed by the plant but water itself in a liquid state. Many years before

Mr. M'Nab, now of the Royal Botanic Garden, Edinburgh, made some experiments on the growth of plants in an inverted condition, and which were recorded in our columns at the time (August 14, 1841). In one case related by Mr. M'Nab an Indiarubber plant was knocked out of a pot, its roots cleansed and itself suspended from the rafters of the house, receiving only the moisture derived from the syringing operations. For three years the plant existed, and was still alive and healthy at the time of the report.

FIG. 153.—PHLEBODIUM AUREUM.

A second specimen (fig. 155), originally of the same size, was more liberally treated, being supplied with moisture by means of a thread depending siphon-wise from a vessel of water hung above it. The plant in question was quite healthy, though the roots were freely exposed to the light.

Another specimen (fig. 156) was hung upside down, like Mr. Darwin's Echeveria, and supplied with water as in the previous case. At

FIG. 154.—PHLEBODIUM AUREUM INVERTED.

first the plant resented the treatment, its heart rotted, its leaves fell off, but after a time new buds made their appearance, which ultimately turned up, as shown in fig. 156. This plant also grew for several years.

Other instances of inverted growth are represented by Polypodium (Phlebodium) aureum, he fronds of which hung down. Mr. M'Nab

FIG. 155.—INDIARUBBER PLANT (SEE TEXT).

FIG. 156.—INDIARUBBER PLANT (SEE TEXT).

suspended the plant upside down, as shown in fig. 154, and the fronds then assumed an upward direction, and allowed the fructification to become visible—an advantage from a decorative point of view.

Platycerium alcicorne is another illustration of like kind (see fig. 157). Our last illustration, also supplied by Mr. M'Nab, shows a plant of

FIG. 157.—PLATYCERIUM ALCICORNE.

Bilbergia nudicaulis, which was hung up from the roof of a stove, flowered in one season, then produced a shoot which in the following year flowered; and so the process of shoot and flower-forming went on year after year, the plant being rootless and feeding on the water collected between the leaves. When first hung up it was not more than 1 foot long, but it had attained at the date of the report to

FIG. 158.—BILBERGIA NUDICAULIS.

2 feet 6 inches, and was then producing shoots at both ends.

Space will not allow us at present to comment longer on these facts; but they will excite the admiration of those who love to probe the workings of Nature, and supply matter for the thoughtful practitioner to ponder over and turn to advantage.

THE GENUS AGAVE.

(*Concluded from p.* 781.)

SERIES IV. — CARNOSO-HERBACEÆ. — Leaves almost herbaceous in texture, dying down annually, often spotted with brown, the tip not at all pungent, the margin entire, or at most minutely serrulate. Flowers few, solitary, laxly spicato-racemose = *Manfreda*, Salish.

These form a most distinct group, worthy, I think, of separation from Agave as a sub-genus, in which habit and leaf-character and short life-duration run parallel with a well-marked distinctive type of inflorescence. The best characters by which to discriminate the species appear to be found in the relative length of the genitalia, perianth-segments and perianth-tube, and in the shape of the latter.

* Filaments not longer than the perianth-segments.

103. *A.* (*Manfreda*) *maculata*, Regel, Ind. Sem. Hort. Petrop., 1856, p. 16; Gartenflora, 1857, p. 158; 1858, p. 314; Engelm. in Torrey, Bot. Mex. Bound., p. 214; Jacobi, Monogr., p. 171; *A. maculosa*, Hook. in Bot. Mag., t. 5122 (1859); Jacobi, Monogr., p. 170; Engelm., Notes, p. 13; Feozi in Gard. Chron., 1872, p. 1194, t. 273.—Acaulescent. Leaves 12—20 in a rosette, lanceolate, spreading, ½—1 foot long, ¾—1 inch broad below the middle, narrowed slightly downwards, glaucous green, deeply channelled, mottled on both sides with irregular brownish blotches, the edges distinctly serrulate. Scape 1½—3 feet long below the inflorescence, furnished with a few lanceolate bract-leaves. Flowers in a lax subspicate raceme ½—1 foot long; pedicels very short; bracts small, lanceolate, acuminate. Perianth purplish-green, 1½—2 inches long; ovary oblong, under ½ inch long; tube usually ¾—1 inch long, cylindrical in the lower half; segments linear-oblong, ½—⅝ inch long. Filaments inserted at the throat of the tube, not longer than the segments. Anthers about ½ inch long. Style just exserted from the perianth-segments. Stigma deeply 3-lobed. Capsule globose or oblong, ½—¾ inch long in our specimens (reaching 1½ inch according to Dr. Engelmann), cuspidate. Seeds black, shining, discoid, semicircular, ⅛—⅙ inch broad.

A native of Texas and the North of Mexico. A full account of the plant with a coloured figure will be found in the *Botanical Magazine*, from a specimen that flowered at Kew in 1859. Dr. Engelmann draws attention to a form with a very short tube gathered by Mr. C. Wright (var. *brevituba*, Engelm., *Notes*, p. 13); but in our specimens of the same gathering, whilst the upper flowers of the spike have the tube nearly obliterated, the lower ones have it as long as in the ordinary form. Jacobi, in his first *Nachtrage*, p. 48, describes a variety *minor*, in which the leaves reach only 3 or 4 inches in length, and a third of an inch in breadth. This species may be readily distinguished from all the other Manfredas by its short stamens and distinctly-toothed leaves.

** Filaments much longer than the perianth segments.
† Perianth segments shorter than the tube.

104. *A.* (*Manfreda*) *virginica*, Linn. Sp. Plant., edit. ii., p. 416; Jacq., Ic., t. 378; Bot. Mag., t. 1157; Kunth, Enum., vol. v., p. 833; Jacobi, Monogr., p. 174; Engelm., Notes, p. 13, but not of Miller, which is a variety of A. americana.—Acaulescent. Leaves 10—15 in a rosette, spreading, lanceolate, 6—12 inches long, 1—1½ inch broad below the middle, narrowed gradually to the point and a little downwards, channelled down the face, undulated, plain green or mottled with brown spots,—the narrow cartilaginous margin very obscurely serrulate. Scape 2—3 feet high, exclusive of the spike, with only a few distant small bract-leaves. Spike very lax, 1—1½ foot long; lower flowers with very short pedicels; bracts lanceolate, those of the lower flowers ⅓—⅔ inch long. Perianth greenish-yellow, 1—1½ inch long, including the ovary; ovary oblong, ¼—⅓ inch long; tube ½—¾ inch long in the lower flowers, little dilated from the base to the throat; segments linear-oblong, ⅓—½ inch long. Filaments inserted below the throat of the tube, exserted ½—1 inch; anthers ½ inch long. Style reaching to the top of the filaments. Capsule nearly globose, ½—¾ inch long, cuspidate and subpedicellate; seeds black, discoid, semi-circular, ⅙—¼ inch broad.

Widely spread through the Southern United States. Dr. Engelmann describes a variety *tigrina*, a robust form with beautifully mottled leaves 1—1½ foot long, 2½—3 inches broad, gathered by Dr. Mellichamp, near salt marshes, on the coast of South Carolina. *A. conduplicata*, Jacobi and Bouche, Monogr., p. 192, sent from Mexico by Ehrhenberg, unknown in flower, is said to be closely allied to A. virginica.

105. *A.* (*Manfreda*) *brachystachys*, Cavan. Descr. (1802), p. 453; Kunth, Enum., vol. v., p. 829; Jacobi, Monogr., p. 184; *A. spicata*, D. C., in Red. Lil., t. 485, non Cavan.; *A. polyanthoides*, Cham. and Schlecht. in Linnæa, vol. vi., p. 55; *A. saponaria*, Lindl. in Bot. Reg., vol. xxiv., Misc., p. 76; vol. xxv., tab. 55; Jacobi, Monogr., p. 179; *A. humilis*, Roem. Amaryll., p. 15.—Acaulescent. Leaves 10—12 or more in a rosette, spreading, lanceolate, 1—1½ foot long, 1—1½ inch broad below the middle, narrowed gradually to the point and a little downwards, channelled down the face, plain green, glabrous, the narrow cartilaginous edge very obscurely serrulate. Scape 3—4 feet long exclusive of the spike, with a few distant lanceolate bract-leaves. Spike lax, 1 foot or more long; flowers 20—40. Bracts lanceolate acuminate, those of the lower flowers 1 inch long. Perianth 2—2½ inches long, inclusive of the ½ inch oblong-cylindrical ovary; tube ¾—1 inch long, cylindrical in the lower half; segments greenish-yellow, spreading, linear-oblong, about ½ inch long. Filaments purple, inserted below the throat of the tube, exserted ½—¾ inch beyond the tip of the segments; anthers ½ inch long. Style overtopping the filaments; stigma deeply 3-lobed. Capsule seen immature only, oblong, ¾ inch long.

A native of Mexico, introduced to the Madrid garden at the beginning of the century. The best published figure is that of the *Botanical Register*, under the name of A. saponaria. We have an excellent unpublished drawing in the Kew collection, made from a plant that flowered, in the garden about 1830, from seeds sent by Deppe. We have a living plant at Kew at the present time, contributed by the Rev. H. N. Ellacombe, and dried specimens have been distributed by Dr. Harvey from Zimapan as No. 1555 of Dr. Coulter's gatherings.

106. *A.* (*Manfreda*) *pubescens*, Regel and Ortgies, in Gartenflora, 1874, p. 227, tab. 804.—Acaulescent. Leaves 12—15 in a rosette, spreading, lanceolate, 1 foot long, 1½ inch broad below the middle, subentire, both sides opaque green mottled with brown, and densely pubescent. Scape 3 feet long, distantly bracteate. Spike ½ a foot long, laxly 12—15-flowered; bracts small, lanceolate. Perianth greenish, 1¼ inch long; ovary oblong, ¼ inch; tube twice as long as the segments, cylindrical in the lower half; segments linear-oblong, ¼—⅓ inch long. Filaments and style much protruded beyond the tip of the segments.

Discovered in Mexico by M. Roezl about 1870. I have not yet seen it in any of the English collections.

FIG. 159.—COTYLEDON (ECHEVERIA) STOLONIFERA. (SEE P. 805).

Its alliance is evidently close with A. brachystachys. It is the only known Agave with pubescent leaves.

†† Segments about the same length as the tube.

107. *A.* (*Manfreda*) *variegata*, Jacobi, Monogr., p. 180; Baker, in Saund. Ref. Bot., t. 326; Engelm., Notes, p. 15.—Acaulescent. Leaves 15—18 in a rosette, spreading, lorate-lanceolate, finally 12—15 inches long, 1—2 inches broad below the middle, narrowed slightly downwards and gradually to the point, deeply channelled down the face, and copiously spotted with brown on a green ground, the narrow cartilaginous edge very obscurely serrulate. Scape 2 feet long, exclusive of the inflorescence, bearing about a dozen lanceolate bract-leaves. Spike about a foot long, 15—20-flowered; bracts minute, deltoid. Perianth greenish, 15—18 lines long; ovary oblong, 5—6 lines; tube equalling in length the oblong segments, gradually dilated from the base to the throat. Filaments inserted below the throat of the tube, reddish-brown, 2—2½ inches long; anthers ½ inch. Style at last overtopping the stamens. Capsule oblong, under 1 inch long; seeds ⅙ inch in diameter.

Discovered by Dr. Gregg, in 1847, on the lower put of the Rio Grande, near Matamoros. A full account of the plant, with a coloured figure, will be found in the *Refugium*, from a specimen that flowered with Mr. Saunders in 1870. We have it at Kew at the present time.

108. *A.* (*Manfreda*) *revoluta*, Klotzsch, in Otto and Dietr., Gartenzeit., 1840, p. 274; Kunth, Enum., vol. v., p. 830; Jacobi, Monogr., p. 189.—Leaves linear-lanceolate, channelled, 6—8 inches long, 7—9 lines broad near the base, plain green, pruinose beneath, recurvato-patent, the edge narrowly cartilaginous, entire. Scape 4 feet long, glaucescent. Spike dense; bracts ovate. Perianth greenish, 16—17 lines long, exclusive of the ovary; ovary oblong, equalling in length the tube, and linear-oblong segments. Stamens inserted below the throat of the tube, exserted. Style falling short of the filaments; stigma obscurely 3-lobed.

A native of Mexico, introduced to the Berlin garden in 1840. I have not seen it in England.

††† Perianth-segments shorter than the tube.

109. *A.* (*Manfreda*) *guttata*, Jacobi and Bouché, Monogr., p. 190; Nachtrage, ii., p. 87.—Acaulescent. Leaves few, lanceolate, 15—16 inches long, 2 inches broad below the middle, deeply conduplicate, bright green above, paler beneath, with subpruinose striæ, both sides spotted with small reddish brown blotches, the narrow cartilaginous border subentire. Perianth, including the ovary, 1½ inch long; ovary cylindrical, ½ inch; segments twice as long as the tube. Filaments nearly 2 inches long; anthers ½ inch.

A native of Mexico, introduced to the Berlin garden by Ehrhenberg about 1860, and flowered there in 1870. Not seen in any of the English collections.

110. *A.* (*Manfreda*) *undulata*, Klotzsch, in Otto and Dietr., Gartenzeit., 1840, p. 274; Kunth, Enum., vol. v., p. 830; Jacobi, Monogr., p. 189; Nachtrage, ii., p. 89; Regel, Gartenflora, 1858, p. 314; *A. drimiæfolia*, Hort. Petrop.—Leaves lanceolate, 1½ foot long, 1¾ inch broad below the middle, narrowed a little downwards and gradually to the point, deeply channelled, dull green, pruinose on both sides, not spotted, reddish beneath towards the base, much undulated, the narrow cartilaginous border obscurely serrulate. Scape 3—4 feet long. Perianth above 1½ inch long, including the ovary; ovary under ½ inch long; segments twice as long as the limb. Filaments much exserted; anthers under ¼ inch long.

A native of Mexico. Introduced to the Berlin garden in 1840, and flowered there in 1869. Not seen in any of the English collections.

A Key to the Known Species of Agave.

Key to subgenera founded on inflorescence:—

Flowers in clusters, which are crowded at the end of the branches of a broad deltoid panicle	1. EUAGAVE.
Flowers in pairs, forming a dense cylindrical nearly spicate panicle	2. LITTÆA.
Flowers solitary, forming a lax, simple, subspicate raceme	3. MANFREDA

Key to series founded on leaf-texture:—

Leaves persistent, both rigid and thick in texture, not at all flexible. End-spine large and pungent	1. CORIACEO-CARNOSÆ.
Leaves persistent, more fleshy and less rigid in texture than in the last. End-spine smaller and less pungent	2. CARNOSO-CORIACEÆ.
Leaves persistent, thin, and flexible, but at the same time firm and rather fleshy in texture. End-spine generally small, subpungent	3. FLEXILES.
Leaves dying down annually, thin and almost herbaceous in texture, with the tip not at all pungent	4. HERBACEÆ.

In the following key the species are arranged according to leaf-texture. When the inflorescence is known the name of the subgenus is mentioned, so that where no subgenus is given, the flowers have not been examined. The species of which sufficient coloured figures have appeared in the *Botanical Magazine*, or other horticultural periodicals, have their names printed in capitals; those others of which I have seen specimens in the English collections have their names printed in italics, and the remainder—those which so far as I know are not to be found in England at all—have their names printed in Roman characters. Respecting all, therefore, except those species the names of which are printed in capitals, further information is needed.

Series I. CARNOSO-CORIACEÆ.

Group I. FILIFERÆ.—Edge of the leaf splitting off into distinct threads.

1. A. (LITTÆA) FILIFERA	3. A. (Littæa) Schottii
2. A. (LITTÆA) SCHIDIGERA	4. A. (Littæa) parviflora

Group II. MARGINATÆ.—Edge of the leaf furnished with a toothed continuous horny border from top to bottom.

* Leaves ensiform, hardly at all narrowed at the base.

† Grandifoliæ.

5. *A.* (*Littæa*) *lophanta*	7. A. (LITTÆA) HETERACANTHA
6. A. (LITTÆA) UNIVITTATA	8. A. splendens

9. A. (LITTÆA) XYLACANTHA

†† Parvifoliæ.

10. A. (LITTÆA) POSELGERII	12. *A. Nissoni*
11. *A. Kerchovei*	13. *A. Roezliana*

14. *A. Victoriæ-Reginæ.*

** Leaves decidedly narrowed from the middle downwards.

† Grandifoliæ.

15. A. Vanderwinneni	16. A. Demeesteriana

†† Parvifoliæ.

17. *A. Gheisbreghtii*	19. *A. horrida*
18. *A. Peacockii*	

Group III. SUBMARGINATÆ.—Edge of the leaf toothed, and furnished with a distinct horny border in the upper part.

* Parvifoliæ.

20. *A.* (*Euagave*) *Deserti*	22. *A. applanata*
21. *A.* (*Euagave*) *Shawii*	

** Grandifoliæ.

23. *A. Hookeri*	25. A. (Euagave) latissima
24. *A.* (*Euagave*) *Salmiana*	

Group IV. AMERICANÆ.—Edge of the leaf without any continuous horny border below the tip; teeth large, deltoid, with the margin repand between them.

* Leaves oblong-spathulate.

26. *A.* (*Euagave*) *Seemanniana*	29. A. (EUAGAVE) SCOLYMUS
27. A. (Euagave) Parryi	30. *A.* (*Euagave*) *potatorum*
28. *A.* (*Euagave*) *Wistizeni*	31. *A. ferox*
	32. *A. Galeottei*

** Leaves oblanceolate-spathulate.

* Parvifoliæ.

33. *A. flaccida*	36. A. (LITTÆA) MACRACANTHA
34. *A. viridissima*	37. *A. concinna*
35. A. (Littæa) utahensis	

** Grandifoliæ.

38. A. (Euagave) Palmeri	41. *A. Maximiliana*
39. *A.* (*Euagave*) *Theometel*	42. *A.* (*Euagave*) *mexicana*
40. *A. coccinea*	43. A. (EUAGAVE) AMERICANA

Group. V. RIGIDÆ.—Edge of the leaf without any continuous horny border below the tip; teeth small, the edge not repand between them.

* Leaves oblong-spathulate.

44. A. Decaisneana	46. A. (LITTÆA) BOTTERII
45. *A. Warelliana*	

* Leaves oblanceolate-spathulate.

47. *A.* (*Euagave*) *miradorensis*	51. *A. Corderoyi*
48. A. (EUAGAVE) LURIDA	52. A. Regeliana
49. A. (EUAGAVE) IXTLI	53. *A.* (*Littæa*) *polyacantha*
50. *A. excelsa*	54. A. (LITTÆA) DENSIFLORA
	55. *A. Salm-Dyckii*

Group VI. STRIATÆ.—Edge of the leaf minutely serrulate; surface strongly ribbed.

56. A. (LITTÆA) STRIATA	58. A. (LITTÆA) DASYLIRIDIDES.
57. *A.* (*Littæa*) *californica*	

Group VII. INTEGRIFOLIÆ.—Edge of the leaf entire; surface not ribbed.

59. A. (Euagave) Newberryi	60. *A. Houlletii*

Series II. CARNOSO-CORIACEÆ.

Group VIII. GEMINIFLORÆ.—Edge of the leaf splitting off into threads as in the *Filiferæ*.

61. A. (LITTÆA) GEMINIFLORA.

Group IX. ALOIDEÆ.—Edge of the leaf furnished with small but distinct teeth.

* Leaves oblong-spathulate.

62. *A. regia*	66. A. Offoyana
63. A. melanacantha	67. A. (LITTÆA) CELSIANA
64. A. rudis	68. A. (Littæa) Ehrhenbergii
65. A. Laurentiana	69. A. Lindleyi

** Leaves oblanceolate or ensiform.

† Grandifoliæ.

70. *A.* (*Littæa*) *Goeppertiana*	76. A. (A. Littæa) oblongata
71. *A. Smithiana*	77. *A.* (*Littæa*) *Haseloffii*
72. A. (Littæa) horizontinalis	78. A. (Littæa) Muilmanni
73. *A. Humboldtiana*	79. A. Martiana
74. *A. Kewensis*	80. *A. caribæa*
75. A. (LITTÆA) SARTORII	

†† Parvifoliæ.

81. A. Bernhardii	86. *A.* (*Littæa*) *albicans*
82. A. (LITTÆA) RUPICOLA	87. *A. Thomsoniana*
83. *A.* (*Littæa*) *Bouchei*	88. A. Wallisii
84. A. (LITTÆA) MICRACANTHA	89. A. (Littæa) chloracantha
85. *A.* (*Littæa*) *mitis*	90. *A. Brauniana*

Group X. SERRULATÆ.—Leaves minutely serrulate.

91. *A. pruinosa*

Group. XI. ATTENUATÆ.—Edge of leaves entire.

92. A. (LITTÆA) ATTENUATA	93. A. (LITTÆA) ELEMEBETIANA

Series III. FLEXILES.

Group XII, VIVIPARÆ.—Leaves distinctly toothed. End-spine subpungent.

* Leaves linear-ensiform.

94. A. pugioniformis	95. A. serrulata

** Leaves lanceolate.

96. A. rubescens	98. A. laxa
97. *A.* (*Euagave*) *vivipara*	99. A bromeliæfolia

*** Leaves oblanceolate-oblong.

100. *A.* (*Euagave*) *sobolifera*

Group. XIII. YUCCÆFOLIÆ.—Leaves subentire or obscurely serrulate. End-spine not pungent.

101. A. (LITTÆA) YUCCÆFOLIA	102. A. (Littæa) spicata

Series IV. HERBACEÆ.

* Filaments not longer than the perianth-segments.

103, A. (MANFREDA) MACULATA

** Filaments much longer than the perianth-segments.

† Perianth-segments shorter than the tube.

104. A. (MANFREDA) VIRGINICA	105. A. (MANFREDA) BRACHYSTACHYS

106. A. (MANFREDA) PUBESCENS.

†† Perianth-segments as long as the tube.

107. A. (MANFREDA) VARIEGATA	108. A. (Manfreda) revoluta

††† Perianth-segments longer than the tube.

109. A. (Manfreda) guttata	110. A. (Manfreda) undulata

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J. G. Baker.

WINTER TOKENS.

When the stormcock blows his whistle
And the tomtit files his saw,
And the robin pipes his treble
And the rook flies with the daw,
And the cricket tunes his fiddle
To the kettle's merry song,
And the sleety blast is driving
The poor beggar-boy along;
When the sea-coal fire burns brightest
And the kittens loudest purr,
And no music to the sportsman
Beats the pheasant's sudden whirr;

When the cowherd sets his springles
By the runnel and the mere,
And the starlings seek the plashets
At the belling of the deer;
When the colly in the coppice
Cracks his snails upon the stone,
And the carrion-crow sits telling
His doleful tale alone,
While the young thrush in the thicket
Tries his notes o'er for the spring,
And the wild geese, flying V-like,
Speed swifter on the wing;

When the flails make merry music
To the urchins out of school,
And the old men seek the settle
While the maidens card the wool;
When fair Nelly from the forest
Calls the acorn-hunting swine,
With her cheery "Chuggy, chuggy,"
In the glow at even-chime,
And old gossips croon their stories
As they knit around the fires,
And wee Jenny Wrens a-peeping
See the poachers set their wires;

Then the black storms shade their mantles
O'er the leaf forsaken trees,
And the snipe comes with the woodcock
And the culver seeks the leas,
And the little little lads are busy
Making ready for the fray,
With their cannon, logs, and crackers,
For great Guy Fawkes his day—
When piles of blazing bonfires
And spiteful, hissing toys,
As serpents, squibs, and rockets,
Please large and lesser boys;

Then the skylarks flock together
And the linnets crowding sing,
And the children, 'mid the heather,
Their red-rose berries string;
Then, the fruits all safely hoarded,
Lo, the farmer waits for morn,
With a shout for bleak November
And the merry hunter's horn;
While the dormouse and the squirrel,
Curling cosy in their nest,
Tell of merry Christmas coming
And a weary earth at rest.

Edward Capern, in "Good Words."

New Garden Plants.

Iris (Apogon) Rossii, *Baker, n. sp.**

This is a new species of Iris of the small group of Apogon with very long tubes. It has not yet been introduced in a living state, but as I have already described all the known species in your columns I venture to ask to be allowed to add this to the list. It is an inhabitant of dry sloping banks in the province of Sching-king, in Northern China, where it was gathered in flower on April 27, 1876, by the gentleman in whose honour I have named it, Mr. John Ross. This province of Sching-king runs like a wedge between Manchuria and Corea, and its botanical productions were totally unknown till we received a considerable collection of them from Mr. Ross this present autumn. The collection has not yet been fully worked out, but I have studied the Ferns and find that, although none of them are absolutely new, it adds not less than half-a-dozen species previously known only in Japan and Manchuria, as for instance Aspidium tripteron and Scolopendrium sibiricum, to the Chinese flora. The present Iris comes nearest the West Siberian I. humilis, M.B., from which it may be readily distinguished by possessing a short flower-stem, by having only two leaves to each tuft and by its very short stigmas, with appendages as long as the lamina.

Densely cæspitose on a slender rhizome, the tufts of leaves surrounded by clusters of bristles. Produced leaves not more than two to a tuft, linear, acuminate, glabrous, thin and grass-like in texture, 3—4 inches long at the flowering time, $\frac{1}{8}$—$\frac{1}{6}$ inch broad. Scape always 1-flowered, very short, hardly rising above the soil. Spathe-valves always two, linear, green except at the very edge, 2—3 inches long. Pedicel not more than $\frac{1}{4}$ inch long inside the spathe. Ovary cylindrical, $\frac{1}{3}$—$\frac{1}{2}$ inch long. Perianth-tube cylindrical, 2—3 inches long. Limb lilac, or rarely white; falls obovate-spathulate, 1 inch long, under $\frac{1}{2}$ inch broad, the claw shorter than the lamina; standards erect, 1 inch long, obovate-unguiculate. Stigmas, including the linear points, $\frac{1}{2}$ inch long, the point equalling the undivided portion of the lamina. Anther $\frac{1}{4}$ inch long, exceeding the filaments. *J. G. Baker.*

* *Iris* (*Apogon*) *Rossii*, Baker, n. sp.—Dense cæspitosa; rhizomate brevi; foliis productis geminis linearibus; scapo brevissimo unifloro; spathæ valvis duabus linearibus viridibus 2—3 pollicaribus; pedicello brevi; perianthii tubo 2—3 pollicari, limbi lilacini vel raro albidi segmentis exterioribus obovato-spathulatis, interioribus obovato-unguiculatis exterioribus æquilongis; stigmatibus limbo duplo brevioribus appendicibus linearibus; antheris parvis filamento longioribus.

Primula nivalis, *Pall. var.* turkestanica.

It is a long time since Primula nivalis became known to botanists as one of the most beautiful and distinct of its race. In the volume for 1870 of the *Gartenflora*, Dr. Regel called attention to this species, and said that its introduction into Europe was one of the tasks of the naturalists of Russia. Already at that time several forms of this species were known, the best of these being the variety called by Dr. Regel farinosa, a plant indigenous in the mountains of Songaria and of Kamtschatka. In the course of last summer Dr. Regel's son, who is a physician attached to the Russian army in Turkestan, in travelling through the mountainous districts of Kuldscha and the Thian-Shan mountains discovered another form, which has received the name of turkestanica, and which Dr. Regel says is by far the most beautiful of all Primroses of Central Asia.

Fig. 160.—Primula turkestanica

Fig. 161.—Primula turkestanica.

The plant is a robust grower, has oblong flat obtuse leaves, smooth above, white powdered below. The vigorous flower-stems terminate in a many flowered umbel, standing in dense whorls, stage-like, as in Primula japonica. The flowers are as much as 1 inch in diameter, finely shaped, and of a bright violet colour. There occur other tinted varieties, from pale rose to deep purple in its wild state, and we may expect soon to have a variety of brilliant colours. This species, coming from one of the coldest mountainous districts of Central Asia, will probably be perfectly hardy throughout the greater part of Europe, and much more so than P. japonica.

The accompanying illustration (figs. 160, 161) have been drawn from a plant in its wild state, and are very true and exact representation. There is no doubt that cultivated plants will soon show larger umbels and larger flowers, but even in the state it is, this new Primrose will be hailed as a most valuable addition to our hardy herbaceous plants. *Haage & Schmidt, Erfurt.*

PRESERVING CUT FLOWERS.

At this time of year, when flowers are scarce and dear, every one is naturally anxious to preserve them in a nice fresh condition as long as possible, and not only this, but likewise to make the best display that can be done with a small quantity. Of all ways of showing them off, the most natural as well as the most economical is that of using any low shallow vessel either of glass or china of about the size and depth of a soup-plate. If this is filled with nice fresh wood moss made up in a slightly conical or mound-like form, the flowers and foliage can be arranged to great advantage and made to look almost as natural as if growing in the positions in which they are placed instead of having that excessively formal appearance they generally have when closely packed in a vase. Not only do they look infinitely better in this way, but they last fresh considerably longer, owing to the much larger surface exposed immediately under them, and from whence a stream of vapour is continually arising from the moss surrounding their stems. Besides the nice fresh appearance this has, it is of great use both for the above-named purpose and for keeping the flowers in any position they may be placed in, so that they may be quickly and easily arranged.

Those who have had to do with putting cut flowers in vases of water know what a bother it is to get them to remain where placed, as with the slightest touch they have a provoking way of tumbling out and bringing others with them in their fall; but with the moss there is none of this trouble, for if the ends of the stems are cut a little slanting they may be thrust in readily, especially if a way be first made for them by inserting a pointed stick. Having epergnes and opaque vases to dress, I always adopt this plan of doing them, and I find that less than half the quantity of flowers suffices to produce a far better effect than could be done as they were formerly used. Take such things as forced Lily of the Valley and Violets, for instance, and what can look more natural or beautiful than a combination of the two nestling on a soft bed of verdant moss in a low vessel on a drawing-room table or window recess, from which positions they would fill the air with their delicious perfume. Charming as they are when plucked or cut and put in vases in the ordinary way, they are much more so used in the above manner, as then they can be put in with their leaves and a portion of roots attached, and are able to grow away and expand their blooms almost as well as when under glass in the garden.

In forming these natural groups small seedling Ferns and many of the Selaginellas come in handy, as they are more durable than cut fronds, which in the warmth of a dry room soon shrivel up. There is one thing that should be borne in mind when cutting both these and flowers, and that is to sever them with a sharp knife, as scissors crush the sap-vessels of the stems and so prevent the absorption of water; the same thing also happens if they stand long without being retrimmed, as then they become choked from coagulated matter that forms about their base. Evaporation from every pore is always going on at a rate more or less rapid, and unless they can take up fresh supplies to meet the loss, cut blooms must soon wither and die, and this is why it is that those with hard close stems are less durable than such things as Gladiolus, Mignonette, Iris, and other of that class that will expand in water almost as well as if allowed to

remain on the plants. It will therefore be seen how important it is that the inlets should be kept clear by timely attention in trimming, so that there may be no obstruction to the flow of moisture to replace that passing off in the atmosphere.

One reason why many flowers are so short-lived when cut is, that to get them in quickly they are sometimes subjected to more heat and confinement than is good for them, and when to this there is loss of light as occurs at this season, the petals must inevitably come thin and flimsy, in which state a dry air at once affects them unfavourably. This being the case, any plants that are being grown for the purpose of supplying cut blooms should be stood as near the glass as can be done without touching, and in such positions that they may have full benefit of all the sunshine available. So favoured, there will be little difficulty in keeping them fresh for a considerable length of time, provided the situation they occupy in the room when cut is far removed from the fire, and not where they are subjected to draughts, as they would be if placed between the door and the grate, as there is always air passing from the one to the other caused by the combustion of the fuel. Cut flowers never last so well or look better anywhere in a room than in window recesses, with the light immediately behind them, as then the delicacy of their colours is seen to advantage, and the atmosphere there is always impregnated with a greater amount of moisture on account of the temperature in that particular part being several degrees lower, as may readily be proved by testing it with a thermometer.

Such thick fleshy blooms as those of the Camellia may be rendered quite safe from tumbling to pieces by being wired, which should always be done before using them, otherwise they are apt to cause much disappointment by casting their petals. Four bits of very fine wire, about 6 inches long, thrust through at equal distances near the base of the flower so as to cross each other in the middle will pierce the whole, and if the ends are then brought down and twisted around the stem it will stand any amount of shaking without coming to pieces. In Covent Garden the bouquetists are adepts at this kind of work and mount almost every flower they use, but although manipulating them in that way may answer their purpose better they do not last long as their stems are so short they do not reach the water, and unless there is plenty of moss worked in it is not readily conducted to them. The duration of many single flowers may be greatly prolonged by removing the anthers, as when the pollen on these becomes ripe the stigma gets impregnated, and the purpose of Nature having been fulfilled after impregnation takes place, the petals fall, and that very quickly with such things as Pelargoniums, especially those of the Zonal section. The best way to treat these and all others of a like fragile nature is to let fall a drop of gum down the centre of each, which will then glue them together at the base and make them secure. In order, however, to prevent this from running out and give it time to set, the flowers should be placed in an upright position by putting their stems through the bottom of a sieve or sticking them in sand. By the use of a camel-hair brush or a sharp-pointed stick a number may be operated on in a short space of time and much disappointment saved, as nothing is more provoking just when the finishing touch is being put to a bouquet or vase, than to find some of the petals of the principal flowers are tumbling out.

It often occurs when flowers are sent from a distance, that from not being packed in air-tight cases and from being kept long on the road, they arrive in a withered condition, but if properly treated they will quickly revive, and if not bruised or injured soon regain their original freshness. Instead of being at once put into glasses of water and subjected to the dry air of a room, they should either be carefully spread out on a piece of thick wet flannel cloth, or moss, and covered with a box pressed tightly down, or put in large pans containing moss and water where they can be stood upright and shut close in the dark, where after a few hours they will be found to have filled the empty sap-vessels and be looking as well as when cut from the plants. Especial care should be taken with cut flowers to handle them in such a manner that they are not chafed or rubbed, or they are sure to become bruised and discoloured; and more particularly is this the case with Gardenias, Camellias, Eucharis, and such-like things. *S. W.*

GREENHOUSE PLANTS WORTH NOTICE.

PLANTS whose habit or growth is peculiar must include Cordyline vivipara, syn. Chlorophytum Sternbergianum, that most enduring and persistent of plants—also its variegated form, which is more attractive to the eye. Testudinaria elephantipes—Elephant's Foot: it is most interesting to watch the first sproutings of tender green forcing its way out of the solid lump of root-stock, pieces of suitable length, if they can be spared, make, when hardened sufficiently, excellent trailers for tall glasses. Thomasia quercifolia is a favourite with us, with an edging of gold around the Oak-shaped leaf; although its white Solanum-like flower is insignificant, it stands well in water. Rubus australis is perfectly distinct, an inveterate hooker on to every and anything if used with cut flowers, when it lasts for very long. Beaufortia decussata is so regularly set with its opposite sessile leaves, squared or decussate, that it attracts when not in flower. Coccoloba platycladon, from its being one of these plants which bear the true leaves on dilated stems, is interesting and curious, and it is a plant that bears coming into the house, and is not easily killed. Although keeping to greenhouse plants, I cannot resist naming a most singular Oxalis, which bears these false leaves, so to speak. No one could guess, even when the true trefoil leaf grows at the apex, that this O. bupleurifolia belongs to the same family as our native Wood Sorrel. It requires a stove; as also does O. sensitiva, still less like a Wood Sorrel, having pinnate leaves and no trefoil leaflet at the end, closing, when touched, like the Sensitive Plant, Mimosa pudica, and only when its yellow flowers are to be seen would one imagine the plant to be an Oxalis.

Acacia seems to be one of the most varied genera of plants, and is certainly a most numerous one. You think you are sure about one fact with regard to them, and then discover there are only certain members of this erratic family that produce phyllodes, others spines, others sensitive leaves, others leaves at irregular intervals and seasons at the tip of the phyllodes; and, lastly, there is A. pyracantha, whose broad and silvery phyllodes have never terminal leaves (in this country at least). Three other most singular and unique Acacias selected at the Botanic Garden are A. penninervis, also broad leaved, A. pycnantha and A. heterophylla. It is barely possible to believe these are Acacias, unless one saw the yellow balls of flowers, which I had the good fortune to see on A. pycnantha, and that these broad phyllodes are not honest leaves. Neither is one much helped in believing that phyllodes are easily (?) distinguished from leaves by the fact that "they are always so placed that their edges look upwards and downwards, so that by this means, as well as by the arrangement of the veins, they may be distinguished from true leaves, which have their surfaces looking upwards and downwards." I have tried hard to find these vertical edges and horizontal surfaces, but somehow (in this country) both phyllode and leaf are looking upwards and downwards, and I would like to know the observations of those who have unlimited means and plants to study from; or is it possible that, as the plant only requires such change of position in its native climate, it accommodates itself to the present locality? It is very interesting to grow Acacias from seed and watch their growth, and mark when the true leaves make their appearance; it takes three and four years in some species), others, again, as the well-known A. lophantha, produce true leaves at once from the seed. There are above 400 Acacias, and of those procurable in nurseries some six or eight of utterly distinct character might be selected for the amateur's mixed greenhouse. Of this half-dozen, A. pulchella must be one, having spines, beautiful small foliage, which shuts up at night (a sprig in water is interesting to watch), quantity of flowers, and a small-growing species, which can be trained to suit a limited space. A. juniperina should be another completely distinct and characteristic in small plants.

Bryophyllum calycinum, a fleshy-leaved plant, should certainly have a place. It will do in a room, but during winter is safer in the stove. Leaves cast upon the gravel or sand in the stove-bed will make buds, and very interesting it is to see such forming at the termination of the veins at the notches on the edge of the leaves. There is quite a fringe of tiny plants in about three weeks. If the leaf is pegged down, this result is sure at any season. The flower is purplish, and pretty I believe, but the bud-forming leaf is the interesting point of this plant.

Kleinia articulata is another singular plant, easily grown, allied to, but as unlike Groundsel as is the Oxalis already spoken of to Wood Sorrel. It makes a good basket-plant, as the glaucous gouty stems with tuft of pale green foliage at top hang about.

One other plant and I will stop. Oldenlandia Deppeana is always in flower. Twenty years ago Mr. Robertson, then of Lawson's Nursery, advised me to get what appeared a poor little flower, but assured me it would always be in bloom, and most true have been his words. Only three years ago did we get into a stock of it, as our present gardener found a seedling in a neighbouring pot; we now ripen any amount of seed, which germinates readily, and also, by cutting over the plants, get plenty of cuttings. Naturally it is such an incessant flowerer there are no cuttings. I daresay the seed would ripen in the greenhouse, but one pot set in the stove makes all sure. The little pure white flowers are very useful, and last long in water, and it is a very handy plant for coming into the house. I believe this last-named plant will be the most attractive to your readers, simply on account of its continual flowering. *F. J. Hope, Wardie Lodge.*

Notices of Books.

Report of the Conservator of State Forests. Wellington. 1877.

Captain Campbell-Walker, the author of this report, was commissioned by the Government of New Zealand to draw up a report on the forests of New Zealand, their nature, the laws or customs connected with them, and on the best means to be adopted to preserve them and turn them to the best account. To this end Captain Walker traversed the greater part of the North and South islands, visiting all or nearly all the forest districts, and noting the relative abundance and quality of the timber produced in them. In his explorations Captain Walker was much aided by Mr. T. Kirk, whose local knowledge both of the country and of its botany and geology were of the greatest service. The report before us deals in detail with the several districts visited on the tour of inspection, and contains in small compass a very large amount of valuable and interesting information on the timber trees and generally on the botany of New Zealand. The first district visited was in the province of Auckland, where the reporter was "much struck by the colossal dimensions of the Kauri, Dammara australis. Trunks of 5 and 6 feet diameter, running up to 50 and 60 feet without a branch, were not uncommon, while those of smaller dimensions, which would be considered fine trees in other countries, were numerous. Other districts were visited in succession, and the general conclusion arrived at is "that whilst New Zealand has a splendid and most valuable property in her forests as they exist now, she must be very careful in their management, and no longer proceed blindfold in their disposal and removal, otherwise she will not only lose them without any adequate return or income to the public or colonial purse, but lose very much besides in the shape of equable climate and ample but not excessive supply of water which years of labour and heavy expenditure will hardly replace." The trees specially reported on are divided into classes according to the durability of their timber and their suitability for special purposes. The most valuable trees are thus enumerated:—1, Dammara australis, the Kauri; 2, Podocarpus Totara, the Totara; 3, P. spicata, the Black Pine or Matai; 4, Libocedrus Doniana, the Arbor-vitæ or Kawaka; 5, L. Bidwillii, the Cedar or Pahautea; 6, Phyllocladus trichomanoides, the Celery-topped Pine or Tanekaha; 7, Dacrydium Colensoi, the Manoao; 8, D. Westlandicum, the Westland Pine; 9, D. intermedium, the Yellow-silver Pine; 10, Fagus Menziesii, the Round-leaved Beech or Tawai. For special purposes other timbers are used, as Vitex littoralis, Fagus fusca, Metrosideros tomentosa, M. robusta, M. lucida, Leptospermum ericoides, Sophora tetraptera, Olea apetala, and Eugenia Maire. Other trees yielding timber of less durability are various species of Dacrydium, Podocarpus, Fagus, Weinmannia, Atherosperma, Elæocarpus, Nesodaphne, Alectyron, Ixerba, Tetranthera, Knightia, Hedycarya, Dysoxylum, besides several others of smaller dimensions, among

which are various species of Myrtle, Fuchsia, &c. The Kauri is, however, the most valuable of all.

"The Kauri (Dammara australis) is the finest tree in New Zealand, and produces the most valuable timber. It is restricted to the northern part of the North island . . . It attains a height of from 120 to 160 feet and upwards; clean symmetrical trunks may be seen from 50 to 80, or even 100 feet, in length, varying from 5 to 12 feet and upwards in diameter. The timber has acquired a reputation above all other New Zealand kinds from its value for masts, spars, and other purposes of naval architecture, which, about the commencement of the present century, led to its being exported for use in the British dockyards. Except for general building purposes its use has been chiefly confined to the North island, where there is abundant evidence of its durability for more than thirty years in some of the old mission buildings at the Bay of Islands, the weather boarding of which exhibits no signs of decay. The same must be said of some of the oldest houses in the city of Auckland, and in other parts of the province, although I have been unable to obtain trustworthy evidence of their existence for more than twenty-three or twenty-four years, as in all the towns most of the old buildings have been removed to make way for improvements. Kauri has been employed, in connection with Totara (Podocarpus Totara), for the upper timbers of the Auckland wharf, the largest work of the kind in the colony, and with most satisfactory results. . . . The superiority of Kauri to Tasmania Blue Gum (Eucalyptus) under heavy wear and tear has been demonstrated by the use of both timbers on the Auckland wharf, when the former was found to last twice as long as the latter under severe tests."

The extracts above given will suffice to show the manner in which Captain Walker has treated his subject, and afford evidence of the valuable resources New Zealand has in her forests.

In addition to timber various other products, are yielded, such as Kauri gum, which is largely used instead of mastic, of which nearly 3000 tons annually are exported. Tree Ferns are exported to the value of £600 per annum, but the most curious article of exportation is a Fungus, Hirneola polytricha, of which we are told that in 1871 this plant was first collected for exportation to China, where it is used as an article of food, being boiled and mixed with bean curd and vermicelli; it is also administered as a medicine to purify the blood. Its price in Hong Kong is 10½*d.* per pound retail. In most parts of New Zealand the Chinese merchants pay the collector 3*d.* per pound, or £28 per ton for the Fungus when dry. Fresh specimens lose four-fifths of their weight in drying. The total quantity exported to the end of 1876 was of the value of £18,294. During the year 1876 alone, 2633 cwt. were exported, valued at £6224.

Of the particular plans recommended by Captain Walker it is needless to say much in this place, save that they appear judicious, based as they are upon personal observations in New Zealand and an extensive practice in India. The report is a valuable summary of information on New Zealand timber trees, their products, as well as the meteorology and general climatic conditions of the islands.

Annales du Jardin Botanique de Buitenzorg. By Dr. R. H. Scheffer, Director.

The Buitenzorg garden in Java has obtained a well earned fame for the beauty of its arrangement and the extent and variety of its collections. It was established by Reinwardt in 1817, governed by the famous botanist Blume from 1822—1826, after whose departure the establishment was superintended by M. Teysmann, who in spite of crippled resources largely augmented the number of species grown. The present volume consists of a series of botanical memoirs on the plants of New Guinea, on sundry Palms, on the culture of Roses in the Archipelago, &c. M. Teysmann gives some account of his journey to New Guinea, in the course of which he mentions that the inhabitants make use of the fermented juice of Nipa when Palm wine fails, and abuse it so much that they think nothing of killing any one when under its influence. As to Roses, Teas, Noisettes, and Bourbons do best. Hybrid Perpetuals do not do so well, as a rule. Many varieties grow, but refuse to flower except on the hills. Manure is employed very abundantly, as the plants are always in growth, and have no winter rest. The rich Chinese are great Rose buyers, and do not mind paying 25 florins (Dutch) for a young plant of the green Rose! or for Marshal Niel. The volume before us is illustrated with a number of photographs of Palms, with numerous lithographic plates devoted to the botanical details of the flowers. The photographs make a plant-lover anxious to take a voyage to Batavia forthwith.

Garden Operations.

PLANT HOUSES.

ORCHIDS.—Without in any way intending to enumerate the vast number of genera, species, and varieties now met with in our houses, that for the most part are of comparatively recent introduction—many altogether new to science and culture, others, again, that have for years been known to the learned professors, but, not having been received in a living condition, all that is known of them being obtained by a study and examination of dried specimens in herbaria and botanical descriptions in old, and therefore seldom read works—whilst of others many were so exceedingly rare, and produced their flowers at even rarer intervals, that to many of those who had for years followed the culture, and ever anxious to increase in the knowledge of them, they were absolutely unknown—it may be well just now, as we pass from one period of time, as we reckon it, to another that inevitably follows, to pause, and endeavour to cast a backward glance, and to look at the very paucity of the numbers of plants in any given collection, and also to remember the small number comparatively of the species and varieties to be found in those days. Whilst thus we think of the period through which many of us have passed, let us carefully look at the situation in which we are placed at the present; notice the gain in the number of forms and varieties, the vast additions that have been made, and still are almost daily augmenting the numbers in our houses, and remember the ease with which a collection of choice varieties can now be got together, not forgetting the vast difference in the price that now has to be paid for plants of real and sterling merit, so much less than would have had to be given and were paid in the times of scarcity, and therefore of considerably greater difficulty to obtain. Take as an example the Odontoglossums. Twenty years ago, and even less than that, about a space of one or at most two lights on the side table of the coolest end of the Cattleya-house would be all the room required for these, and the different species then represented could almost always be reckoned up by a single figure. A single plant of O. Pescatorei, probably a nævium majus, pulchellum, one or two plants of grande, nebulosum, and citrosmum, would then have been considered a fair number to represent this genus, and if, by good fortune, a small piece of Cervantesii or Insleayi could be added to the list it was considered a matter of great success and something of which one might feel proud. Turning to the present, take any collection with any pretensions to size and comprehensiveness, and what do we find in this genus alone? Not purposing to name sorts which are or should be sufficiently well-known, it may truly be said that we have here such a rich, chaste, and attractive display, and withal in such large numbers, that to those who now have the opportunity of starting their gardening career in such a garden of Eden, the means and opportunities they possess and have at their fingers' ends should be diligently improved, and this would enable them to become proficient in the culture of these plants in a pre-eminent degree. It may be well to remind all such that there is no doubt a knowledge of the growth of plants is an ever-increasing and extending passion, and that the tendency in this is ever and always to obtain the best, most useful and beautiful, and the most serviceable in decoration, whether of rooms, or tables, or for personal adornment. And since in this class we have those that answer to this latter description, and fulfil these requirements in an especial manner, so we may be assured they will be in more increasing demand; and that those who are capable of having flowers of this order always at command, winter or summer, autumn or spring, and that too in quantity, will be the men that will ever be sought for, and deserve and obtain a higher reward for their labours; and instead of the profession being looked upon a luxury, and men sometimes being influenced by such thoughts and the spirit that follows such reflections, they will be esteemed and considered an absolute necessity, and will hold in any establishment a place of respect and trust far higher and more esteemed than many unfortunately find themselves to occupy at the present day. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

Although the present year is now drawing to a close the work to be carried on in the garden is never all finished, but something constantly wants doing, and we must always be looking forward to something which we can improve and try to do better than we have hitherto done. Therefore we must not rest satisfied with what we have accomplished, but aim at higher and more favourable results. Proceed with the work which is best suited to the state of the weather and other circumstances. Should sharp frost set in take advantage of the opportunity for wheeling manure on all vacant pieces of ground while the walks are hard; this work is much more expeditiously done than at any other time. Soils may be got ready for potting, which will save time when the busy season comes round In open weather digging, trenching, and cleaning-up generally may be carried on. The grass will also require frequent sweeping and rolling, in order to keep clean and smooth. In stormy weather see that climbing plants in exposed positions are secure, those trained on walls or trellises nailed or tied, and others that may have broken from their supports have fresh stakes, to prevent them from being damaged. During intervals of unfavourable weather, when outdoor work cannot be carried on to advantage, something will always require looking to. Where plants are kept under glass have them carefully gone over, and all dead pieces cut off, decayed leaves removed, the surface of the soil stirred, and many other matters may be attended to which are apt to be overlooked when the time is more favourable for other operations. Give no more water to bedding plants in cold weather than is absolutely necessary, but when the temperature ranges higher advantage should be taken of the first suitable opportunity to give them a good supply, which probably may be sufficient for them for several weeks. Where a large number of plants are used for bedding purposes, and with the view to introduce more variety, which is not so often met with in the modern style of flower gardening, a very pleasing effect might be made by planting some of the beautiful varieties of perennial Phloxes, Pentstemons, Delphiniums, &c., and with several of the more lasting hardy annuals a most interesting and enjoyable display may be made on borders by the sides of walks and other places: such borders would be found most useful for cutting from during the summer and autumn months, and would be of great service where flowers are used largely for bouquets and for table decoration. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

CUCUMBERS.—One of the most trying and disappointing years to horticulturists, now waning, seems likely to go out in the good old English fashion, for at the present time the ground is covered with a thin layer of snow, and the thermometer last night descended to 20°. This sudden change from a long period of dull mild weather will necessitate a little extra firing to prevent the plants from receiving a sudden check, one of the worst accidents that can befall winter Cucumbers at Christmas. To counteract sudden depression, economise fuel and save the plants from injury by hard firing. Blinds or mats should be placed over the roof at nightfall and during snowstorms, but the covering must not be allowed to remain on longer than is absolutely necessary, as Cucumbers require all the light that we can give to them in Winter. Whilst guarding against sudden changes of temperature avoid exciting the plants overmuch by going to the opposite extreme. A minimum of 68°, with a rise of 10° to 15° by day from sun and fire-heat combined will be sufficient until the days get longer and brighter. Pay constant attention to top-dressing with rough sods as the roots show through, and apply clear tepid liquid. Crop lightly and cut the fruit young. Watch closely for red-spider, which generally follows sharp firing: the remedies are well known. If the plants are syringed once a week with a weak solution of Gishurst, ½ oz. to a gallon of water, spider may be held in check. In badly ventilated pits subject to canker this troublesome disorder may now be expected. The best remedy is good quicklime well rubbed into the parts affected. *W. Coleman.*

THE Fine Arts department in the city of PARIS has under consideration a plan for adorning the promenades and open spaces, down to the smallest squares, in a way similar to what has been done in parts of the Parc Monceau. According to *Galignani*, the idea is to place, at certain distances, busts of all the historians who have left studies of the manners and customs of the capital, in the great avenues—such as the Champs-Elysées, the Avenue du Bois de Boulogne, &c. In the squares will be erected statues of notable personages, provosts of the guilds, judges, soldiers, &c., of all periods, who have in any way conferred lustre on Paris. Finally, in the large spaces, such as the Bois de Boulogne, the Buttes-Chaumont, and Montsouris, groups will reproduce historical events which have occurred in the city from the most distant times to our days.

THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 29, 1877.

FOLLOWING a practice which has now become customary, we turn over the record of the year, now at its close, and proceed to glean from the mingled statements what there may be which will in the future render the year memorable—or what there has been in it that is deserving of more than ephemeral notice. Taking in this way a general survey from a distance as it were, we see things in better perspective, and can form a juster estimate of their proper proportions than we could do at the time in the hurry and confusion amid which work has to be done now-a-days.

Wholesome activity rather than startling advance seems to have characterised the horticulture of the year; falling back there has been none; of steady onward progress, more perceptible in the future perhaps, there has been much.

In scientific horticulture the two main events of the year are the establishment of a physiological laboratory at Kew, and the publication of Mr. DARWIN'S work on the *Fertilisation of Plants*. The laboratory has, we believe, already been utilised by Professor TYNDALL, in his experiments on germs, by Dr. BURDON SAUNDERSON, and others; and we would fain hope that in the future the foundations of improved practice in horticulture may be laid in the accurate study of plant-life, and the conditions favouring it in the laboratory at Kew. The garden and the herbarium have each in their respective ways been of incalculable service to horticulture and agriculture. There is urgent need for physiology—the study of the living plant in action—to be prosecuted, as we hope it will be, till the newly-opened laboratory shall take its place by the side of the herbarium as a great centre of scientific discovery, and a means of diffusing information for the common good. Mr. DARWIN'S book, whatever modification may hereafter have to be made in the inferences drawn from it, must of necessity form the basis for much of the work of the future. Hybridists, propagators, and raisers of seedlings will in time consciously or unconsciously mould their procedures on the results obtained by Mr. DARWIN.

Practical horticulture, so far as it can be estimated in a general way, without going into detail, may be roughly gauged by reference to the various horticultural exhibitions of the year. If numbers be a test of merit or progress, then practical horticulture must be very flourishing. Exhibitions increase on all sides, and if they are not always called for by any real exigencies of horticulture, at least they evince an increasing love of flowers among the populace. So far as gardeners themselves are concerned, we strongly doubt the good effects of these ever-increasing shows.

Leaving that topic, however, as one not suited for discussion on the present occasion, we may say that the general average of merit in plants exhibited has been high. The shows of the Royal Horticultural Society have throughout the year been excellent, the fortnightly and monthly committee meetings have been kept up with spirit, and have been of the most interesting character, though neither the South Kensingtonians nor the general public seemed at all to appreciate the treasures prepared for their delectation. When HER MAJESTY on one occasion, and the Prince of WALES on another, visited the gardens, there was indeed a large influx of visitors, but they came to see the QUEEN or the Prince, and the flowers and fruit were less than secondary considerations. As to the Society, the supposed national exponent of British horticulture, it has not done much to act up to its duties—as much, perhaps, as could be expected under present circumstances. Its finances are, we believe, somewhat better, and there have been a few new members added, but we look in vain for any indications of a real appreciation of the gravity of the situation and of the necessity of reconstructing and reorganising the Society. The proposed appointment, however, of a paid secretary, conversant with scientific horticulture, is a step in the right direction, and we only trust that the scandalous jobbery which dictated a former appointment of the kind may be present to the minds of the electors on this occasion, and induce them to make a proper selection. Of foreign and provincial exhibitions, we can only say that neither that at Amsterdam nor that at Carlisle were up to the usual standard of such important exhibitions. The Carlisle show was also singularly unfortunate in the weather.

To the weather also must be attributed a fruit crop worse probably than has ever been experienced before, except, perhaps, so far as Nuts and small fruits are concerned. The Potato crop was not much better, though, perhaps, hardly so bad as was at one time anticipated.

The Colorado beetle has not yet made its appearance among us, but when he does come we shall at least be in a position to cope with him; and so much has been done in the way of making his lineaments known to those whom they concern, that we may hope not to have so many boxes of ladybirds sent to us in future under the impression that they were the dreaded foes.

Seed killing and seed dyeing have unfortunately made their appearance again, but we have little doubt that the unprincipled manipulators of such wares will speedily find that the game is not worth the candle, and turn their attention to some other less risky business.

The obituary list of the year is perhaps less heavy than usual, and contains fewer distinguished names; nevertheless, we count among our losses the names of ALEXANDER BRAUN, the noted botanist of Berlin; of HUGH WEDDELL, of ALFRED SMEE, so well known as an enthusiastic horticulturist and a keen man of science; and of THOMAS RIVERS, whose great achievements and fine character formed so lately the subject of comments in our pages.

It is a sad thing to wind up the year with, but our duty as chroniclers compels us to notice the disastrous fire at the establishment of Messrs. WEEKS & CO., the eminent horticultural builders, and the lamentable destruction of new plants in the adjoining establishment of Mr. BULL. Happily no loss of human life is reported, but the destruction of many fine plants is a matter which will cause all plant lovers to sympathise with Mr. BULL, whose energy in collecting them together has been so remarkable. Fortunately, though the loss is great, there are still many left to replace those destroyed. *Le roi est mort—vive le roi!* Regrets are unavailing. On the whole we horticulturists have deep reason to be thankful, and good grounds for anticipating that 1878 will be a year of progress. Let us all resolve that the fault shall not be ours if it prove otherwise.

THE following statement has been sent to us for publication by the Council of the ROYAL HORTICULTURAL SOCIETY:—

"The Council submit to Fellows and members the following statement:—

"The end of 1876 found the Fellows, as a body, dissatisfied with their privileges and divided into hostile sections, their resignations alarmingly numerous, and new candidates for the fellowship few; the Council, unable to satisfy the conflicting wishes of the contending parties, obliged to maintain South Kensington Gardens, and without funds in possession or prospect sufficient to carry on the Society with credit to the end of the year 1877. In this situation all parties saw the necessity for mutual concessions, and the Society ceased to be torn by internal strife. The privileges claimed by Fellows were granted to them and added to, and a new body of annual members created. Resignations ceased, and candidates for admission presented themselves in numbers which, though absolutely large, are still far short of those required to place the Society on a safe footing for the future.

"The fortnightly fruit and floral meetings were held in the conservatory, and through the admirable exertions of the exhibitors assumed the beauty and dimensions of regular shows; and the Saturday promenades were resumed, although much later in the season than the Council could have wished. In addition to the fortnightly exhibitions, a special show of Covent Garden produce proved most attractive; and two magnificent summer shows held in the Gardens were honoured respectively by the presence of the QUEEN and the Prince and Princess of WALES.

"During the year the scientific and practical work of the Society has been satisfactorily prosecuted at the Chiswick Gardens, from which also plants, cuttings and seeds have been largely distributed among the Fellows. 179 debenture holders have accepted Fellows' privileges (except that of voting) in lieu of interest on their debentures, and the Council believe it will be possible to make a similar arrangement on a more extended scale for 1878. All the expenses of the Society for the year have been paid up to date and out of revenue.

"Next year, during March, April and May, the fortnightly exhibitions will be held in the conservatory. On these occasions a band will attend. In June a four days' show, which the Council hope will at least equal any ever seen in London, will be held in the Gardens. In July a four days' provincial show on a large scale will be held, under the patronage of the Society, at Preston; the funds for this purpose being raised by guarantee. Any surplus from this show will be vested in trustees, for the promotion of similar shows, which experience has shown powerfully stimulate practical horticulture. The Council hope to resume the publication of the *Journal* of the Society on a suitable footing, and to make satisfactory arrangements with correspondents in foreign countries for the collection and transmission to England of rare seeds and plants.

"The Council desire to render the South Kensington Gardens attractive to London Fellows and members, and with this object will provide a band and give promenades every Saturday while the attendance justifies the outlay. These promenades will commence on Saturday, January 19, will, during the winter, last from 3 to 5 P.M., and be held in the conservatory, which will be warmed, and when necessary lighted at dusk; Fellows' tickets and small book orders will admit to them; and, to render them select, the minimum charge to the public will be half-a-crown. Members will have personal admission. From wishes expressed at general meetings and otherwise conveyed to them, the Council believe that a summer *fête*, to be held in the evening, would yield gratification to many of the Fellows, and they will give the subject their consideration. Fellows' privileges will remain as settled this year. Lists of these and of the promenades, exhibitions, and shows for 1878 will be sent to each Fellow and member in due course.

"Although the position of the Society has improved to an extent that could scarcely have been anticipated at the beginning of this year, the Council must remind Fellows and members, especially those resident in London, that the aggregate amount of their annual subscriptions is still far short of the £10,000 which must be raised from that source during the next twelve months, to prevent the forfeiture of the South Kensington Gardens. The money must come from the subscriptions of Fellows and other annual subscribers; if not so raised the gardens will be forfeited, and perhaps built over; if so raised, they will be secured to the Society for fifteen years. The Council believe that if Fellows and members exert themselves individually to induce their friends to join the Society, the amount required, which exceeds the average income from subscriptions in the years 1871 to 1874 inclusive by less than £2000, can easily be obtained. If the gardens are to be preserved this effort must be made at once."

—— We much regret to state that Messrs. J. WEEKS & CO.'S extensive premises in Maude Grove, King's Road, Chelsea, were totally destroyed by fire on Sunday morning last. The fire broke out about 10.30 a.m., and steamers from Brompton, Kensington, Bayswater, Portland Road, and King Street, Regent Street, were quickly summoned to the scene, but in spite of the exertions of the firemen the whole range of premises were soon alight, and about an hour after the outbreak the roof fell in with a loud crash on to the valuable machinery underneath, and

the fire soon attacked an adjoining cottage and some stabling, and also several of Mr. BULL's plant-houses and a covered yard, the roof of the latter being burnt off. For more than three hours the firemen continued to direct the water from the engines, and up to Sunday night a stand-pipe was employed in cooling the heated ruins. Messrs. WEEKS & Co. request us to state that while much regretting the loss and inconvenience that must inevitably result from the loss of their workshops, it is only one out of their four business premises that has been destroyed, and that by converting portions of the foundry, boiler-works and stores into temporary workshops, the general conduct of their business will suffer no interruption.

—— We are glad to hear that the HORTICULTURAL CLUB propose to migrate to the Temple Club in Arundel Street, Strand, close to the Temple Station. We can speak from experience of the great superiority of the accommodation offered, and hope that the Club may continue to be the bond of union and good fellowship between all sections of horticulturists.

—— Some months since we had the pleasure of seeing a plant of WELWITSCHIA at Kew, with its two green leaves in a living condition. We are glad to learn that the plant still continues in a good state, and that there are reasonable grounds for hope that eventually the public may be enabled to see in a living condition this most extraordinary plant.

—— We hear that Mr. CHARLES EDMONDS, who has so long and so well filled the post of head gardener at Chiswick House, formerly in the service of the Duke of DEVONSHIRE, and latterly in that of H.R.H. the Prince of WALES, is about to retire, in consequence of failing health, and that Mr. MICHAEL MAY, formerly of Chatsworth and Hampton Court, who has been foreman at Chiswick House for the last three years, will succeed him. We are also gratified to hear that Mr. EDMONDS retires upon a pension from the Duke of DEVONSHIRE, and that the Prince of WALES has presented him with a gold watch in recognition of his services.

—— The splendid samples of APPLES shown by Mr. S. FORD, gr. to W. EGERTON HUBBARD, Esq., Leonardslee, Horsham, were such excellent examples of good management in the preservation of fruit that the rules observed by Mr. FORD, though not novel, may yet be given as a guide to young gardeners. There are always learners among us, and it is therefore necessary to repeat lessons of instruction. Cleanliness and sweetness is a first condition in a fruit-room, and therefore Mr. FORD thoroughly whitewashes the walls of his fruit-room every summer. No variety of Apple is gathered until it is quite ripe and fit for housing, and picking and storing is done only when the fruit are quite dry, and the handling of the Apples is done with great care. This is a very important matter, one having much to do with preserving fruit in fine condition. In storing the Apples are placed two deep only, and no straw is used for the shelves. The fruit-room is thoroughly ventilated night and day, and the ventilators are closed only when bad frosty weather happens. The fruit are not handled till wanted, except it should be for the purpose of removing decaying specimens, but under Mr. FORD's method of treatment loss from this cause is quite minimised. Pears are treated in the same manner, and with similarly favourable results. Mr. FORD's practice appears to be the farthest removed from "coddling"—the justification is found in the excellent samples of fruit he is in the habit of exhibiting at the meetings of the Royal Horticultural Society in spring.

—— What a fine berried plant for the Christmas season ARBUTUS ANDRACHNE makes! There is a specimen of it at Ealing Park growing with other interesting trees on the lawn, which is now loaded with bunches of bright orange berries, in quite large clusters, and branches of it in a cut state do excellent service, mingled with Holly, &c., for house and church decoration. The smooth red trunk, from which the bark peels off annually, lends a certain attractiveness to the tree. The birds appear to be fond of the berries as an article of food.

—— There is a fine example of DRACÆNA ARBOREA in the stove-house at Ealing Park. The specimen is about 5 feet in height, and it is clothed with long, broad, bold, pendulous leaves to the rim of the pot, the younger leaves being somewhat erect. Mr. EDWARDS, the gardener to J. S. BUDGETT, Esq., is to be congratulated on the possession of such a well-condition example of a plant that is said to be not at all common just now. It is a fine bold subject for a warm conservatory.

—— The following Orchids are now in flower at the Victoria and Paradise Nurseries, Upper Holloway:—

Angræcum sesquipedale	Dendrobium Wallichianum
Bollea Patini	Lælia autumnalis
Calanthe Veitchii	Lycaste Skinneri
,, vestita lutea oculata	Masdevallia ignea
,, ,, rubra	,, polysticta
Cattleya Trianæ	Maxillaria picta
Colax jugosus	Neottia maculata
Cirrhopetalum species	Odontoglossum Alexandræ
Cymbidium Mastersii superbum	,, cirrhosum
	,, ,, Klabochorum
Cypripedium Boxallii	,, crispum
,, Crossianum	,, Ehrenbergii
,, Dayanum	,, Pescatorei
,, Harrisianum	,, Rossii
,, insigne	,, ,, major
,, pardinum	,, Uro-Skinneri
,, Swannianum	Oncidium cucullatum
,, Sedeni	,, ornithorynchum
,, venustum	Ornithidium sophronites
,, ,, spectabile	Rodriguezia secunda
Dendrobium bigibbum	Saccolabium giganteum
,, moniliforme	Vanda tricolor superba
,, nobile	,, ,, insignis
,, superbiens	Zygopetalum Mackayii

—— We are informed that Mr. MCKELVIE has resigned the Secretaryship of the DUNDEE HORTICULTURAL SOCIETY, and that his successor in the office is Mr. DAVID P. SCOTT, of the National Bank of Scotland.

—— The present disgraceful condition of ROTTEN ROW is the subject of the following comments in *Land and Water*, after reading which we are constrained to ask what the new bailiff is doing for his salary? His road-making experience was the only qualification that could be claimed for him on his appointment, but it does not seem as if he were allowed to use even that little knowledge with any advantage to the State:—

"MICHAEL SCOTT, we are told, kept his assistant demons in subjection under the condition of finding them never-ending work, the penalty for failing in doing so being his own destruction. He solved the difficulty by setting them to make ropes out of sea-sand. Surely the department having charge of Hyde Park must be under some similar obligation to the clamorous jobbers, their demons, and meet it by setting the endless and hopeless task of constructing a serviceable road out of broken brickbats and rotten plaster. The attempt is now, as it has been for many years past, in progress, and the result, not only a failure, but a disgrace and a scandal. The same system goes on year after year. In the autumn the Row is closed from end to end; hundreds of labourers with carts and horses are employed; the filthy surface and decayed substance beneath are scraped off, picked up, and replaced with loads of similar rubbish, the refuse of condemned houses, a substance which builders in general pay heavily for permission to 'shoot,' but which in Hyde Park is purchased, doubtless at a high price. About November, the Knightsbridge ride having in the meantime become thoroughly broken up and dangerous, one-half of the Row is opened to the public, and long before the other is ready, as is the case at this moment, it is at least partially worn out. At this moment numerous gangs of men are employed in 'darning' it, and so the work goes on, like TENNYSON's brook, 'for ever.' We have heard that this work costs the public £8000 a year. Besides the enormous expense and the inconvenience to which the riding public is subjected, another evil arises from the stupid system pursued, which is daily becoming more apparent and which affects all frequenters of the park. The constant accession of rubbish and sand has so raised the ground that the stems of the Elms forming the avenues have been buried some feet below the surface, and in consequence their tops are fast dying. They are all young trees, but in nearly as decayed a state as the old ones in Kensington Gardens. Elms are perhaps not the best trees for the purpose, but they will live and grow into fine timber if only their roots, which run along near the surface, have room to spread. This the mass of concrete and rubble entirely forbids, and the trees, especially at the east end, are already half destroyed."

—— According to the *Gardeners' Monthly*, the new HYDRANGEA THOMAS HOGG, for which Messrs. VEITCH & SONS obtained a First-class Certificate from the Royal Horticultural Society last spring, is getting so abundant in America as to find its way to the auction-room, 1000 plants having been recently disposed of in this way in New York.

—— We have received the following communication from the Hon. Secretaries of the NATIONAL ROSE SOCIETY:—

"We are happy to be able to announce that the dates of the exhibitions for 1878 are now fixed. The metropolitan show will be held at the Crystal Palace, on Saturday, June 29; and the provincial exhibition at Manchester, on Saturday, July 6, under the auspices of the Manchester Botanical and Horticultural Society. In both instances the arrangements are most advantageous to the interests of the Society. We have fought hard in deference to the wishes of many to get some other day in the week, but have been obliged to give way. The executive committee will meet early in January to arrange the schedules for the consideration of the general committee. *The Hon. Secretaries.*"

—— The SCREW PINES (Pandanus) hitherto have presented great difficulties in their study, but nevertheless Dr. I. BAYLEY BALFOUR has summoned resolution to commence work on a monograph of the group, his preliminary notice being laid before a late meeting of the Linnean Society (December 6). The variability of species, inability to obtain male flowers, the feeble character of the leaves, and the fact of the fruit on being dried losing its distinctive features, render elucidation of the group most troublesome. It seems, though early voyagers took notice of the Screw Pines, their descriptions and identifications are most faulty; nor have recent travellers added much to their botanical history. RUMPHIUS, to whom we owe the name Pandanus, has poor figures compared with those of REDÉ a century before. LINNÆUS indicated a plant, Bromelia sylvestris, but omitted nevertheless the genus Pandanus—an omission rectified by his son. Many of the named genera and species of the Pandanaceæ, it seems, will necessarily have to be rejected. The group goes eastward from Africa through the Mascarenes, India, Malay Archipelago, Australia, as far as the Sandwich Islands. Two centres are said to exist, the Eastern Archipelago and Mascarene Islands, and the species do not commingle. Dr. BALFOUR complains of the needless multiplication of names by horticulturists, but nevertheless desires every information, that he may be enabled, on publication of his provisional list, afterwards to correct the synonymy, &c., as his monograph proceeds. We hope at a later date to be enabled to refer more fully to his list, and possibly those horticulturists interested in the subject may afford hints to the author in his attempt to unravel this confusing group.

—— If the large HORTICULTURAL EXHIBITIONS held in London are experiencing a decline, it would appear that horticultural societies in the immediate suburbs of the metropolis are able to show a state of things of an agreeable and prosperous character. The shows which take place at Richmond, Chiswick, Highgate, Ealing, and other places, are not only thoroughly good in themselves, but of an extensive character also, and, being well managed, they are able to pay their way. The Richmond Horticultural Society, which has now been established three years, can show a remarkably prosperous career. The first year's income was something over £250, the second year it exceeded £400, and in the balance-sheet just published the income for the past year was just over £500, and it is pleasing to note that the balance left over from each exhibition shows a much more marked increase than the income, for in 1875 it was £1 3*s.* 10*d.*; in 1876, £13 15*s.* 11*d.*; and in 1877, £47 11*s.* 1*d.* The Ealing Society will next year embrace a spring and autumn show in its programme, with every probability of their proving successes in every respect. These societies are well worked, in each case an active committee of practical business men, in combination with experienced horticulturists, have the direction of affairs; all items of expenditure are carefully considered and brought down to the lowest possible limit consistent with efficiency, and the subscription lists in each case are well looked after. As long as societies are well worked the danger of financial failure is reduced to a minimum, and it is only a wet and unpropitious show day that can cause apprehension on financial grounds. The best committee ever formed cannot control the weather, but it should have a reserve fund to fall back on in case of financial collapse from this cause.

Home Correspondence.

Lapageria alba.—The remarkable floriferousness of this plant has been well exemplified the past season in the Camellia-house of Mr. C. W. Cowan, of Valleyfield, Pennicuick. It produced not only several hundred flowers, but there were about 400 fully expanded delicate wax-like blooms adorning the plant at one time. This appears to have been one of the very earliest introduced plants, having found its way here, I understand, from the Exeter Nurseries when it was exceedingly rare. It is growing on a trellis facing the glass in the tall perpendicular front of the Camellia-house, and is planted out in a slate tub. No such plant for general excellence has come under my eye, not even the famous Trentham plant, although the latter is larger; this one seems revelling under the cool winter treatment common to all well-managed Camellia-houses. Indeed, the Camellias themselves, particularly alba-plena and imbricata, are equally notable for good culture, being great cylindrical masses of foliage quite 12 feet high, and about 4 feet in diameter, grown in strong hooped circular tubs. These things particularly reflect considerable credit on Mr. Burd, who hailed from the sound practical teaching of Mr. James M'Nab to this place some thirty years ago. *A.*

Pinus insignis.—Seeing Mr. Penford's remarks at p. 724, I was induced to measure a specimen here that was planted in April, 1869. When planted the tree in question was turned out of a pot, and had a leader and four lateral shoots, and was 2½ feet high. The height now is 21 feet, girth of the bole at 1 foot from the ground 2 feet 8 inches, circumference of the branches 42 feet. Fine specimens of Abies Douglasii and Cupressus Lawsoniana are now 21 feet high. Arbutus Unedo, turned out of 4-inch pots in 1868, are now 10 and 12 feet high, with fine heads on them, covered with flowers and fruit. In planting the trees and shrubs here the ground was trenched, keeping the good soil at the top, and forking up the subsoil. The growth of the plants has well repaid the labour. *W. Hutchison, Llwyndii Court.*

Poinsettia pulcherrima.—At this dull season no flower can surpass the dazzling effect produced by a well-grown lot of Poinsettias, such as are now in flower at Old Sneed Park. A large quantity were struck in July and August, and grown on in large 60-pots, the most convenient size for house decoration; and the plant so confined makes but little growth, therefore the result is a dwarf plant with a grand head of bracts, suitable for any purpose. My plants vary in height from 6 to 18 inches, with bracts varying in diameter from 10 to 18 inches. Many larger specimens are also grown with bracts measuring fully 23 inches in diameter, which is thought here to be especially good. I should like to have the opinion of Poinsettia growers as to what size they have been grown. *E. M.*

Dendrobium chrysanthum. — This popular Orchid, so long known and appreciated, bids fair to rival even the most wayward of the species of this family for diversity, both in point of habit and inflorescence. The exceeding richness of the flowers, remarkable alike for depth of colour and great substance, stamp this as one of the most suitable for cultivation in a general collection. Usually it is of somewhat pendulous habit, throwing its pseudobulbs somewhat in arching fashion from the centre of growth. Unlike its compeer D. nobile it flowers from the maturing, not from the matured growth, and although it may be comparatively mismanaged, so as to yield only a few flowers at the extremity, in good hands any variety will flower half-way down the growths. What induces me to speak of it now is the coming in contact with a very superb variety in the choice well-managed collection of Mr. Wm. B. Boyd, of Ormiston House, Kelso. This variety had actually the very large number of ninety-eight flowers on a single growth, that growth being from 4 to 5 feet long—quite the height of a stout well-grown Wheat-stalk! Great as is the variety in D. Wardianum, as Professor Reichenbach truly says, this chrysanthum, in the remarkable instance quoted, seems quite to outvie it. The pseudobulbs were so long that Mr. Fairbairn, who is no novice in Orchid-growing, as the writer had occasion to remember in his examples at the International Show of 1866, had to tie it up perpendicularly. The variety appeared to me to be so remarkable that a simple notice of it for present comparison and future reference, would, I opine, be interesting to your rapidly increasing list of Orchidophilists. *James Anderson.*

The Magnum Bonum Potato.—Although there is an undoubted similarity between the tubers of Magnum Bonum and White Belgian Kidneys, the haulm is so different that there is no reason for any grower continuing to cultivate the latter variety under the name of the former if he has once grown both kinds. The haulm of Magnum Bonum, where grown on good soil, reaches to a height of 30 inches, is very woody and erect, and has medium-sized rough leaves, indeed it resembles the well-known top growth of Victoria more than any other kind. The haulm of Belgian Kidney reaches to an average height of 18 inches, is of more compact habit; the foliage generally resembles that of Bresee's Prolific, the leaves being green and glossy, but the growth of the plant is more erect. Even by the slicing of the tubers I have been enabled to detect the different sorts, as the flesh of the Belgian Kidney has a yellow tinge and is rather coarse and watery; the skin also has a pink tinge. Magnum Bonum has flesh of solid and fine quality, whiter than that of the preceding kind, and displaying the smallest quantity of moisture on the surface. I have this day enjoyed a singular experience, having had a dish of Magnum Bonum cooked from lots grown here in clay loam, in Wilts in black sandy loam, and in Berks on gravel, but the diversity of soils gave no divergence in the quality of the Potatos when cooked, all the tubers being then exactly alike. I am inclined to think that very few, if any, of the Belgian Kidney have been sold for Magnum Bonum, as in a varied Potato experience I have not seen other but the real kind growing under that name. Seed houses, as a rule, don't do that sort of business, for even if inclined to be dishonest, by no means (in spite of recent revelations) a feature of the trade, it would soon provoke more loss than gain; no seed house can continue to trade long on the credulity of its customers. It may answer a certain purpose to start stories of this kind, as was the case with another somewhat popular Potato a couple of years since, but they won't bear inquiry. Magnum Bonum is a fine main crop Potato, and merits all that has been said in its favour this season, which has peculiarly suited it. *A. D.*

Root-pruning *v.* Finger-and-thumb Pruning.—I think finger-and-thumb pruning is of little use in the case of trees outside if the roots are in a cold subsoil, the result of the practice being a second or third growth of wood, and but few fruit-buds. There is a fine wall of Pear trees here, which quite fill the space allotted to them, and I think they are about twenty-six years old from the graft. The breast-wood on these trees last summer was fully a yard long, and there has been hardly any bloom on them for the two years I have had charge of them. I recently set to work to root-prune them. We opened a trench about 6 feet from the stem, and gradually worked up the roots till we got under the stems, where we found in nearly every case a number of strong roots going straight down into the clay and under the wall, and many thong-like roots so full of sap that they snapped like a carrot on being slightly bent. Finger-pruning in this case would be useless. [Certainly.] The roots were laid in near the surface in good turfy loam, and though the remedy, from the size of the trees, is a severe one, I have no fear for the result. *John Barker, Sandown Hall, Liverpool.*

The Rival Ivies.—It is not at all clear what Mr. Thomas Williams really does mean. He told us in his first letter that the demand for Irish Ivy was so great that nurserymen could with difficulty keep pace with it, and now he says that he did not mean that there was any difficulty. According to his own showing it is in demand, and has been for years, and so are all Ivies, and their great usefulness makes them more and more in request. Does he mean to say that the gardening public (who, by the way, are very fair judges of what suits their particular requirements) have been for such a length of time purchasing an article that now turns out to be such a scarecrow as he describes it, when a much better thing was to be got quite readily? He praised the extreme leafy constancy of character of his native Ivy in his former letter, and now he admits that it varies. He will probably tell us in his next that he has discovered that, after all, the Irish Ivy known to him is only a selected form of the English, preserved in its constancy, as all other varieties can be, by constant propagation by cuttings. As to the Ivy being shorn like a sheep, most practical men admit that, a work once performed is done with; and so when Ivy is cut in the spring, and the litter cleared up, the constant mess that uncut Ivy makes all through the summer is obviated. If Mr. Williams will try what we in this more practical country adopt, he will not require to have a man up a break-neck ladder for days together. A handy man with a short, sharp, strong reaping-hook will go over as much ground in one hour as another will do in a day with a pair of ordinary shears. This not only applies to shearing Ivy, but to all other shearing—hedges, &c. *T. Smith.*

The Destruction of Mealy-bug.—At p. 693 "Experience" informs your readers that the present is the most appropriate season for the annihilation of this abominable pest, and the most inexperienced of us will endorse what your correspondent has written on the subject. I have had to contend with it, and know well what a terrible pest it is to eradicate when Vines or plants get overrun with it, and the most effectual remedy with which I am acquainted by personal experience is Bridgeford's Antiseptic Liquid. Merely touching the bug with it, with a sponge or small brush, causes instantaneous death. When a statement like this was made to me by a nobleman's gardener, under whom I acted as foreman, I had much hesitation in believing it, but my master soon convinced me that he had not exaggerated its destructive qualities. Since I have had the management of these gardens this liquid has been used, with the same good results, without the least injury to our plants. My only object in giving this matter publicity is that I have proved it to be truly a boon, and that there may be some who may not know of its existence. I have no hesitation in asserting that any person who will give it a fair trial will fully bear out what I have written about this invaluable liquid. I think Mr. Bridgeford's (seedsman) address is Sackville Street, Dublin. *Thomas Lloyd, Gr., Mongewell Park, Wallingford, Berks.*

—— I can justly endorse all that "Experience" said regarding cleanliness. It is a difficult task to deal with mealy-bug in a mixed collection, but it can be kept under. I say with "Experience," get out of it and keep out of it; but how we are to prevent it coming from the nurseries is another question. It is not always convenient for gardeners to go to pick their own plants, and it happens sometimes that our employers take a fancy to a rare plant, and order a hamper to be packed, and it very often happens that they pack some bugs as well, and it is always the busiest season when these plants arrive. I had on our old Vines a good stock to start with four years ago, but during the following spring I peeled all the bark off and dressed with paraffin oil. The Vines broke weak and showed only small bunches, but there was no bug during that or the following spring to grumble about. The winter following I did not attempt to disturb the bark, and in the spring following the bug was as bad as ever: so I have taken the bark off again, and dressed with the Chelsea Blight Composition, mixed with clay, applied as a thick paint. I have heard that paraffin has caused the death of some Vines, but, though I gave these Vines two dressings in one day, it has weakened the growth and reduced the crops to half but not killed any. *H. W. D. H.*

——"Experience" gives some very useful hints at p. 693 on eradicating this pest, but, next to prevention, there is no remedy at once so simple, cheap, and effectual as the cold-water cure. The moment a bug is seen direct a powerful stream of cold water against it. This batters the woolly-looking filaments to atoms, and the pest denuded of these is well nigh powerless for further mischief. If not much injured the bugs seem to have sufficient strength to recover, but three good shots in succession from the end of an engine or well-handled syringe will finish the strongest bug alive or render him powerless for mischief in the future. There is nothing bothers these pests like a powerful shower-bath. The coldness of the water also seems an element in the cure, the water denudes them of their filaments, its force also bruises them, and the cold striking them on the heels of both, probably produces paralysis or death. Certain it is the persistent use of cold water clears off the most inveterate cases, and has been quite effectual in keeping large masses of Stephanotis, as roof climbers, clean. Of course some care would be needful in applying this cure to tender leaves or shoots, such as Vines or other plants, but most stove plants will bear a dash of cold water with impunity. We have seen hot water up to a temperature of 140° tried with less decisive effects. This and experiments with water from 140° down to the coldest that can be had in a shady place in the open air in summer, shows that the colder the water the more speedy the cure. It may be needful, however, to add that by this statement it must not be inferred that iced water is meant, or water from the open air, for stove plants after November; at no season should water under 40° or 45° be used, and in summer, of course, our cold water is at least 10° warmer than that; so that the term "cold" is a mild and relative one after all. The force of the water and the disparity of temperature between it and the pests seem the chief elements of success in the cold-water cure. If at first it don't succeed, all that is needful is to obey the nursery rhyme and "try, try, try again" until it does. *F.*

Rubus laciniatus.—A great deal has been written in favour of Vegetable Marrows for making preserves, and those who use the recipe given in the *Gardeners' Chronicle* may like to know of a cheap addition to the valuable fruits for making preserves. The plant is Rubus laciniatus; it is much the same as the common Bramble, but the berries are larger and earlier, and a more abundant crop of them is produced. This season the common Bramble failed entirely to ripen; we began to gather the other for ordinary domestic purposes as soon as our small fruits failed in the

garden, and we found it an excellent substitute. All who have a rubbish heap, or any unsightly object to cover, where it is practicable, I would recommend to plant of the above; it is a robust grower, has beautiful foliage, and altogether it is is a most suitable, as well as profitable plant for such purposes. *W.*

Temperature of Outside Early Vine Borders.—I think "S. W." is scarcely correct in saying that "In starting an early vinery, and for some time afterwards, the heat of the house, and that of the border outside, bear the same relative proportion to the natural ground and open air during the spring." The mean temperature of the ground in April at 1 foot depth is 45°.1. I find the mean temperature at Edinburgh in the open air for the same month is 45°.1. In starting a vinery in December the ground temperature is by the same tables 34°.6. The mean temperature at Edinburgh in open air for December is 39°.8. (I have taken the mean open-air temperatures for Edinburgh, as they are ready to hand, and may be taken as an average for Scotland.) This shows that in spring the relative temperature enjoyed by root and branch is much the same. But if we create an artificial temperature round a Vine by starting it in December in a vinery while the roots are all outside, it appears to me there will not be "much relative proportion to the natural ground and open air during the spring" unless some means are taken to raise the temperature of the border. The pinch is most likely to be felt not so much at the starting as from the time the bunches show till they begin to colour. "S. W." also asks me how I "account for the rapid start vegetation makes after a few hot days and a genial shower or two?" Why nothing is more simple, because those hot days act upon the soil and the roots at the same time as upon the stem and branch above ground, and the genial shower or two, if there is enough of it after refreshing the top, finds its way to the roots. The mistake "S. W." makes here is in recommending that when Vines are started in December the stem and branch should have the necessary artificial climate inside the vinery, corresponding to those warm days and genial showers in spring, while the roots are outside starving perhaps in a temperature a little above freezing, and entirely shut out from the vivifying influence of heat. In reply to the query as to the "North of Europe, where they jump at once from winter to summer—and what about the warmth of the soil there and its effect in producing root-action, and is it not rather brought about in response to atmospheric influence alone?"—I may say that I have no figures at hand showing the air and soil temperatures for those parts in the North of Europe where summer comes so suddenly, but I should say that it was scarcely a climate for Vines flourishing outside; it only affords additional proof, however, that Nature gives the soil and roots the benefit of a summer climate at the same time that the part of the plant above-ground is exposed to its influence. It is a fact well known to meteorologists that the daily range of temperature influences the soil to depths varying from 2 to 3 feet, according to its nature; friable soils feel its influence to a greater depth than cold clay soils. In my own experience the underground temperatures registered here often vary from 2° to 4° at a depth of 2 feet in the space of twenty-four hours during a sudden change from hot to cold, or the reverse. Without going into all "G.'s"-communication last week, I may be allowed to notice one or two points in it. In reply to "S. W. the Second's" query for the temperatures of his borders, or the weekly means of the borders when forced without artificial heat he tells us he has not been at the trouble to ascertain; that he took two observations, and found there was no perceptible difference, at 18 inches deep, between a border covered with fermenting material and one simply covered with leaves, "and that the question is not of much importance." Surely, if he wants to show the fallacy of a practice adopted for generations to assist in the production of early Grapes, it is worth the trouble to have more than two observations to show that heating an outside border is unnecessary, and if cultivators run the risk of losing a crop by following his advice, surely it is a question of some importance. From his experiment of 1861-62 he feels thoroughly convinced that, whatever amount of heating material be placed upon the border, it is impossible to drive the heat far down into it, and unless it can be driven down more than a foot or 18 inches he cannot see that we are "gaining anything by placing it there." As he is already thoroughly convinced it would be labour lost to try to convince him, it would perhaps be a more hopeless case than *Punch's* typical Scotchman who at least was "open to conviction, but would like to see the man that would convince him." I have never heard of any process by which heat could be "driven" into the earth, nor is there any necessity for any driving process, because when the air is warmer than the earth then the earth absorbs heat from it; when the air is colder than the earth, then the earth loses or gives back heat to the air. In the early part of the season up to July, the earth on the whole gains more during the daily ranges than it loses. After the maximum is reached at that time, then with the shortening day and longer night the earth gives out on the whole more than it gains, hence the gradual diminution of the mean temperature until the minimum is reached in December. By putting heating materials on a Vine border the earth simply absorbs the heated air, and if carefully managed a gradual rise of temperature in the border is secured instead of a gradual loss during the winter months. "G." finishes with the remark that "unless your correspondents can prove that they can grow better Grapes, &c." with than without "heat to outside borders that he has the best of the argument." As "G." says there is no necessity for a practice that has been in general use many years, and is still, the onus of proof lies with him. About having the "best of the argument," he is welcome to his own opinion about that, so long as both sides of the question are properly ventilated. *D. M., Dunrobin.*

The Weather.—Last year I ventured to remark that where the wind was on Martinmas eve, November 12, there it would be for most of the winter, and nothing could be more true than that it proved last year. It appears we are going to have another mild winter, the wind being south-south-east on November 12. It has shifted to the east for a day or so, and also to the other points, but it very soon veers back to the south and is now as I am writing. My old garden woman says it will be there most of the season, for she and her old man have noticed that it has been so for fifty years. [Keen observers!] *W. Brown, Merevale.*

A Rat-guard.—To keep rats away from anything that is hung up, the following simple method may be used. Procure the bottoms of some old fruit cans, by melting the solder which holds them upon a hot stove. Bore holes in the centre of these discs, and string a

Fig. 162.—Guard against rats.

few of them upon the cord, wire, or rope upon which the articles are hung. When a rat or mouse attempts to pass upon the rope by climbing over the tin discs they turn and throw the animal upon the floor. This plan, shown in the illustration (fig. 162), will be found very effective. *American Agriculturist.*

Early versus Late Propagation of Chrysanthemums.—I can assure Mr. Hinds that what I have said in favour of early propagation of this plant was not based upon supposition, but on actual practice. Though I have never grown this flower for exhibition, but in common with other decorative plants which I have cultivated, I have always tried to do them as well as if they had been intended for that purpose. I have tried the effect of propagation from December to April, and have found the earliest time the best. Mr. Hinds commits a common mistake in arguing that certain conclusions must result from a particular practice, basing their argument simply upon theory, than which nothing is more delusive. No one who knows anything about Chrysanthemum culture needs to be told that the suckers should be kept cleared off until the flower-buds are well advanced; but I always reserved one plant of a kind on which the suckers were not removed from the time the buds were fully set, and these will be large enough for putting in by the time the flowers fade. The Chrysanthemum is a hardy plant, and requires no warmth to induce the cuttings to strike further than, as I said, a greenhouse or a vinery at rest. Here the cuttings will root, during which time they will make very little top-growth; after which, the propagating-glasses being totally removed, and the young plants allowed to remain for two or three weeks in the cutting-pot, require no confining after potting off singly, and should be kept quite cool with plenty of air. So treated, the 2½ or 3-inch pots into which they were moved will not be overcrowded with roots before April. Mr. Hinds says these winter-struck plants will not retain their bottom foliage healthy through the season. Most certainly they will, if they receive all they require. I stop my plants 6 inches from the collar, and they invariably retain all the leaves above that; and as, with the liberal treatment I recommended, the leaves grow to a size that enables the lowest to all but touch the soil, there is no naked stem seen. Chrysanthemums will thus retain their leaves to the end of the season, provided they are properly treated, taking special care to keep them free from aphides and mildew, and never letting them want for water well enriched with manure. I found no difficulty in growing late-struck plants quite as large as those propagated earlier, but the early ones under similar subsequent management were always able to perfect a larger number of flowers. The time of commencing, like every other operation connected with the cultivation of a plant, requires to be regulated by, and is part and parcel of, the whole routine of culture through the year. And as in a Calendar this could not be given all at once, consequently the suggestions for any single week are scarcely a fair field for criticism. It is like finding fault with unfinished work. *T. Baines.*

Plants in Flower at Clevelands, Dawlish, on Dec. 25.—I send you a list of what there is in bloom in my garden to-day. I live on a hill quite close to the sea, and am very much exposed to east winds:—Wallflowers, Stocks, Carnations (seedling), Violets Prince Consort, La Belle Chatenay, Czar; Laurustinums, Mignonette, Jasminum nudiflorum, Veronica, Arbutus, Daphne cneorum, Chrysanthemums, Lobelias, Anemones (single and double), Cytisus racemosus, Roses Alfred Colomb, La France, Gloire de Dijon; Periwinkle, Primroses, and, I regret to say, Charlock and Coltsfoot. I have to-day eaten Raspberries and Blackberries. In respect to Orchids I have Odontoglossum grande still in flower, and one plant yet to open, with five flowers on the spike. This Orchid has been flowering with me since June 30. An unhealthy plant of Cypripedium venustum has two flower-spikes out of the same young growth, which is an unusual circumstance, and I fancy foretells its death. *Edward W. Walker, Clevelands, Dawlish.*

New Plants Certificated.—In your list of these, given on p. 778, there is one omission, namely, that of Primula veris robusta alba, which received a First-class Certificate when exhibited by me on April 18. Permit me also to state that Viola Golden Prince came from M. Fromow, and Viola Vestal from myself. *Richard Dean, Ealing, W.* [The list was drawn up from our own notes, the official list having been refused. Eds.]

The Gravenstein Apple.—I can tell Mr. Rust why I have not planted the Gravenstein Apple extensively. It undoubtedly is, as he says, a first-rate Apple early in the autumn, but here it is an unhealthy tree, liable to canker, and a very shy bearer. This latter quality alone will prevent its ever being extensively cultivated. *C. W. Strickland.*

Christmas Decorations.—In your article upon evergreens for this purpose you omit to notice the several kinds of evergreen Barberry, many of which, besides being evergreen, supply us with some of the brightest colours to be had at this season. Nothing can be more brilliant than the scarlet leaves which are frequently scattered about the sprays of Berberis Darwinii, and the leaves of B. Aquifolium furnish us with every sort of variety of crimson and puce and purple. *C. W. Strickland.*

Reports of Societies.

Edinburgh Botanical.—The Society met on the 13th inst., Dr. Cleghorn in the chair. The following communications were read:—

1. *Description of Hieracium Dewari*, a new species, by Dr. J. T. Boswell. Dr. Boswell furnished a detailed description (on the plan adopted by him in *English Botany*) of this novelty, which he has been unable to identify with any described species, and had named it after the late Dr. A. Dewar, of Dunfermline, to whose exploration of the botany of Clackmannan, Kinross, South Perth, and West Fife, we are much indebted. Few local botanists appear to have worked their district better. Previous to 1875, when Mr. T. Drummond distributed it as "H. strictum, broad-leaved form," most of the specimens in the British Herbaria were of Dr. Dewar's collecting at Linnmill and the Ochils, though there is no doubt that the plant was first collected in the Loch Lomond district by Professor Balfour. The British or reputed British species of Hieracium, to which H. Dewari is most nearly allied, are H. juranum, Fries (Borreri of *E. B.*, ed. iii.), and H. gothicum, Fries. No doubt it sometimes presents a superficial resemblance to H.

strictum, Fries, but their physiological characters are widely different. (Specimens were exhibited).

2. *Notes on the Flora of the Neighbourhood of Blantyre, Shire Highlands, Central Africa*, by Mr. John Buchanan, in a letter to Professor Balfour, dated August 6, 1877, read by Mr. Sadler.—The timber here, as in many places among the Shire Hills, is, as a rule, inferior. Beside streams and in damp places some good trees are to be seen. In appearance the trunks resemble much the Plane tree at home. Except in such places it is rare to meet a tree of more than a foot in diameter. What we have found the most useful for house-building and other purposes is a fruit tree called Lisuka. The wood is red and hard, and has the advantage of not being soon attacked by insects; the fruit is of a brown colour, about the size of a Plum, and much eaten by the natives. It agrees well with its order, Santalaceæ, and is very plentiful. A wood with a dark, hard centre and yellow alburnum is also plentiful. I have not seen it in flower. The leaves are pinnate. A species with white, soft wood and tripinnate leaves is very abundant; it is called "Jumbo" by the natives, and from the liber of its bark they make their cloth. Acacias are very plentiful; they abound in both marshy and dry places. There are several species, one has the peculiarity of being flat on the top. A species more in the nature of a shrub than a tree is when in flower a complete mass of yellow bloom, giving out a delightful odour. Gum exudes spontaneously from all the species; one kind is very pure and clear, another brown. There are no Tamarind or Baobab trees in the neighbourhood of Blantyre, but 30 miles north of this they are plentiful. Here and there is a species of Fig tree. Lime trees [?] at one station have cast their foliage twice since November, and are in full foliage now. They are plentiful, but the fruit has never come to maturity. The order Proteaceæ is well represented. There are many nice shrubs belonging to the Willow order. Kalmias are plentiful and beautiful [??]. The orders Leguminosæ and Compositæ have in numbers the advantage of the other orders. There is a vast number of creeping and twining plants in Papilionaceæ; some of them are so strong and tough that I have occasionally used them as garden-lines. Next to these orders come Orchidaceæ, Labiatæ, Liliaceæ, and Amaryllidaceæ. There are many distinct species of Orchids, both epiphytal and terrestrial. Five of the latter are particularly nice—a yellow, a purple, a red, and two white species. Labiatæ has many showy plants, chiefly about waste places. I have seen some lovely specimens in Liliaceæ. Several species of Aloes are found on the hills and mountains. We have about 400 plants beautifying our station. The natives brought them for sale; the price was an inch of calico per plant. The plants which I have seen in Amaryllidaceæ have very large bulbs; they average 6 inches in diameter. A species of Castor-oil plant grows profusely about old gardens. The natives by boiling extract an oil from the seed, which they use chiefly for adorning their persons. The orders I have mentioned are the most conspicuous, but very many more are represented. I feel confident in saying that there are here many flowers and plants which, if once brought home and cultivated, would compare favourably with any yet introduced. Ferns as well as flowers are here in abundance. At a stream above the station I have observed about twelve different species. There are Adiantums, Lastreas, and Athyriums, Polystichums, Polypodies, and Osmundas. A noble-looking Osmunda, in which I have seen no difference from Osmunda regalis, is in endless quantity. On the hills and mountains, as well as in the lower grounds, Ferns are abundant. Thrice I have gone Fern-hunting to the mountains, and twice I was forced to return drenched with rain. There I found quite different forms of plants from those in the streams. A species identical with Lastrea montana is everywhere present. Where two or three stones are heaped together, there it appears. I found amongst some stones a species very different from what I had before seen. It is about 4 inches high—frond almost a circle; in many parts I should say about one-eighth of an inch broad. These parts fold slightly in the back, and enclose the spores. I have seen species of Lindsæa, Lomaria and Pteris; I have just seen one species of moss; there are a few species of Lichens and fungi; one species of Mushroom is very large, and is eaten by the natives. Whilst an outhouse was being levelled I discovered what I presume to be a species of Truffle; they were of a small size, oval-shaped, skin hard and black. I have seen several nice grasses which, if grown at home, might pass as ornamental. The chief crops cultivated by the natives are Indian Corn, Ground Nuts, Beans, Sweet Potatos, and Pumpkins. There are no Water Melons in the neighbourhood. Indian Corn is the staple food of the country, from it they make a flour which they call Uffa. The corn being taken off the cobs, it is stamped in a stamper along with a little water. This finished it is taken and sifted, not through a sieve, but simply shaken until all but the flour is shaken out. This flour when made into porridge changes its name from that of Uffa to Usima. Englishmen use a large quantity of this flour in porridge and bake it into bread. Ground Nuts grow well, and when roasted are very good. They cultivate different kinds of Beans. One sort is identical with the French Bean; it may have been introduced by the Portuguese. Two varieties are white, one black, and one, a round Bean contained in a thin pericarp, has the peculiarity of growing attached to the root fibres underground. The Sweet Potatos which they cultivate are inclined to be small; it is quite the opposite in our garden, but perhaps new ground may have something to do with it. Here and there an occasional patch of Sugar-cane may be seen grown for no other purpose than that of eating it. Sugar-cane is extensively grown in some places on the Shire river. Bananas are the only fruit they cultivate.

I must now say a few words regarding what has been done in the way of gardening at Blantyre. We arrived here on October 24, just in time to get our seeds sown before the rains. The first thing to be done was to get ground prepared for Rice and Sugar-cane, and accordingly a number of natives with hoes were at once set to work. On November 10th, 14th, and 15th Rice was planted; it "briered" in eight days, and looked well until the end of January. The soil was of a peaty nature. The month of February was very dry, scarcely any rain fell. Its growth was severely checked, and though rain was plentiful in March it never recovered, and was reaped about the end of May, a poor crop. A small piece of ground which was very wet, in which the Rice was transplanted, produced a good crop. I don't think Rice can be grown here without irrigation. Indian Corn grew admirably, but the seed, which came from Edinburgh, was a complete failure. I found Sweet Potatos to be a crop easier cultivated, and still easier propagated. I got a number of plants from an old garden and planted them, which in a short time gave me plenty of cuttings. The cuttings I made about a foot long, took off the leaves, and put them in the ground about 3 feet apart. They quickly rooted and covered the ground. A small portion was sown with the oil seed called Sesame, and was a fair crop. This we shall cultivate largely, as it is the chief article of export.

On November 9 I made a general sowing of English vegetable seeds, Cabbages, Lettuces, Cauliflowers, Carrots, Onions, Leeks, Beetroot, Peas, Melons, Cucumbers, and Tomatos. For the most of these I can scarcely report anything but a failure. The Windsor and common field Bean a total failure, as also Mangel Wurzel, Kohl Rabi, and Turnips. At various times I made sowings of English grains, Wheat, Rye, and Barley. Of these not even one grain has vegetated. I can in no way account for such failures, as the seeds seemed quite good and the soil in fine order when these trials were made. A variety of Wheat from the lower Shire has done tolerably well. Sown on April 2, it is being reaped now; it is short in growth but the ears cannot be complained of. From Mr. McGibbon, in the Botanic Gardens, Capetown, we got a varied collection of seeds, amongst which were two varieties of Oats; the Cape feeding Oat, and the Queensland Oat. They have grown as well as could be expected. The Cape feeding Oat is grown in the colony for no other purpose than that of making hay. The Queensland is different, it is much like the Sandy Oat at home. From Mr. McGibbon we got Tea, Coffee, and Cotton (Sea Island) seeds. I have made several trials of the former but without any result. The Tea-nuts swelled as if to vegetate, but they rotted instead of doing so. I think the Coffee seed must have been too old. The Cotton grew pretty well. The climate here is delightful and healthy, the rainy season is not what people make it; commencing about the middle of November it finishes with the end of April. I have not seen a whole day of rain. In January we had rain nearly every day, but generally in showers of short duration. In February there was little rain, March had plenty but not to be complained of. The dry season is from May to November. Now it is very dry, and vegetation I may say is at rest. I am keeping a record of temperatures. The heat is in no way excessive, the highest temperature since May has been 134°; at mid-day it ranges between 80° and 100°. The ground heat at mid-day averages about 70°; the highest I have seen was 82°. During night the ground temperature falls on an average from 10° to 12°. I shall try this season and keep an account of the rainfall. Blantyre, you are aware, is about 3000 feet above the sea level, on what Livingstone called the third plateau of the Shire Hills.

3. *Effects Produced on Vegetation by the recent Sunless Summers.* By Mr. M'Nab, Curator, Royal Botanic Garden.—As vegetation for the present year is now drawing to a close, I think it desirable that a few remarks should be recorded as to the deficiency of certain fruits, flowers, and vegetables, so as to afford comparison with future seasons. A considerable portion of the summer of 1876 was comparatively sunless and moist, so much so that the bearing branches of many fruit trees and flowering shrubs were not sufficiently ripened to produce healthy flowers or fruit, and, therefore, a deficiency in the crop of 1877 has been the result, although the winter of 1876-77 was rather mild. This season, like the previous one, has also been sunless and moist, and, therefore, many vegetable productions were never properly matured. At the present time, as far as can be ascertained, the flowering shoots of many shrubs and fruits trees do not appear sufficiently strong to warrant us to expect a full crop another year, two good consecutive seasons being generally necessary for this purpose. The late mildness is causing many fruit trees, particularly Pears, to produce late blossoms, which will also be against next year's expectations. In cases where fruit-bearing wood has been ripened by a previous fine summer, it sometimes happens that the fruit blossoms are ruined by late spring frosts. A slight touch of frost occasionally during the spring months is, however, sometimes desirable, for if all the blossoms produced were to come to maturity the trees would often run a risk of being injured by an excess of small-sized fruit. With a season like last year (1876) the wood formed during the year was not thoroughly ripened, and when the flower-buds of many fruit trees opened in 1877 they were in general weak and frequently colourless, particularly the pink-flowering kinds, and in numerous instances fell off without fruit being formed. In those cases where fruit was produced a deficiency in flavour was generally remarked. This deficiency in flavour was particularly noticeable in many of the finer wall and standard open-air fruits, such as Peaches, Nectarines, Apricots, Plums, and Cherries, as well as Apples and Pears; also on many of the smaller fruits, as Gooseberries, Strawberries, Rasps, &c. Although some kinds of Apples fruited freely, some tolerably well perfected, the majority were miserably small and unripe, and many are still seen hanging on the leafless trees. Deficiency of fruit was observed on many of the hardy trees, as well as native fruit-bearing plants, such as Crab Apple, Medlar, standard Plum, black Sloe, Strawberry tree (Arbutus Unedo), common Black Elder, Bramble, Barberry, Mahonia, particularly M. Aquifolium; Gaultheria Shallon, Ribes sanguineum, Portugal Laurel, and Laurustinus. Amongst the hardy ornamental trees and shrubs noticed as being freely covered with fruit were the varieties of the Service or White Beam tree (Sorbus domestica), also the Mountain Ash, Cotoneaster, Thorn, Yew, Snowberry, and almost all the varieties of Holly. Although the Holly was rarely to be seen in fruit last year, this dearth was evidently caused by frost, 167° having been registered during the months of March and April, 1876, at a time when the blossom of the Holly was approaching perfection. This spring the Holly was later in blooming, and thus escaped certain spring frosts, and a profuse crop of fruit is the result. Of the smaller description of hard fruits, Filberts and Hazel are also scarce. The latter were freely covered with catkins during the month of January, the earliest flowers being seen on the 1st, hastened no doubt by the previous mild December, as recorded in the Botanical Society's Report for February, 1877. The severe frosts which occurred towards the end of January and beginning of February completely destroyed the catkins while in perfection, turning them from a rich yellow to brown, and hence the result. (See Botanical Society's Report for March, 1877.) Fruit is likewise scarce amongst ornamental fruit-bearing and forest trees. In this part of the country Walnuts are excessively small, none approaching ripeness. The Horse Chestnut trees are this year fruitless, the leaves being much infested with insects during spring, the flowers became injured, and few opened. Eatable Sweet or Spanish Chestnuts are also scarce. A great scarcity is also noticeable in the seeding of the Norway Maple, Elm, Oak, Birch, Lime, and Beech. The Norway Maple and Elm were freely covered with flowers during the early part of April. Throughout that month we experienced collectively 50° of frost, which must have injured the flowers of these trees, and probably many others which flowered about the same time. The Beech in many districts is covered with masts, but almost all are empty. This scarcity, as well as other instances recorded, I consider in a great measure arises from the unmatured state of the wood, which, although sufficiently strong to produce flowers, was not strong enough to resist frosts, which they are capable of doing when thoroughly ripened by a previous fine summer. On some of the varieties of Fraxinus, Ash keys are to be seen in abundance, but the great majority of the trees are fruitless, while with the Sycamore trees, the samara in some cases are plentiful, but generally they are entirely wanting, even on those trees which usually fruit in abundance. In many situations the young growths of the Sycamore and other trees are observed to be short and twiggy when compared with the growths of previous years, while the new-made growths on Conifers is very luxuriant. Laburnums flowered well during the spring months, and are now covered with seeds. Although cones of Abies Douglasii are in many places plentiful, few seeds seem to be perfected in them. Seeds are also scarce on many annual and perennial herbaceous plants; this, however, is greatly owing to the excessive mois-

ture at the time they were in bloom. We annually collect seeds from our own Sweet Peas and Mignonette, but this year not one pod has ripened on the former, nor a seed on the latter. Many perennial herbaceous plants were also very late in coming into bloom, and as a rule far from strong. Dahlias, Hollyhocks, and Gladioli were rare at most exhibitions, as well as Roses and other florists' flowers. Almost all bedding out plants were more or less failures, such as Scarlet Pelargoniums, Verbenas, Calceolarias, &c. Tritomas, particularly T. Uvaria, were hardly seen in flower this year before the middle of October, and the Pampas-grass (Gynerium argenteum) not till the middle of November, and those only in favoured situations.

Many vegetables are also deficient, Potatos in many districts scarce and inferior in quality, as well as Jerusalem Artichokes. Beetroot, Carrots and Parsnips, are generally small, although good in quality. Many varieties of Peas, French Beans, and Scarlet Runners quite a failure, as well as Cauliflowers. Cucumbers and Vegetable Marrows were also a failure, the stems in many cases became diseased, and little or no fruit was produced. Many other examples might be quoted, the foregoing, however, are sufficient as a record of the season of 1877 in the neighbourhood of Edinburgh. In many parts of England the scarcity of several of the above articles is also complained of, although exceptions are to be found in some places, both in England and Scotland.

Judging from present appearances we are likely to experience the same difficulty as last year in forcing many of the hardy shrubs, &c., into flower, in consequence of the unmatured state of the wood and flower-buds, also caused by the recent sunless summer.

This autumn has likewise been remarkable for the want of the usual autumnal tints on the leaves of the various forest and ornamental trees. During those seasons when the wood and leaf shoots have been thoroughly ripened, the autumnal tints are very beautiful in reds, rich yellows, and browns, while this year, with the exception of the Medlar and Sorbus vestita, which are now yellow, also certain Azaleas, and Ampelopsis tricuspidata (the latter on a wall), most other kinds have passed away of a dingy olive green colour, and in many instances blown off in consequence of the severe gales to which they were exposed. The Liquidambar (Liquidambar styraciflua), is generally one of the latest trees to part with its leaves, which are always of a dark red colour. They are still hanging flaccid on the trees (December 13, 1877) of a greenish colour, showing the unripe state of the wood.

The scarcity of wasps has also been remarked. Honey is likewise a failure, the wet season having been much against the working of bees.

4. *Miscellaneous Notices.*—1. Professor Balfour read a note which he had received from Count G. M. Hamilton, Hedensberg, Sweden, in which he says, "I never remember such an autumn, or rather winter. I do not think it is favourable for trees or plants. On December 7 there were found in flower near Stockholm—Veronica agrestis, Phleum pratense, Alopecurus geniculatus, Viola tricolor, Stellaria graminea, Potentilla argentea, Raphanus sativus, and many others. In general at that time we have snow in Sweden, especially in these northern parts, and it is certainly preferable to this rainy weather, which will, I fear, spoil many of our plants." Count Hamilton also mentions that several of Linnæus' letters and correspondence are to be published next year.

2. Mr. Stephen Wilson, of North Kinmundy, exhibited and presented to the museum at the Botanic Garden, sample of meal made from Ægilops ovata, accompanied by a note, in which he says, that this meal, the produce of the first crop, serves as a proof that no change is required upon the grass to make it a bread-corn. The difficulty is in the decortication of the grain, a labour which hardly anyone would venture upon. He decorticated about 5½ ounces, and ground a quarter of a pound. M. Fabre does not say that he made meal or bread from the grain.

3. Messrs. Whytock and Reid presented to the Museum a section of log of Walnut, in which were completely embedded several large stones. The log had been received from the Mediterranean.

The following office-bearers for 1877-8 were elected:—President—Thomas Alexander Goldie Balfour, M.D., F.R.S.E., F.R.C.P.E. Vice-Presidents—Sir Wyville Thomson, LL.D., F.R.S.; Isaac Anderson-Henry, F.L.S., F.R.S.E.; Sir Robert Christison, Bart., M.D., D.C.L.; W. B. Boyd, of Ormiston. Councillors—William Craig, M.D., C.M., F.R.C.S.E., F.R.S.E.; Malcolm Dunn, F.R. Cal. Hort. Soc.; George H. Potts, of Fettes Mount; Isaac Bayley Balfour, Sc.D., M.B., C.M.; John Methven, F.R. Cal. Hort. Soc.; James T. Wilson, of Restalrig House; Alexander Buchan, A.M., F.R.S.E.; William Gorrie, of Rait Lodge; Charles S. France, F.R. Cal. Hort. Soc.; Hugh Cleghorn, M.D., F.R.S.E. Honorary Secretary—Professor Balfour, M.D., F.R.SS.L. and E. Honorary Curator—The Professor of Botany. Foreign Secretary—Professor Dickson, M.D., F.R.S.E. Treasurer—Patrick Neill Fraser, F.R. Cal. Hort. Soc. Assistant Secretary—John Sadler, F.R.P.S.

Obituary.

WE regret to announce the death, on the 21st inst., at Fordel, Fifeshire, of Mr. ROBERT FOULIS, in his 80th year. Mr. Foulis, whose portrait and autobiography were given in our issue for April 15, 1876, was for a little over half a century gardener and forester at Fordel, a position which his predecessor had held for no less than sixty-three years. He was long and honourably known as a very successful horticulturist, a keen arboriculturist and geologist, a popular lecturer, and one of the most estimable of men. In February, 1876, he was awarded the Neill Prize by the managers of the Royal Caledonian Society—an honour well deserved, and which he highly appreciated. So recently as October last Mr. Foulis received the congratulations of his many friends on the completion of his fiftieth year of service at Fordel, at a complimentary dinner given in Edinburgh, when he was also presented with a gold watch and a purse of sovereigns, to commemorate so rare an event.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, DEC. 26, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 16 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Dec.	In.	In.	°	°	°	°	°				In.
20	30.46	+0.62	44.5	37.0	7.5	40.8	+ 1.1	39.0	94	WSW: S.W.: W.: WSW	0.02
21	30.32	+0.47	46.0	37.9	8.1	42.3	+ 3.0	40.1	92	WSW: S.W.: W.	0.01
22	30.00	+0.15	49.7	40.1	9.6	45.3	+ 6.5	42.5	90	NNW: N.W.: WNW: W.	0.00
23	29.98	+0.13	44.2	37.8	6.4	41.6	+ 3.2	33.4	80	WSW: W.	0.00
24	29.59	−0.27	48.8	33.1	15.7	41.5	+ 3.3	35.3	79		0.01
25	29.48	−0.39	39.2	30.5	8.7	34.6	− 3.4	30.4	84	S.W.	0.00
26	29.19	−0.69	39.2	31.4	7.8	35.4	− 2.4	32.3	89	W.	0.00
Mean	29.86	0.00	44.5	35.4	9.1	40.2	+ 1.6	36.1	87	W.	sum 0.04

Dec. 20.—A dull, cloudy day. Slight rain in morning. Cool.
— 21.—A very dull damp day. Slight rain at intervals.
— 22.—Overcast, dull, and mild throughout.
— 23.—A fine bright day. Cool. Partially cloudy.
— 24.—Overcast, dull, with occasional slight showers till 2 P.M. Fine and bright after. Cold at night.
— 25.—A very fine day. Cold. A little snow fell at 2 A.M.
— 26.—A very fine bright day. Cold. Snow fell about 6.30 A.M.

LONDON: *Barometer.*—During the week ending Saturday, December 22, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.41 inches at the beginning of the week to 30.30 inches by the afternoon of the 16th, increased to 30.43 inches by the morning of the 17th, decreased to 30.35 inches by the afternoon of the same day, increased to 30.70 inches by 9 A.M. on the 20th, decreased to 30.49 inches by the afternoon of the 21st, increased to 30.55 inches by the night of the same day, and decreased to 30.02 inches by the end of the week. The mean reading for the week at sea level was 30.45 inches, being 0.34 inch above that of the preceding week, and 0.44 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 49¾° on the 22d to 39¼° on the 19th; the mean value for the week was 45¾°. The lowest temperatures of the air observed by night varied from 28¾° on the 19th to 43° on the 17th; the mean value for the week was 37°. The mean daily range of temperature in the week was 8¾°, the greatest range in the day being 12¼° on the 18th, and the least 4¼° on the 17th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—16th, 44°.8, +4°.1; 17th, 45°.3, ×4°.8; 18th, 39°, −1°.2; 19th, 33°.4, −6°.6; 20th, 40°.8, −1°.1; 21st, 42°.3, +3°; 22d, 45°.3, ×6°.5. The mean temperature of the air for the week was 41°.6, being 1°.5 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 59° on the 18th, 56° on the 16th, and 55½° on the 17th; on the 20th the highest reading was 45°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 26° on the 19th, 29° on the 18th, and 33° on the 21st; on the 17th the lowest reading was 39½°.

Wind.—The direction of the wind was principally from the W., and its strength gentle. The weather during the week was dull and miserable. *Fog* prevailed on the 18th and 19th.

Rain.—Slight rain fell on three days during the week; the amount measured was 0.05 inch only.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 52¼° at Liverpool, and 52° at Truro, Leeds, and Sunderland; the highest temperature of the air at Wolverhampton was 48¼°, and at Portsmouth was 48¾; the mean value from all stations was 50¼°. The lowest temperatures of the air observed by night were 27½° at Norwich, 28¾° at Blackheath, and 29° at Bristol and Cambridge; the lowest temperatures of the air at Sunderland was 38°, and at Liverpool was 34¼°; the mean value from all stations was 31¼°. The range of temperature in the week was the greatest at Norwich, 22°, and the least at Sunderland, 14°. The mean range of temperature from all stations was 19°.

The mean of the seven high day temperatures was the highest at Truro, 51¼°, and at Plymouth, 49°, and the lowest at Norwich, 44¾, and at Hull, 45°; the mean from all stations was 47°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34¼°, and at Nottingham, 34¾°, and the highest at Sunderland, 41¼; the mean from all stations was 38°. The mean daily range of temperature in the week was the least at Norwich and Sunderland, 7°.2; and the greatest at Northampton, 11½°, the mean daily range from all stations was 9¼°.

The mean temperature of the air for the week was 42¼°, being 1¾° higher than the value for the corresponding week in 1876. The highest was 46°, at Truro, and the lowest was 40°, at Wolverhampton.

Rain fell on three or four days in the week at most stations, the amounts measured varied from ¼ of an inch at Plymouth and Truro, to 0.05 inch at Blackheath; the average fall over the country was 0.14 inch.

The weather during the week was dull, and the sky generally overcast. A *lunar halo* was seen at Bradford on the 20th.

SCOTLAND: *Temperature.*—The highest temperatures of the air observed by day varied from 55° at Perth to 50½° at Greenock; the mean value from all stations was 52¼°. The lowest temperatures of the air observed by night varied from 32° at Aberdeen to 40° at Glasgow; the mean value from all stations was 37¼°. The mean range of temperature in the week from all stations was 15°.

The mean temperature of the air for the week was 44½, being 6¾° higher than the value for the corresponding week in 1876. The highest was 46½° at Glasgow, and the lowest 41¼°, at Aberdeen.

Rain.—The amounts of rain measured varied from 1.17 inch at Greenock to 0.04 inch at Leith and Perth. At Dundee no rain fell. The average fall over the country was 0.35 inch.

DUBLIN.—The highest temperature was 52°, the lowest was 26½°, the range was 25½°, the mean was 43½°, and the fall of rain 0.18 inch.

JAMES GLAISHER.

Variorum.

THE REGISTRATION OF LETTERS.—On and from January 1, 1878, the following changes will be made in the system of registering letters:—1. The registration fee will be reduced from 4*d.* to 2*d.* 2. For the convenience of persons living in country places, where no post-office is near, letters will be registered by rural post messengers, who will receive letters for registration on their outward and on their inward walks, whenever it is practicable for them to do so. 3. In the event of a registered letter containing an enclosure of intrinsic value, or its contents, being lost while passing through the post, the department will, under certain regulations, make good the value of the contents up to £2. These regulations will be published shortly; but the following are some of the principal conditions:—(*a*) That the sender of the letter duly observed all the conditions of registration required. (*b*) That the letter was securely enclosed in a reasonably strong envelope; and, if it contained money, that it was enclosed in one of the special registered letter envelopes which will be sold by the Post-office for the purpose. (*c*) That application was made to the Secretary of the Post-office immediately the loss was discovered. (When

the complaint is that the contents of a letter have been abstracted, the envelope must accompany the application; otherwise the question will not be entertained.) (*d*) That the Postmaster-General, whose decision shall be final, is satisfied that the loss occurred while the letter was in the custody of the British Post-office, and was not caused by any fault on the part of the sender. 4. Registered letter envelopes, bearing a 2*d*. stamp for the payment of the registration fee, will be sold at all post-offices and by rural messengers. To begin with, envelopes of the following dimensions will be supplied:—5¼ inches by 3¼ inches, and 6 inches by 3¾ inches; these will be sold for 2¼*d*. each, or 2*s*. 2½*d*. for a packet of twelve—the registration fee being included in the prices. Three larger sizes will be sold hereafter, and due notice will be given of their dimensions and prices. 5. The postage must be prepaid by affixing the necessary stamps; the impressed stamp, which the envelope bears, represents the registration fee only. 6. A letter intended to be registered must not be dropped into a letter box, but must be given to an agent of the Post-office to be registered. 7. Inland letters containing coin, jewellery, or watches, cannot be sent unregistered. If dropped into a letter-box, they will, as heretofore, be registered by the Post-office, and charged on delivery with a registration fee of 8*d*.; a similar fee of 8*d*. will be charged on letters (without regard to their contents) marked "registered," but posted unregistered instead of being given to a Post-office servant. No letter containing coin, jewellery, or watches, can be sent, even if registered, to any foreign country. 8. The Postmaster-General hopes that when registration is made so cheap and so easy, the public will altogether abstain from sending letters containing enclosures of value through the post unregistered. 9. Concurrently with these changes the scale of charges for inland money orders will be altered by raising the rate now charged for orders under 10*s*. from 1*d*. to 2*d*., and the rate for orders of 10*s*. and under £1 from 2*d*. to 3*d*. Consequently, on and after January 1 next, the scale of charges for inland money orders will be as follows:—

For sums under 10*s*.	2*d*.
" of 10*s*. and under £2	3*d*.
" " £2 " £3	4*d*.
" " £3 " £4	5*d*.
" " £4 " £5	6*d*.
" " £5 " £6	7*d*.
" " £6 " £7	8*d*.
" " £7 " £8	9*d*.
" " £8 " £9	10*d*.
" " £9 " £10	11*d*.
" " £10	1*s*.

FRENCH HORTICULTURAL INDUSTRY. — The Central Society of Horticulture in France has just published some official statistics calculated to show the importance of this industry in France. According to the Customs Administration Tables, the average annual export of fruit from 1827 to 1836 was but 93,000 kilogrammes of Oranges and Lemons, and 2,300,000 kilogrammes of other fresh fruits. In 1874 the exports had reached the following figures:—

	Kilos.
Oranges and Lemons	3,307,612
Fresh fruits for the table	43,349,424
Dry and pressed fruits	14,156,046
Candied and preserved fruits	2,402,390
Almonds, Walnuts, and small Nuts ..	15,265,653
	78,479,227

—equal to about 7700 tons. This is inclusive of Chestnuts, which in the same year furnished 6,398,486 kilos., and of Potatos, the exports of which from France amounted to 175,779,230 kilos. It is impossible to ascertain with any precision the quantity of fresh and dried fruit and vegetables consumed in the interior of France, but the commerce of Paris will give some idea of the quantity. In 1872 there was sold wholesale in the central public markets of Paris:—

Choice fruits	802,548
Ordinary fruits	3,234,307
Choice vegetables	678,084
Ordinary vegetables	1,831,695

In the quarries in the environs of Paris, 79,000 square metres of surface are devoted to the culture of Mushrooms, producing 1,800,000 francs of produce (£72,000); and finally, the sales made yearly in the four flower markets of Paris reach £80,000. The Chamber of Commerce of Paris in 1872 returned 25,804 persons in the Department of the Seine occupied as farmers, market gardeners, horticulturists, florists, and Mushroom growers, who obtained annually by their labour about £1,100,000. M. Husson, a well-informed authority, estimates that Paris receives from the South yearly 20,000,000 kilos. of early products, from the environs 259,000,000 kilos. of various vegetables, exclusive of 17,000,000 kilos. of dried vegetables which enter into consumption. There is also a grand production of Roses in France, in which shich she is distinguished above other countries: also many flowers and plants for which her climate is well suited, and also the raising of young fruit trees.

Answers to Correspondents.

ADIANTUM: *H. H.* The specimens sent are A. excisum multifidum, which comes variably crested; they are not at all like A. amabile.

AGAVE VIVIPARA: The Agave figured as vivipara at tab. 150 is not the plant described in the text under the name of vivipara, but A. sobolifera of Salm-Dyck, which is often grown as vivipara in English gardens. *J. G. B.*

ANTS: *J. B. A., Mentone.* Try an application of petroleum in their tracks.

BOOKS: *Young Gardener.* From Mr. E. H. May, 171, Fleet Street, E.C., price 2*s*.—*J. W. B.* Brown's *Forester*, or Grigor's *Arboriculture.* The first named for choice.

CHRYSANTHEMUM: *H. C.* Your sport from Prince Albert is likely to prove a fine variety. At present it is rather thin, but that may arise from its being a late flower. It is a very pure white, and will be useful for decoration if it always blooms late.

COPINGS FOR GARDEN WALLS. (*Erratum*, p. 787.) In line 19 from the top, for "screw" read "scrim." It is a thin cloth manufactured in Dundee, principally for protecting the blossom of fruit trees, and very suitable for the purpose.

INSECTS: *W. W. R.* The very minute circular white spots on the Ivy leaf sent are females of one of the Coccidæ—Aspidiotus hederæ of Vallot. Will Mr. "R." state the species of Ivy and the locality where grown? *I. O. W.*

NAMES OF PLANTS: *W. P.* Bignonia venusta and, we think, Streptocarpus Rexii.—*G. W.* 3, Stevia eupatoria, or some near ally.—*W. T. T.* 1, Davallia novæ zealandiæ = Acrophorus hispidus; 2, Lastrea quinquangulare; 3, Asplenium Adiantum-nigrum; 4, Eriobotrya japonica.—*J. B. A., Mentone.* The shrub is Deeringia Amherstiæ variegata. The other we do not recognise at present.

STACKING STRAWBERRIES, &c. The title of Mr. Hind's letter, at page 788, should have been "Stacking Strawberries, and Starting them in Bottom-heat," instead of as there printed.

CATALOGUES RECEIVED.—Messrs. Carter & Co. (High Holborn, London, W.C.), Illustrated Vade-Mecum and General Catalogue for 1878.—Louis van Houtte (Ghent, Belgium), Catalogue of Gesneraceous Plants, &c. — B. S. Williams (Victoria and Paradise Nursery, Upper Holloway), Catalogue of Plants, and Descriptive Catalogue of Flower, Vegetable, and Agricultural Seeds for 1878.—Toole & Co. (22, D'Olier Street, Dublin), Select Spring Catalogue of Vegetable and Flower Seeds for 1878.

COMMUNICATIONS RECEIVED.—A. S. W.—W. T. T.—C. Y. M.—J. S. C.—B. F.—J. D.—E. C.—G. H.—W. B.—E. K. W.—W. M.—E. S.—G. P.—Scotia.—J. W. S.—J. McC.—James Backhouse & Son.—W. R.—B. P.—Nurseryman.—Disappointed (clearly the cause was an over-dose).—E. B.—A. S. W.—W. S.—Hugo Voit.—J. T. B.—W. T. T. D.—J. Linden.

Markets.

COVENT GARDEN, December 27.

During the last few days there has been nothing doing, the open market having been virtually closed. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 6– 6 0	Oranges, per 100	2 6–12 0
Grapes, per lb.	1 6– 6 0	Pears, per doz.	2 0–10 0
Lemons, per 100	4 0–12 0	Pine-apples, per lb.	1 6– 6 0
Nuts, Cobs, per lb.	0 4– 0 6		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, English Globe, doz.	2 0– 4 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 6– ..	Leeks, per bunch	0 2– 0 4
Beans, French, per packet	1 0– ..	Lettuces, per score	2 0– ..
Beet, per doz.	1 0– 2 0	Mint, green, bunch	0 6– ..
Brussels Sprouts, p. bush.	6 0– ..	Mushrooms, per pott.	1 0– 3
Cabbages, per doz.	1 0– 2 0	Onions, per bushel	3 6– ..
Carrots, per bunch	0 4– 0 6	— young, per bun.	0 6– ..
— new, Fr., bunch	1 6– ..	Parsley, per bunch	0 4– ..
Cauliflowers, per doz.	1 6– 4 0	Peas (green), per qt.	1 0– ..
Celery, per bundle	1 6– 2 0	Potatos (new), pun.	1 0– ..
Chilis, per 100	3 0– ..	Radishes, per bunch	0 1– 0 3
Cucumbers, each	1 0– 1 6	— Spanish, doz.	1 0– ..
Endive, per doz.	1 0– 2 0	— New Jersey, doz.	2 0– ..
— Bataviao, p. doz.	1 6– ..	Rhubarb, per bun.	1 0– ..
Garlic, per lb.	0 6– ..	Salsafy, per bundle	1 0– ..
Herbs, per bunch	0 2– 0 4	Seakale, per punnet	2 0– ..
		Shallots, per lb.	0 6– ..
		Spinach, per bushel	2 6– ..
		Tomatos, per doz.	1 0– 6 0
		Turnips, per bundle	0 4– 0 6

Potatos: — Essex Regents, 90*s*. to 110*s*.; Kent Regents, 100*s*. to 140*s*.; Kent Kidneys, 140*s*. to 160*s*.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 6	Jasmine, per bunch	1 0– 2 0
Arum Lily, per doz.	9 0–18 0	Lily of Val., 12 spr.	4 0–12 0
Azalea, 12 sprays	1 0– 3 0	Mignonette, 12 bun.	6 0–19 0
Bouvardias, per bun.	1 0– 4 0	Narcissus, various, per doz.	2 0– 4 0
Camellia blms., doz.	9 0–24 0	Pelargoniums, 12 spr.	1 0– 3 0
Carnations, 12 blooms	1 6– 4 0	— zonal, 12 sprays	0 6– 1 6
Christmas Roses, 12 blooms	0 9– 2 6	Poinsettias, per doz.	4 0–12 0
Chrysanth., 12 blms.	2 0– 6 0	Primula, double, per bunch	1 0– 2 0
Epipbyllum, 12 blms.	1 0– 3 0	Roses (indoor), doz.	2 0–12 0
Eucharis, per doz.	8 0–12 0	Stephanotis, 12 spr.	9 0–18 0
Euphorbia jacquiniæfolia, 12 sprays	2 6– 6 0	Tropæolum, 12 bun.	1 0– 4 0
Gardenia, per doz.	9 0–18 0	Tuberoses, 12 blms.	2 0– 4 0
Heliotropes, 12 spr.	0 6– 1 0	Tulips, per doz.	2 0– 3 0
Hyacinths, Rom. doz.	2 0– 4 0	Violets, 12 bunches	1 0– 3 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azalea, per dozen	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–12 0	Fuchsias, per dozen	6 0–12 0
Bouvardias, do.	12 0–24 0	Hyacinths, per doz.	10–0–18 0
Camellia, var., doz.	30 0–60 0	Mignonette, per doz.	6 0– 9 0
Chrysanth., per doz.	9 0–12 0	Myrtles, do.	6 0–12 0
Clematis	12 0–24 0	Narcissus, per doz.	15 0–24 0
Coleus, per dozen	6 0– 9 0	Palms in variety, each	3 6–21 0
Cyclamen, per doz.	12 0–24 0	Pelargon., scarlet, p. dozen	6 0–12 0
Cyperus, do.	6 0–12 0	Poinsettias, per doz.	12 0–24 0
Dracæna terminalis	30 0–60 0	Solanums	9 0–24 0
— viridis, per doz.	18 0–24 0	Scilla, per dozen	6 0–12 0
Erica Hyemalis, doz.	12 0–42 0	Tulips, per dozen	10 0–18 0
— gracilis, per doz.	6 0–18 0	Valotta purpur., doz.	9 0–18 0
Euonymus, var., doz.	6 0–24 0		
Ferns, in var., p. doz.	4 0–18 0		
Ficus elastica, each	2 6–15 0		

*** The demand for flowers being much increased for Christmas decorations, &c., the above prices must only be taken as a guide, and must not be fully relied on.

SEEDS.

LONDON: *Dec.* 26.—Our markets are now quite of a holiday character, the business doing being almost *nil.* Probably the new year will be two or three weeks old before any active demand arises for agricultural seeds. The supply of French Clover continues fully sufficient for present requirements; but the opinion is said to now obtain with some Paris houses that, in consequence of the recent political misgivings, and the commercial timidity and desire to realise resulting therefrom, the French have lately been over-shipping red seed to this country, and that their own wants during the approaching sowing season have accordingly been largely overlooked. This statement must, of course, be taken for what it is worth. The specimens of Canadian Clover which have just been received here prove disappointing, and exhibit a great falling-off in quality from those of last year; unless, indeed, there are finer samples to follow, Ontario this season will be unable to compete with Southern France. Although there appears no reason to doubt that the American yield is this year very large, it is worth noting, that on account of the low prices, unfavourable threshing weather, and heavy home consumption, the receipts at the Western depôts have been less this autumn than last. For example, the arrivals down to the end of last month in the important city of Toledo, State of Ohio, were 6000 bags less than for the corresponding period of 1876. Canary, Linseed, and all other articles, offer, in the absence of transactions, no subject for remark. *John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday business was quite of a holiday character. There were a few millers in attendance, and these operated with extreme caution in Wheat. The political agitation seems not to affect in the least the course of the trade, but the advanced period is beginning to be felt in the gradual hardening of the rates for foreign produce. On Monday higher prices were asked and invariably given for parcels of Wheat to arrive. Barley was well held, especially malting, but there was only a small demand. Malt remained stationary. Oats were quite as dear, without being much sought after; and a steady market prevailed for Maize. Beans and Peas were offered on former terms. Flour was dull and not very well supported as to prices. The market was not open on Wednesday, it being a statute holiday.—Average prices of corn for the week ending December 22:—Wheat, 51*s*. 4*d*.; Barley, 43*s*. 3*d*.; Oats, 23*s*. 11*d*. For the corresponding week last year:—Wheat, 50*s*. 8*d*.; Barley, 38*s*. 7*d*.; Oats, 25*s*. 2*d*.

CATTLE.

At the Metropolitan Market on Monday the number of beasts was rather larger than expected for a holiday market. There was a good attendance of buyers for the day, and the weather being favourable trade rather improved. Best qualities were readily disposed of at an advance on last Thursday's quotations. The number of sheep was very small, but this article is not in much request at this season. Trade was fair, and choice descriptions made a good price. Quotations:—Beasts, 4*s*. 6*d*. to 5*s*. 2*d*., and 5*s*. 6*d*. to 6*s*.; calves, 5*s*. to 6*s*. 4*d*.; sheep, 5*s*. 6*d*. to 5*s*. 10*d*., and 6*s*. 4*d*. to 7*s*.; pigs, 3*s*. 6*d*. to 4*s*. 8*d*. — On Thursday trade ruled quiet, but rather steadier, owing to the cold weather. Beasts were a shade dearer than on Monday, and sheep realised full prices. Calves were quiet.

HAY.

At the Whitechapel market on Thursday there was a short supply on offer. Trade was quiet, and prices as follows:—Prime Clover, 100*s*. to 138*s*.; inferior, 85*s*. to 95*s*.; prime meadow hay, 90*s*. to 102*s*. 6*d*.; inferior, 70*s*. to 85*s*.; and straw, 44*s*. to 56*s*. per load.

POTATOS.

At the Borough and Spitalfields markets sound Potatos command a steady sale, but the trade is irregular for inferior kinds:—Kent Regents, 150*s*. to 185*s*.; Essex ditto, 140*s*. to 175*s*.; rocks, Essex, 100*s*. to 120*s*.; flukes, 170*s*. to 180*s*.; Victorias, 140*s*. to 180*s*. per ton. —The imports into London last week consisted of 39,606 bushels from Charlotte Town, 22,320 bags Hamburg, 3072 Bremen, 1256 sacks 1240 bags and 46 tons Dunkirk, 2568 bags Antwerp, 1627 Stettin, 614 Boulogne, 444 barrels New York, 427 bags 90 tons Rouen, 474 bags Rotterdam, 526 Ghent, 200 Harlingen, and 160 tons Brussels.

TO THE SEED TRADE.

OUR WHOLESALE CATALOGUE

is now ready, and may be had on application. A copy has been posted to all our Customers, if not received an early intimation will oblige.

MINIER, NASH AND NASH, 60, Strand, London, W.C.

ROSE BUDS.

All who wish to have a succession of Roses from the open ground, from June to November (without forcing), should plant

QUEEN of BEDDERS (Noble).

See *Gardeners' Chronicle*, May 5. A beautiful bouquet was cut from open ground Nov. 20, 1876. Price is within reach of everybody.

CHARLES NOBLE, BAGSHOT

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LIMERICK SEED and NURSERY COMPANY,
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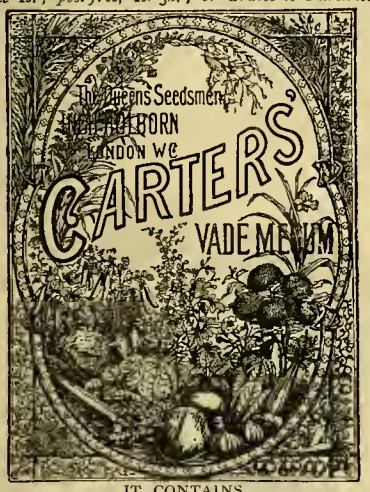
NOW READY,

Price 1s.; post-free, 1s. 3d.; or Gratis to Purchasers.



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DENDROBIUM SUBERBIENS
(Reich. fils).

B. S. WILLIAMS

having at present several fine plants of this new and magnificent Dendrobe in flower, received some time ago from his Collector (which, according to Professor Reichenbach, is now flowering for the first time in Europe), will be glad to be honoured with a visit from any one who may be interested in this class of plants.

VICTORIA and PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

SEAKALE, ASPARAGUS and RHUBARB.—Roots for forcing, exceptionally fine, very low prices. For special quotations apply to
H. THORNTON, 12, Maxwell Road, Fulham, S.W.

Cucumber, Rollisson's Telegraph.

H. J. HARDY begs to offer to the Trade, SEED of his SELECTED STOCK of the above, by the 100 Seeds or the Ounce. Cash or reference. Price on application to
H. J. HARDY,
Stour Valley Seed Grounds, Bures, Suffolk.

Fruit-bearing Trees.

FINE STANDARD and PYRAMIDAL PEARS.—A large quantity of the above to be Sold cheap, the land being required for other purposes. Inspection invited. No reasonable offer refused. All recently removed.
JOHN STANDISH AND CO., Royal Nurseries, Ascot, Berks.

W. BALL AND CO. beg to offer the undermentioned PLANTS, all of which are strong and well established:—
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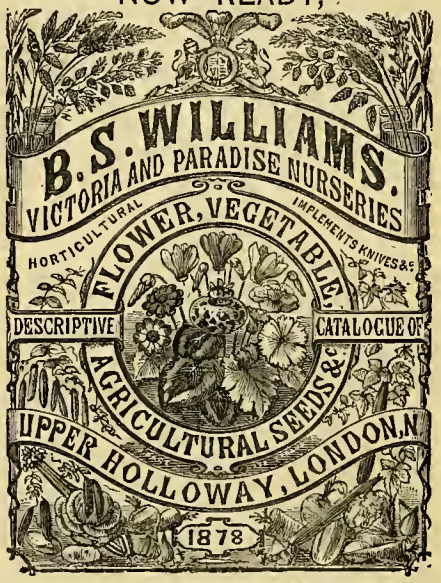

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WILLS' ELIXIR.—This Manure produces the most marvellous and enduring effects on all kinds of Fruits grown under glass, such as Vines, Pines, Peaches, Strawberries, Melons, Cucumbers, and all kinds of Flowering and Foliage Plants. It is equally effective when applied to Fruits and Flowers growing in the open air. It is very light, 1 cwt. being equal to 6 cwt. of any other manure; it is also free from all objectionable smells.

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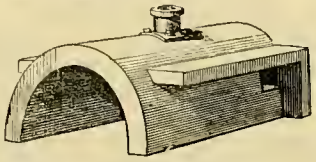
Silver Medal, 1874.
THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



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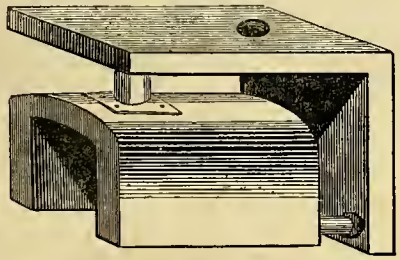

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

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"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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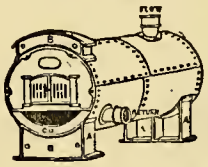
After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



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"Royal Exotic Nursery, King's Road, Chelsea, S.W.—Aug. 8, 1877.
"Messrs. SILVESTER,
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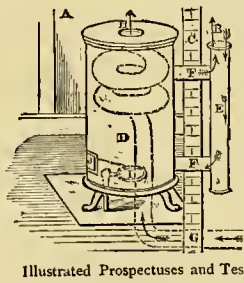

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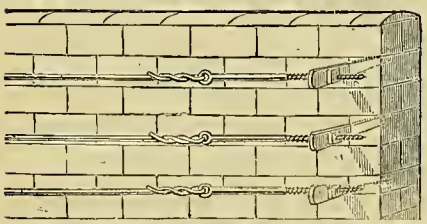

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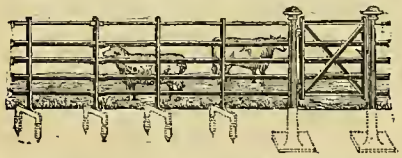

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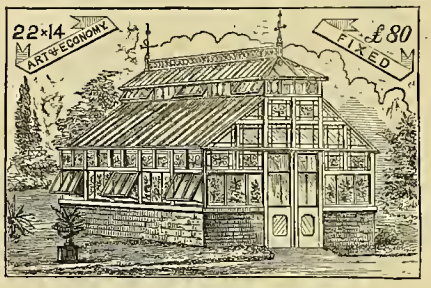

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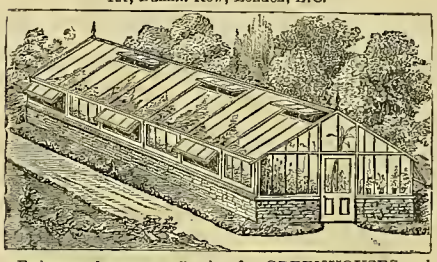

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No Cost for Motive Power, which is obtained from the Stream of Water passing through the Rams.

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WILL FORCE TO A HEIGHT OF 1,500 FEET.

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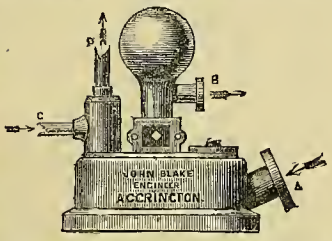

This Ram will raise a part of the same water that works it, or will raise pure water from a well whilst it is worked by a stream of impure water.

TESTIMONIALS.

From the Right Hon. T. SOTHERN ESTCOURT, *Estcourt Park, Gloucestershire. September* 6, 1875.

"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful."

(The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

From Captain TOWNSHEND, *Wincham, February* 10, 1877.

"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000."

From JOHN BARNES, Esq., *Contractor, Chatburn and Hellifield Railway, Contractor's Office, March,* 1877.

"Dear Sir,—I have the pleasure to inform you that the three Hydraulic Rams you erected for me on this contract about two years ago, have continued to work very satisfactorily, without requiring any repairing. With a fall of 5 feet sufficient water has been raised daily by each Ram to supply two of my locomotive engines: they have fully answered my expectations and all that has been said of them."

Deanwater, Wilmslow, November 20, 1873.

"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required, namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—I am, yours truly, L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.

"Sir,—Your self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours to a height of 194 feet."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.

"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

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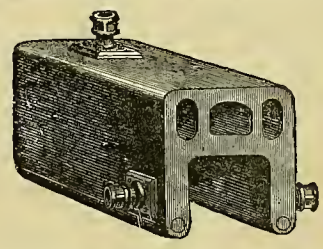

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GARDENERS' CHRONICLE

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W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.